

Contemporary organisation and management

Challenges and trends

editors Anna Michałkiewicz, Wioletta Mierzejewska



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Introduction

The beginning of the 21th century was marked by significant and dynamic changes in the business environment. These changes relate to a growing complexity and unpredictability, driven by digital revolution, knowledge-based economy, globalization, social revolution and other factors. Today's business environment can be described as turbulent, discontinuous and uncertain, as the evolution that we are observing is not gradual but extremely fast. Companies are faced with rapid technological progress, development of new communication technologies, fast globalization combined with parallel regionalization, political instability, and hyper-competition. In almost all business activities, competition is becoming more complex and dynamic, boundaries of enterprises and industries get blurred and vulnerability to technological changes increases. Such transformation of the market environment and structure requires a change in the approach of companies to other participants of the market game and implementation of modern management methods and techniques.

According to Boston Consulting Group, winning companies in the 2020s will be those that are designed to constantly learn and adapt to changing realities¹. These companies will have built capabilities enabling them to keep up with evolving environment, especially with technological and social changes. Traditional approach to management will not be effective any more. New solutions will have to be implemented in all areas of organisation's management. The need for constant adaptation to fast-changing environment explains why crucial challenges for companies consist specifically in leveraging multi-company ecosystems, achieving resilience in an uncertain world, focusing on organization learning and combining artificial and human intelligence². Thus, contemporary organisations should be fast, flexible, simple and digitalized. There are many companies that attempt to reorganize in order to better cope with this new environment. The successful

1 L. Fæste, M. Reeves, K. Whitaker, *The Science of Organizational Change*, BCG Publication, 2019, <https://www.bcg.com/publications/2019/science-organizational-change.aspx> (accessed: 9.03.2020).

2 R. Kimura, M. Reeves, K. Whitaker, *The New Logic of Competition*, BCG Publication, 2019, <https://www.bcg.com/publications/2019/new-logic-of-competition.aspx> (accessed: 14.02.2020).

ones are those designed not for efficiency and effectiveness, but for speed, agility, and adaptability that enable to win in today's global business environment³. These companies put their emphasis on agile business models, network management, talent seeking, diversity management, maintaining ethical standards, sustainable development, leadership, heterarchy, orchestration, organisation culture, project and process orientation. Therefore, the main direction of business practise and research development revolves around the concepts of ambidexterity, coopetition and ecosystem management, dynamic capabilities.

Above-mentioned challenges and trends in the business environment, together with the resulting changes within companies' management systems are widely discussed in the literature. The questions being: "What challenges do the contemporary companies face?", "How to adapt or overtake these changes?", "How to manage contemporary organisations?", "What is the practical value of various management methods and techniques?", "What are the main directions of modern management evolution/revolution?". These and other questions were discussed by chapter authors of the present monograph. In each chapter, the authors share their thoughts, experience and results of research carried out in various areas of modern management.

The present monograph consists of five parts. Each part is devoted to specific challenges and trends in modern management and organization behaviour. Topics are very diverse and range from strategic to operational issues, from conceptual analyses to results of empirical research. This diversity is in fact for the benefit, as it allows for an in-depth recognition of the heterogeneity of challenges and trends that modern organizations are faced with.

Part one entitled *Strategic challenges for contemporary organizations* consists of six chapters presenting some important aspects of digital transformation, internalisation, entrepreneurship, social entrepreneurship and business models. Authors' biggest focus is placed on the problem of technological anxiety in the context of digital transformation in industrial processing companies in Poland, as well as general problems related to digital transformation in European agri-food, packaging and ICT small and medium-sized enterprises. Other subjects of interest are also explored here, such as the dynamics of value appropriation, including entrepreneurial decision-making practices and strategic behaviours, or business models in the energy sector. The last two chapters present challenges faced by specific types of organisations, i.e.: multilatinas and start-ups with dual mission.

3 J. Bersin et al., *The organization of the future: Arriving now*. 2017 Global Human Capital Trends, Deloit Insights, 2017, <https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2017/organization-of-the-future.html> (accessed: 4.03.2020).

Part two entitled *Modern approaches, methods and measures supporting management* consists of five chapters related to various methodological issues. They raise a question of appropriateness of certain methodological assumptions in the management science, design science and anthropological approach to management. Then, it is postulated that content analysis could serve as an advisable method for studying psychological traits of firms' core decision makers. The last chapter of this part aims to present a measurement tool for the assessment of supply chain resilience in the context of managing supplier relationship. Based on conducted research, a measurement of flexibility and redundancy in relationships with suppliers is proposed.

Part three entitled *Sustainability and CSR as important trends in modern management* is dedicated to the questions of sustainability and CSR, which are considered important trends in modern management. In the first place, authors present reviews of literature on the subject of sustainable entrepreneurship and sustainable development of suppliers. These are followed by a thorough analysis of: a) Corporate Social Responsibility as an instrument of employer branding strategy for Z generation and b) similarities and differences between Corporate Social Responsibility and Responsible Research & Innovation and the ways of including both in business practice.

Part four entitled *Trends in modern Human Resources Management* deals with current trends in human resources management. In this area, authors discuss the problems of: human-machine interaction in warehouse jobs, in employees' perspective, the process of personnel controlling, performance management and HR outsourcing. Authors' field of interest includes as well: young professionals entering the labour market, new lifestyles and opportunities for professional development of this specific group, women in IT managerial positions, as well as employee satisfaction.

The last fifth part entitled *Other trends and challenges for modern organisations* contains seven chapters. Challenges identified by the authors include: a) the question of adaptation to change and functioning of business processes management in enterprises and b) project management culture and risk management in projects, taking into account the role of managers in the said risk management. Then, issues related to different ways of assessing the importance of offer's features by cooperatives in the area of sales marketing for various groups of customers are described. The last three chapters discuss challenges for higher education, i.e.: difficulties experienced by private universities in Poland, actual demands with regard to higher education system, idea of an entrepreneurial university as an attempt to respond to these demands, problems with assessing the link between the intention to commercialize knowledge displayed by academic entrepreneurs and the quality of the relationship of these entrepreneurs with their supporting institutions.

All topics contained in the present monograph are an original contribution to the development of management sciences and a better understanding of the challenges faced by modern organizations. We hope that this monograph will be an inspiration for further research in the field of modern organizations and modern management methods and techniques.

*Anna Michałkiewicz
Wioletta Mierzejewska*

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- Kimura R., Reeves M., Whitaker K., *The New Logic of Competition*, BCG Publication, 2019, <https://www.bcg.com/publications/2019/new-logic-of-competition.aspx> (accessed: 14.02.2020).

PART 1

**Strategic challenges for
contemporary organizations**

The importance of technological anxiety for the digital transformation of industrial processing companies in Poland

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Introduction

Industry 4.0 (otherwise known as the Fourth Industrial Revolution, Revolution 4.0) is a topic that is increasingly being addressed not only in business circles and economic policy but also in scientific discourse, as evidenced by the rapidly growing number of publications in renowned scientific journals¹. In the era of change brought about by this digital transformation of industry, companies are facing the challenge of skillfully implementing and effectively using machines and advanced ICT technologies such as progressive robotisation, artificial intelligence, the Internet of Things, intelligent sensors and transmitters, Big Data².

- 1 V. Alcácer, V. Cruz-Machado, *Scanning the Industry 4.0: A Literature Review on Technologies for Manufacturing Systems*, "Engineering Science and Technology an International Journal" 2019, vol. 22(3), pp. 899–919; C.O. Klingenberg, M.A.V. Borges, J.A.V. Antunes Jr., *Industry 4.0 as a data-driven paradigm: a systematic literature review on technologies*, "Journal of Manufacturing Technology Management" 2019, <http://doi.org/10.1108/jmtm-09-2018-0325>; J.M. Müller, *Industry 4.0 in the Context of the Triple Bottom Line of Sustainability: A Systematic Literature Review*, [in:] C. Silvestri, M. Piccarozzi, B. Aquilani (eds), *Customer Satisfaction and Sustainability Initiatives in the Fourth Industrial Revolution*, IGI Global, Hershey 2020, pp. 1–20, <http://doi.org/10.4018/978-1-7998-1419-1> (accessed: 8.01.2020).
- 2 K. Schwab, *Czwarta rewolucja przemysłowa*, transl. A.D. Kamińska, Wydawnictwo Studio EMKA, Warszawa 2018.

Some impact of digital transformation on the functioning of companies and their environment, including, in particular, suppliers, manufacturers, business partners and customers, is inevitable, resulting in new value chains and business models³. Organisational and technological changes are driven by the evolution of customers' needs and the requirements of mass personalisation⁴. The multifaceted impact of the Industry 4.0 concept opens new areas of research for researchers. Areas however, due to limited access to information on the background and consequences of the digital transformation process, which require a thorough and careful exploration. The article assumes that the identifying feature of the concept of Industry 4.0 is related to the integration of people and machines, along with advanced information and communication technologies, enabling real-time interaction between key components of a company⁵.

Adopting technology 4.0 requires a systemic view on the functioning of the entire company⁶. Scientific studies on Industry 4.0 focus mainly on the very scope of the concepts, objectives and potential beneficial results⁷. At the same time, there is a research gap in the literature concerning the barriers to digital transformation⁸. The aim of the article is to determine the significance of technological anxiety for the digital transformation of production companies operating in the Polish industrial processing sector. The results of the empirical research conducted cover six dimensions of technological anxiety, the significance of which was presented on the basis of the age of companies, the size of employment and the phase of transformation they are in.

3 L. Herbert, *Digital Transformation: Build Your Organization's Future for the Innovation Age*, Bloomsbury, London 2017.

4 K. Nosalska et al., *Industry 4.0: coherent definition framework with technological and organizational interdependencies*, "Journal of Manufacturing Technology Management" 2019, <https://doi.org/10.1108/JMTM-08-2018-0238> (accessed: 8.01.2020).

5 M. Młody, A. Weinert, *Industry 4.0 in Poland: A Systematic Literature Review and Future Research Directions*, [in:] A. Zakrzewska-Bielawska, I. Staniec (eds), *Contemporary Challenges in Cooperation and Competition in the Age of Industry 4.0: 10th Conference on Management of Organizations' Development (MOD)*, Springer International Publishing, Cham 2020, pp. 43–71, http://doi.org/10.1007/978-3-030-30549-9_2

6 Technologies 4.0 belong to the open set because of the combinations of solutions and their derivatives permanently developed by manufacturers and users. A wider range of technologies 4.0 is presented by e.g. M. Młody, A. Weinert, *Industry 4.0 in Poland...*; K. Nosalska et al., *Industry 4.0...*

7 M. Młody, *Lęk technologiczny jako patologia organizacyjna w dobie czwartej rewolucji przemysłowej*, "Studia i Prace Kolegium Zarządzania i Finansów" 2019, no. 175, pp. 129–144.

8 D. Horváth, R. Szabó, *Driving forces and barriers of Industry 4.0: Do multinational and small and medium-sized companies have equal opportunities?*, "Technological Forecasting and Social Change" 2019, vol. 146(C), pp. 119–132.

The multidimensionality of technological anxiety in the industrial processing sector – hypothesis development

Industry 4.0 and technological anxiety

The term Industry 4.0 is derived from the German initiative ‘Industrie 4.0’, developed in 2011 and aimed at strengthening the competitiveness of the manufacturing industry⁹. Despite the growing number of publications, the concept of Industry 4.0 has not yet been clearly defined¹⁰, and therefore it has been used in research to a limited extent. Studies (especially those made by practitioners) emphasise the benefits of the implementation of Industry 4.0 solutions, supported by examples of successfully completed projects. The spread of technology is driven by the promoted vision of a highly beneficial reality for consumers/recipients of products and services.

The dynamic development of modern technologies means that both the companies themselves and society as a whole are forced to constantly adapt to this new reality. At the same time, the barriers and problems that companies face in the process of digital transformation in the era of Revolution 4.0 are addressed to a limited extent. Modern technologies may be perceived as a threat to a set of established norms and patterns of behaviour, bringing negative emotional reactions, anxiety and fear¹¹. Consulting companies, among others: PwC¹², McKinsey¹³, BCG¹⁴, clearly indicate the uncertainty among company managers concerning what the

9 H.S. Kang et al., *Smart manufacturing: past research, present findings, and future directions*, “International Journal of Precision Engineering and Manufacturing – Green Technology” 2016, vol. 3(1), pp. 111–128; A. Issa et al., *Industrie 4.0 roadmap: Framework for digital transformation based on the concepts of capability maturity and alignment*, “Procedia CIRP” 2019, no. 72, pp. 973–978.

10 K. Nosalska et al., *Industry 4.0...*

11 M. Martínez-Corcoles, M. Teichmann, M. Murdvee, *Assessing technophobia and technophilia: Development and validation of a questionnaire*, “Technology in Society” 2017, no. 51, pp. 183–188.

12 PwC, *Przemysł 4.0, czyli wyzwania współczesnej produkcji*, PwC Polska, 2017, <https://www.pwc.pl/pl/publikacje/2017/przemysl-4-0.html> (accessed: 12.01.2020).

13 McKinsey, *Industry 4.0. Capturing value at scale in discrete manufacturing*, 2016, <https://www.mckinsey.com> (accessed: 8.01.2020).

14 BCG, *Przemysł 4.0 PL. Szansa czy zagrożenie dla rozwoju innowacyjnej gospodarki?*, Boston Consulting Group, Boston 2016, <https://docplayer.pl/24443942-Przemysl-4-0-pl-szansa-czy-zagrozenie-dla-rozwoju-innowacyjnej-gospodarki.html> (accessed: 8.01.2020).

implementation of 4.0 technology actually requires from them. New technologies can generate equally high levels of enthusiasm and fear. This ambivalence is defined in the literature as technophobia (rejection and/or avoidance of technology) and technophilia (enthusiastic absorption of technology)¹⁵.

Despite the fact that technophobia and technophilia are increasingly common phenomena, they have, so far, been studied to a limited extent due to the fact that science is increasingly focused on the development of the new technologies rather than assessing the attitudes and behaviour of their direct users. This attitude can also be said to be true of companies towards digital transformation. With this in mind, the combination of simultaneously-occurring factors that hinder the process of business reorientation may contribute to a multi-layered fear of transformation. Therefore, when companies see the scope of the concept of Industry 4.0, they react in this way has been defined as technological anxiety, a response which may have its origins both in the enterprise's internal processes and its environment¹⁶.

Negative phenomena, mechanisms and trends observed in companies in the process of implementation and integration of technologies, machines and people may take on pathological characteristics. This organizational pathology may manifest itself, in particular, in the persistence of dysfunctions which stops the organization from achieving its goals¹⁷, and may result in wasting the potential of implementing the solutions of Industry 4.0.

Dimensions of technological anxiety

Companies seeking digital transformation should consider a number of key questions that will help narrow down the choice of the right pathway. These include which processes need to be transformed, which areas their resources should be invested in and which advanced technologies can best meet their strategic needs. This transformation process does not end with the implementation of new technologies

15 See e.g. M.E. Osiceanu, *Psychological implications of modern technologies: "technofobia" versus "technophilia"*, "Procedia – Social and Behavioral Sciences" 2015, no. 180, pp. 1137–1144; O.Y. Khasawneh, *Technophobia without borders: The influence of technophobia and emotional intelligence on technology acceptance and the moderating influence of organizational climate*, "Computers in Human Behavior" 2018, no. 88, pp. 210–218.

16 M. Młody, *Lęk technologiczny...*

17 R. Stocki, *Diagnoza organizacji od A do Z: praktyczny podręcznik diagnozy dla konsultantów, trenerów i menedżerów*, Oficyna a Wolters Kluwer business, Warszawa 2013, p. 49; C. McMillan, J. Overall, *Wicked problems: turning strategic management upside down*, "Journal of Business Strategy" 2016, vol. 37(1), pp. 34–43.

as it has profound implications for the organization in terms of strategy, business model, the way the company is organized and even talent management¹⁸.

The multifaceted nature of the transformation indicates the necessity of systemic thinking, all the more so because every comprehensive, costly and long-term undertaking (such as the implementation of Industry 4.0 solutions) may expose the company's weaknesses due to the emergence of conditions unforeseen at the beginning of the transformation process. As justified earlier, companies in the process of digital transformation should not only focus on potential benefits, but, in particular, identify and analyse barriers, the elimination of which will reduce the level of technological anxiety and, consequently, also the risk of investment.

Młody¹⁹, on the basis of a review of scientific literature and studies of consulting companies and industry institutions (e.g. BCG, McKinsey, PwC, Smart Industry Polska), classified the basic internal sources and manifestations of technological anxiety, dividing them into 5 main dimensions (Figure 1): strategic planning, processes within the organization, change potential, standards and security and human resources. This division results from the nature and importance of particular factors for particular areas of a company's internal aspects of the digital transformation.

For the purposes of the research, the authors decided to extend the list with a sixth dimension – external barriers, which consists of²⁰:

- lack of support from the state (including e.g. investment incentives, beneficial tax solutions, reduction of bureaucracy, creation of cooperation platforms, facilitation of cooperation with scientific entities, financing of investments using 4.0 solutions and technologies);
- lack of support from local government units (conducting a range of stimulation activities, support for education, financing of investments using 4.0 solutions and technologies) and
- lack of support from industry institutions (supporting digital transformation in companies).

18 F. Hecklau et al., *Holistic approach for human resource management in Industry 4.0*, "Procedia CIRP" 2016, no. 54, pp. 1–6.

19 M. Młody, *Lęk technologiczny...*

20 See e.g. Ministry of Development, *Strategia na rzecz Odpowiedzialnego Rozwoju do roku 2020 (z perspektywą do 2030 r.)*, Ministerstwo Rozwoju – Departament Strategii Rozwoju, Warszawa 2017; B. Michałowski, M. Jarzynowski, P. Pacek, *Szanse i wyzwania polskiego przemysłu 4.0*, Agencja Rozwoju Przemysłu, Warszawa 2018; *Przemysł 4.0. Na jakim etapie przemysłowej rewolucji znajduje się województwo wielkopolskie?*, Wielkopolskie Regionalne Obserwatorium Terytorialne, Poznań 2019.

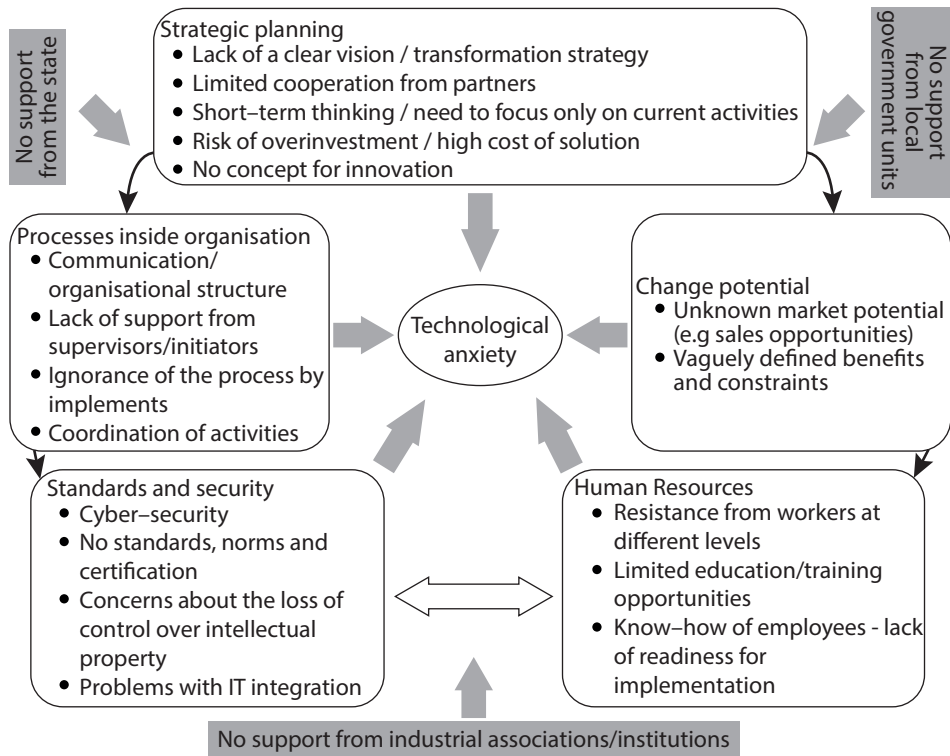


Figure 1. Dimensions and manifestations of companies' technological anxiety related to the digital transformation

Source: elaboration based on M. Młody, *Lęk technologiczny jako patologia organizacyjna w dobie czwartej rewolucji przemysłowej*, "Studia i Prace Kolegium Zarządzania i Finansów" 2019, no. 175, p. 137.

A multifaceted look at the internal and external sources of technological anxiety enables a holistic analysis of this problem. Previous studies into Industry 4.0 indicate that companies have a greater awareness of the financial barriers than they do of non-financial ones²¹. This may change as the subsequent transformation phases pass from assessing the possibilities of actions, through the planning stage, then pilot projects, and ending with full implementation. As indicated by Schulte²², the implementation of pilot stages is a major challenge for many companies and not every pilot project is able to meet an enterprise's expectations, which means that the number of organizations implementing Industry 4.0 projects is not growing

21 Smart Industry Polska, *Adaptacja innowacji w działalności mikro oraz małych i średnich przedsiębiorstw produkcyjnych w Polsce. Raport z badań*, Ministerstwo Rozwoju/Siemens Sp. z o.o., Warszawa 2017.

22 M.A. Schulte, *Digital Transformation in the Manufacturing Industry*, IDC White Paper, Frankfurt am Main 2016.

dynamically. This may suggest that, at this early stage, technological anxiety manifests itself in a specific way. New technologies and solutions should help in achieving corporate goals, but their implementation cannot be an end in itself. Promising pilot projects should be rapidly scaled up, and unsuccessful ones scrapped. Therefore, it is necessary for an organization to be prepared to take risks while fully understanding all the dimensions that cause technological anxiety.

In addition, current research suggests that it is easier to introduce 4.0 technology in a new production plant than to replace outdated solutions in an existing one²³. This is related to the return on investment and the priorities set by the given organization. A company with the goal of sustainable development will be more likely to invest in solutions that bring long-term benefits.

Available studies also indicate certain differences between the SME sector and large manufacturing companies²⁴. For large producers constant manufacturing optimisation is a typical element of process management, thereby achieving economies of scale. In the SME sector, however, the degree of manual and hybrid activities is much higher²⁵. The relatively fewer resources (human, financial, relational) of SMEs may limit the possibility to analyse the potential effects of implementing innovative solutions, and, to a greater degree, the creation of a comprehensive technological transformation strategy.

The above considerations allow the adoption of the following research hypotheses:

- H1: Companies in different phases of digital transformation are characterised by different levels of importance of technological anxiety for digital transformation.
- H2: Companies of different sizes, expressed in terms of employment, differ in the level of importance of technological anxiety for digital transformation.
- H3: Companies differ in the level of importance of technological anxiety for digital transformation when their establishment in the market is considered.

23 *Polish Industry 4.0. Raport specjalny*, "Magazyn Gospodarczy Nowy Przemysł", 2018, <https://przemysl-40.pl/wp-content/uploads/2018-Raport-Expo.pdf> (accessed: 10.01.2020).

24 *Smart Industry Polska, Adaptacja innowacji...*

25 L. Forstner, M. Dümmler, *Integrierte Wertschöpfungsnetzwerke – Chancen und Potenziale durch Industrie 4.0*, "Elektrotechnik & Informationstechnik" 2014, vol. 131(7), pp. 199–201.

Industry 4.0 in the industrial processing sector

Industry 4.0 technologies are accelerators of the unprecedented changes observed within the ecosystems of entire industries²⁶. Real-time data availability within a network connecting all components (e.g. machines, devices, robots, cobots, etc.) involved in creating value is crucial in the transformation process of companies.

The research results analyzed later in this article concern the industrial processing sector. Focus on this sector of the economy results from several pragmatic reasons. First of all, it is a sector of the economy responsible for a significant percentage of Polish and EU GDP²⁷, and whose condition also affects other sectors and industries. Moreover, a visible improvement in the economic situation is signaled by manufacturing companies²⁸. Secondly, this sector is amongst those in which the largest number of SMEs is being created and which is still growing relatively quickly²⁹. Thirdly, it is a sector that is highly accommodating to the impact of those new 4.0 technologies that fundamentally change the rules of competition. In addition, work on developing the concept of Industry 4.0 was initially conducted with industrial manufacturing in mind³⁰. The potential of the economy in terms of the development possibilities of Industry 4.0 can be measured using various indicators³¹, taking into account selected criteria, e.g. Internet accessibility and its speed, the level and state of the digitization of the business, and accessibility to highly specialized employees on the labor market and their level of education. In these rankings, Poland is placed alongside other CEE countries, while still being a significant distance behind highly developed economies (e.g. US, South Korea, Japan, Germany). For some technologies, e.g. robotics, the difference in the level of transformation is particularly evident – in Polish industrial processing there are 42 robots per 10,000 employees, 338 robots in Germany, 135 in the Czech Republic and 84 in Hungary, while the global average is 99 robots³². It is worth pointing out, however, that the level of computerization of companies in Poland expressed by implemented IT systems supporting management (ERP

26 J. Hagel et al., *From exponential technologies to exponential innovation*, Deloitte Insights, 2013, <https://www2.deloitte.com/us/en/insights/industry/technology/from-exponential-technologies-to-exponential-innovation.html> (accessed: 12.01.2020).

27 Eurostat, *Industrial production statistics*, 2018, https://ec.europa.eu/eurostat/statistics-explained/index.php/Industrial_production_statistics (accessed: 10.01.2020).

28 GUS, "Biuletyn statystyczny" 2019, nr 03.

29 PARP, *Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce*, Grupa PFR, Warszawa 2019, https://www.parp.gov.pl/storage/publications/pdf/2019_07_ROSS.pdf (accessed: 11.01.2020).

30 A. Issa et al., *Industrie 4.0 roadmap...*

31 E.g. NRI, DESI, EDPR; B. Michałowski, M. Jarzynowski, P. Pacek, *Szanse i wyzwania...*

32 IFR, *World Robotics Industrial Robots International Federation of Robotics*, 2019.

and CRM classes) is growing year by year³³. Moreover, ever more companies are using a variety of ICTs that increase the potential for information support in management processes³⁴ and also contribute to the development of the concept of Industry 4.0.

Regardless of the indicators analyzed, Industry 4.0 is seen as an opportunity for more rapid development of companies. In particular, the industrial processing sector is accommodating to changes, as part of which one can observe the progressive integration of ICT, robotics and automation, affecting the optimization of production processes, and thus strengthening the competitive position.

Research Methodology

Scope of research

The research was conducted among company owners, board members, CEOs, executive directors, strategic directors and managing directors who decided on the future directions of companies' development. The respondents represented manufacturing companies from the industrial processing sector whose business activities are conducted in Poland. The study was conducted in the third quarter of 2019.

Research instrument and data analysis methods

The electronic questionnaire had the option of being filled in on-line (through: <https://strategicznie.pl/>). The study was based on this closed data collection. The EMIS Professional database was used as a sampling frame. The database was used to access the list of current companies (the surveyed population) with contact details (email address). Invitations to participate in the study were sent by e-mail.

The obtained empirical data were analyzed statistically by presenting distributions of the studied variables in tabular or graphical form and determining the structure, intensity and measures of descriptive statistics³⁵. A method of analysis of the summary data of statistical measures was applied, the average intensity level was compared using the Student t-test for independent samples and analysis of variance (ANOVA) was carried out.

33 A. Weinert, *Zaawansowanie przedsiębiorstw w zakresie informacyjnego wspomagania wyborów strategicznych*, Uniwersytet Ekonomiczny w Poznaniu, Poznań 2018.

34 GUS, *Spółeczeństwo informacyjne w Polsce w 2017 roku*, Warszawa 2017, <http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-w-2017-roku,2,7.html> (accessed: 12.01.2020).

35 IBM SPSS (version 21) was used for data analysis.

Characteristics of the research sample

A total of 120 completed questionnaires was obtained. The research sample included companies from the industrial processing sector, belonging, according to the PKD (Code list of classification of business activities in Poland), to the following sectors: electrical equipment – 23%, foodstuffs – 19%, machinery and equipment not classified elsewhere – 10%, chemicals and chemical products – 6%, furniture – 6%, computers, electrical and optical products – 5%, clothing – 4%, metals – 4%, beverages – 3% and other sectors of the PKD (16, 17, 18, 22, 23, 29, 33) – 20%. The comparison of the population structure and the examined sample of companies showed structural differences in particular sections³⁶. The selection was therefore ultimately disproportionate. The surveyed companies were business entities employing: less than 50 persons (40%), from 50 to 249 employees (38%), more than 250 employees (22%), as well as with different sources of capital (exclusively Polish capital – 75%, mixed capital – 13%, exclusively foreign capital – 12%) and the age of the enterprise (established before 1989 – 34%; established in the years 1989–2004 – 38%; established after 2004 – 28%).

Results of Empirical Research

Industry 4.0 in companies of the Polish industrial processing sector

The first area of research proceedings was the assessment of the level of implementation of Industry 4.0 solutions and the scope of its knowledge in manufacturing companies in the Polish industrial processing sector.

According to the obtained results, more than half of the companies (52%) have either already implemented some solutions characteristic for the fourth industrial revolution or plan to start the process of digital transformation in the medium term (less than 5 years)³⁷. It is also worth mentioning that in most of the surveyed companies the resultant implementations of these technologies are assessed positively.

On the other hand, the level of knowledge of the concept of Industry 4.0 among the managerial staff in the surveyed companies is relatively low. Awareness of the assumptions of the new industrial revolution is acknowledged by only 25% of strategic

36 GUS, *Zmiany strukturalne grup podmiotów gospodarki narodowej w rejestrze REGON, I półrocze 2018 roku*, Warszawa 2019.

37 Scale used: *revolution initiated, planned revolution (in 5 years and less), planned revolution (more than 5 years), revolution not taken into account.*

managers (excellent knowledge 5% and good 20%). The majority of those surveyed assess their level of knowledge as insignificant (60%) (very weak and weak), which raises some concerns about the progress of the implementation of this technology in companies and the likelihood of its rapid development in the Polish industrial processing sector. To a certain extent this is also confirmed by the results concerning the sources of information accessed on the concept of the Revolution 4.0. In the surveyed companies it is mostly press articles/Internet/radio/television (as much as 66%). The respondents more rarely indicate workshops/training (internal and external) (19%), postgraduate studies and MBA (7.5%). However, it is worth noting the importance of the knowledge and information obtained from manufacturers and suppliers of 4.0 machines and technologies, as well as from the organisers of trade fairs (8%), who offer numerous new solutions to improve the production of companies in the fourth industrial revolution.

Taking into account the publicity that the concept of Industry 4.0 is gaining in scientific literature, business practice and at the political level, a reflection arises on the role of the mass media in education, as well as on the approach of entrepreneurs and managers to broadening their knowledge about the concept of 4.0 technology and digital transformation.

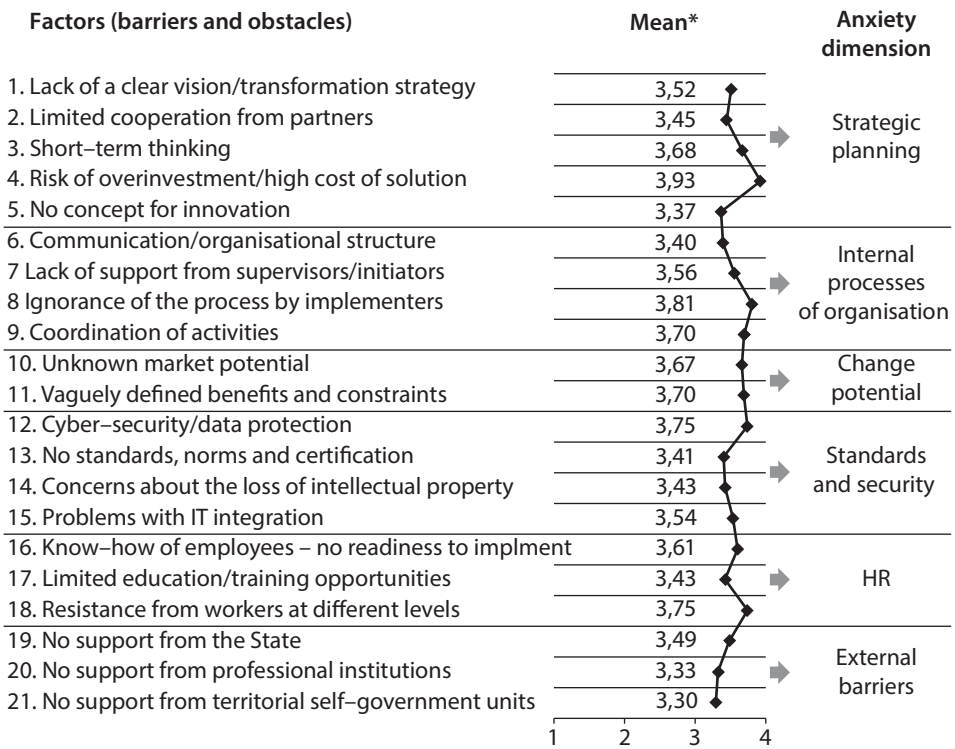
Barriers and obstacles to digital transformation in the surveyed companies

The next step in the research process was to assess the level of importance of technological anxiety for the digital transformation of companies. As indicated earlier, eliminating associated barriers and obstacles is one of the challenges facing managers of manufacturing companies in the Polish industrial processing sector.

Twenty-one variables were assessed (factors concerning the total number of barriers and obstacles to digital transformation), whose significance was presented in terms of six dimensions of technological anxiety. For each of them, the average level of significance was presented according to the particular concerns shown by the surveyed companies (Figure 2). Among the responses of strategic managers, concerns common for the functioning and management of the enterprise are particularly noticeable. Empirical results allow one to prioritise the identified barriers and obstacles to the digital transformation of the surveyed companies. The respondents replies reveal that the most significant factors include the high costs of 4.0 solutions (overinvestment fear) ($\bar{x} = 3.93$), lack of knowledge about 4.0 machine and the technology implementation process ($\bar{x} = 3.81$), resistance of employees at various organizational levels ($\bar{x} = 3.75$), the issue of ensuring cyber-security/data protection ($\bar{x} = 3.75$), the imprecisely defined benefits and limitations

of implementation ($\bar{x} = 3.70$) and slow coordination of implementation activities ($\bar{x} = 3.70$). For the remaining variables, the obtained values are below $\bar{x} = 3.7$, but remain at a level higher than moderate, which indicates their relatively common occurrence in the surveyed companies.

Looking at the results obtained from the point of view of particular dimensions, it should be noted that not one of them is distinguished by its level of low/high significance, except for external barriers (lack of support from the state, territorial/local government units and industrial institutions), where none of the factors exceeded the average of 3.5. In the case of the remaining dimensions, the significance of the particular factors varies.



* The Likert scale (five-point): 1 – low importance, 2 – slightly important, 3 – neutral, 4 – moderately important, 5 – very important.

Figure 2. Mean level of importance of factors concerning technological anxiety for digital transformation in the analysed companies ($N = 120$)

Source: own elaboration.

The obtained results imply that the identified barriers and obstacles to digital transformation may have a negative impact on the reorientation process of manufacturing companies from the industrial processing sector. However, it is impossible to assess on the basis of the obtained results whether and to what extent the individual factors interact with each other, strengthen each other or lead to the creation of further barriers. More broadly, these restrictions may also have a cross-sectoral impact, hindering the development of the economy 4.0. In this context, it is worth restating the insufficient level of knowledge and implementation skills in the surveyed companies with regard to the applied solutions of Revolution 4.0.

Comparison of the significance of technological anxiety between the sets of the surveyed companies

The final stage of the research procedure was to compare the mean values (significance) of the barriers and obstacles to the digital transformation due to the characteristics of the companies involved. This was done using the t-test for independent groups and the single-factor method ANOVA³⁸.

First, differentiation of the significance of identified concerns in the set of companies was verified with regard to the phase of the digital transformation process (Table 1).

Table 1. Comparison of the importance of technological anxiety in the surveyed companies in terms of the phases of the digital transformation process

Factor	Digital transformation			ANOVA F/p
	Not launched (and unplanned)	Planned	Launched	
(12) cyber-security/data protection	3.52	3.65	4.22	3.190*
(15) problems with IT integration	3.04	3.68	3.70	4.998**

p – significance level; * $p \leq 0.05$; ** $p \leq 0.01$.

Source: own elaboration.

The results obtained indicate two factors, the importance of which was different in the company sets. It should be noted that the importance of cyber-security and IT integration problems is always higher in companies that have started their digital transformation than in companies planning changes or not starting to change. At the same time, companies that do not plan to make the digital transformation are less affected by these concerns, which seems justified.

38 Presentation of the results in the article is limited to the presentation of those for which the methods used allowed for the identification of statistically significant differences between the analysed companies.

The next step was to verify the importance of technological anxiety in the companies due to the size of the entity in terms of employment levels (Table 2).

Table 2. Comparison of the significance of technological anxiety in the surveyed companies in terms of size of employment

Factor	Company size (by employment)			ANOVA F/p
	Small	Middle	Large	
(4) risk of overinvestment – high cost of solution	4.36	3.68	3.74	5.933*
(17) limited education/training opportunities	3.61	3.52	2.96	3.974*
(19) no State support	3.86	3.45	2.96	4.580*
(20) no support from professional institutions	3.61	3.41	2.74	6.362**
(21) no support from local government units	3.67	3.25	2.83	4.028*

p – significance level; * $p \leq 0.05$; ** $p \leq 0.01$.

Source: own elaboration.

The research results indicate that the importance of technological anxiety for five factors, varies according to the size of the company (expressed by employment level). A general trend can be observed that the importance of the identified barriers and obstacles to the digital transformation decreases as the size of the enterprise increases. The greatest importance of concerns was observed for each variable in small companies.

The comparison of the average significance of technological anxiety in companies when the age of the surveyed entities is considered allowed for the identification of two statistically significant differences in the set of factors (Table 3).

Table 3. Comparison of the significance of technological anxiety in the surveyed companies in terms of their age (the year of establishment)

Factor	Company age			ANOVA F/p
	Established before 1989	Established in the years 1989–2004	Established after 2004	
(19) no State support	3.08	3.81	3.63	4.334*
(21) no support from local government units	2.95	3.57	3.44	3.143*

p – significance level; * $p \leq 0.05$.

Source: own elaboration.

The results presented in Table 3 show a differentiation in the importance of barriers and obstacles to digital transformation. At the same time, it can be seen that for “older” companies, the importance of these concerns is always lower.

Discussion and summary

The results show that the industrial processing sector in Poland notice the many threats during their digital transformation process. Factors related to costs and lack of awareness of solutions available on the market are of primary importance. Although significant barriers and obstacles in the process of transformation of companies in the Polish industrial processing sector do exist, their perceived level of importance as well as the whole premise of technological anxiety may result not only from real and rational premises, but also from the lack of knowledge in this respect among both strategic managers and lower-level employees. The fears indicated, combined with the low level of knowledge of the concept of Industry 4.0, certainly result in difficulties in choosing the right path for the digital transformation of manufacturing companies in the industrial processing sector. Thus, it would be intriguing to know what barriers and obstacles that lead to technological anxiety hamper the transformation of companies in other sectors.

As a result of the conducted research, statistically substantial differences in the significance of particular components of technological anxiety for digital transformation in the surveyed companies were indicated for the following categories: *phase of the digital transformation process*, *size of the company* and *age of the company*. The obtained empirical results allow for a partial positive verification of the research hypotheses in terms of statistically significant differences found, according to which companies:

- in different phases of digital transformation processes are characterised by different levels of anxiety over ensuring cyber-security, data protection and IT integration (H_1);
- characterised by different employment size, differ in the level of importance of anxiety in relation to the high costs of implementing 4.0 solutions; education and training opportunities, and lack of support from the State, industry institutions and local government units (external barriers) (H_2);
- characterised by their date of establishment on the market (the age of the company) differ in the level of anxiety in relation to lack of support from the State and local government units (external barriers) (H_3).

In addition, interesting regularities can be observed on the basis of the results obtained, which we attempted to justify below.

Firstly, companies that have started or plan to start the digital transformation are characterised by their higher level of concerns regarding cyber security, data protection and IT integration problems. This may be due to the fact that these companies, already in the deployment phase of certain technologies (e.g. ICT), are

more aware of the problems and barriers that may arise in this process³⁹. Experience in this case may have a negative impact on the perception of barriers related to the ‘standards and security’ dimension.

Secondly, larger companies concur with regard to their lower concerns over the high cost of solutions and the limited education/training opportunities, as well as support from the state, industry institutions and local government units. The lower importance of costs and possible risks of overinvestment (“strategic planning” dimension) and the possibility of further training of employees may have its significance in the greater independence of large companies – in terms of investment capital and development opportunities (their wide range of internal and external training, individual development programmes, career paths, etc.)⁴⁰. Small companies are much more vulnerable to economic fluctuations in this area.

Thirdly, companies established before 1989 have a lower level of concerns regarding support from the state and local government units. This may indicate a greater resilience of these companies to strategic changes, including a reorientation towards the economy 4.0. This outcome (indicated by a detailed analysis of respondents’ answers) may result from the fact that a significant number of companies established in this period belongs to the group of medium and large companies, which, in turn, may make them more independent in terms of their investments. The presence of enterprises with State Treasury participation in this group also seems to be crucial, a fact which may influence the relatively positive perception of the indicated external barriers.

Managerial implications

The fears of companies, combined with a low level of knowledge of the Industry 4.0 concept, may result in difficulties in choosing the right path of transformation. Technological anxiety becomes pathological when it begins to dominate the behaviour of management, and, consequently, the functioning of companies in the era of the fourth industrial revolution. It significantly complicates the strategic choices and limits the freedom of investment and adaptation activities, which may lead to long-term disturbances in economic operations. This anxiety leads to companies

39 See e.g. L. Arendt, *Barriers to ICT adoption in SMEs: how to bridge the digital divide?*, “Journal of Systems and Information Technology” 2008, vol. 10(2), pp. 93–108; V. Parida et al., *Barriers to information and communication technology adoption in small firms. Past experiences, current knowledge and policy implication*, Working paper, Swedish Entrepreneurship Forum, Stockholm 2010.

40 PKO BP, *Rynek usług szkoleniowych. Monitoring branżowy*, 2016, http://www.pkobp.pl/media_files/6df66082-489e-441f-9413-f66a726c945b.pdf (accessed: 10.01.2020).

desisting with the changes associated with Industry 4.0, a choice which is disproportionate to the actual degree of risk.

In order to become competitive, the Polish industrial processing sector must undertake investments in modern technologies. From this point of view, the dimensions of technological anxiety diagnosed in the study are crucial, as they concern challenges and obstacles observed at each level of the organization. The identification, analysis and assessment of areas of technological anxiety should be treated as a starting point in the process of implementation of Industry 4.0 solutions. This phase should even precede the identification and assessment of opportunities, the implementation plan and full deployment. The indicated list of negative aspects related to the process of digital transformation may, at the same time, constitute grounds for a diagnosis by the enterprise, on the basis of which appropriate preventive, corrective or adaptive actions may be introduced.

Limitations and directions of further research

The quantitative study carried out has its limitations. Firstly, the size of the research sample does not allow for a generalisation of results for the whole sector of industrial processing in Poland due to the lack of entities representing all sections. Secondly, it should be remembered that the answers obtained are of a declarative nature. Thirdly, the presented model's approach to technological anxiety cannot be treated as static due to the probable evolution of technology 4.0 itself and solutions to the issues of its implementation in a way that is not currently anticipated⁴¹. The deployment and use of 4.0 machines and technology by businesses effecting digital transformation may face barriers and obstacles that have not been foreseen.

Analysis and assessment of technological anxiety should be systemic in nature. The research approach covering selective identification of the ground of non-implemented transformation or slow implementation of modern technologies would be inconsistent with the essentially holistic nature of the Industry 4.0 concept. In this context, the presented results may constitute empirical material for further research work. In particular, it seems crucial to identify the sources and patterns of the emergence of the phenomena that form the particular dimensions of technological anxiety, which would enable a definition of preventive actions necessary. Obtaining more detailed conclusions on the significance of particular dimensions of technological anxiety for the digital transformation of companies would be possible on the basis of qualitative research carried out, in particular, among

41 Deloitte, *The Industry 4.0 paradox: Overcoming disconnects on the path to digital transformation*, Deloitte Development LLC, 2018, <https://www2.deloitte.com/global/en/pages/energy-and-resources/articles/the-industry-4-0-paradox.html> (accessed: 8.01.2020).

companies which have successfully implemented and integrated technologies of Industry 4.0. It also seems desirable to develop tools for measuring technological anxiety and, subsequently, to understand the threshold between the natural fear of new solutions and technologies and pathological anxiety. One possible approach to analysing the problem of technological anxiety could be the use of so-called resistance indicators⁴². In the current, extremely turbulent and dynamic economic reality, research may contribute to a greater understanding of the conditions for the effective implementation of the solutions of the Industry 4.0 concept, as well as contribute to the faster development of businesses in Poland.

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42 M.M. Allende et al., *Aligning Organizational Pathologies and Organizational Resilience Indicators*, "International Journal of Production Management and Engineering" 2017, vol. 5(2), pp. 107–116.

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Abstract

The era of the fourth industrial revolution – which is gradually compelling companies to implement advanced machines and technologies and integrate such technology into the workplace, thereby creating a cyber-physical reality – brings a number of negative factors and phenomena that hinder transition. The aim of the article is to determine the significance of this technological anxiety for the digital transformation of manufacturing companies operating in the Polish industrial processing sector. The presentation of empirical results focuses on six dimensions of technological anxiety, i.e.: strategic planning, internal processes, change potential, standards and security, human resources and external barriers. The phases of their digital transformation, the level of employment, as well as the time they have been present in the market, were used as the prerequisites for differentiation across the research sample of 120 companies. The obtained results allowed for a partial verification of three research hypotheses and the indication of noticeable regularities in the examined area.

Keywords: Industry 4.0, technological anxiety, barriers, fourth industrial revolution, digital transformation, industrial processing sector, manufacturing companies

Challenges faced by SMEs in their digital transformation towards Industry 4.0

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Introduction

European economies are driven by more than 25 million SMEs – representing 99.8% of all EU enterprises¹. Although they are considered crucial engines for European job creation, growth and wealth, SMEs face continuous uncertainty and a highly-competitive business context in a globalized, turbulent and inter-connected world economy. The lack of skills, time, competences and resources in management, financial resources, market information and digital capabilities are only a few examples of the internal and external challenges connected with survival and success in domestic and foreign markets. SMEs also have difficulties in developing new ideas, products and services due to the absence of both knowledge and information about new trends and technologies.

Companies also need to rapidly adopt and incorporate innovative ideas into new products and services. This is especially important in the agri-food and packaging industries, because the nature of this business requires speed, immediacy and dynamism to quickly develop new products, provide them to the consumer and build customer trust and loyalty. Companies are thus looking for agile, co-creative and collaborative tools that will allow them to improve business performance or to develop new products and services. This is why in recent years an increasing number of companies have been using hackathons and other co-creation tools and processes to rapidly implement prototypes, including those that incorporate digital solutions.

1 EASME, *Annual Report on European SMEs 2018/2019*, European Commission, Brussels 2019.

The article aims to identify the challenges existing in the process of implementing digital innovations by SMEs, and to describe the new collaboration tools which have the potential to lower the barriers for cross-industry collaboration.

Digital transformation and Industry 4.0

Taking into account that technology has been completely revolutionizing the present era, and that digital transformation is expected to have a vast impact on almost any every industry, digitalization can bring new opportunities for SMEs by improving the entire value chain².

According to Schallmo et al. digital transformation can be defined as “a framework includes the networking of actors such as businesses and customers across all value-added chain segments and the application of new technologies As such, digital transformation requires skills that involve the extraction and exchange of data as well as the analysis and conversion of that data into actionable information. This information should be used to calculate and evaluate options, in order to enable decisions and/or initiate activities. In order to increase the performance and reach of a company digital transformation involves companies, business models, processes, relationships, products, etc.”³.

Ulas⁴ pointed out several driving factors expediting digital transformation, these include, among others, globalization, advancement of technology and innovation, electronic commerce and social media.

Digitalization can be helpful to improve products and/or services, to manage operations in a more efficient way, to reduce costs or to better shape their competitive advantage. According to Chukwunonso and Tukur⁵, the adoption and deployment of new tools and technologies cut down cost and improves efficiency. Moreover, the development of Industry 4.0, artificial intelligence, Internet of Things (IoT), blockchain, cloud computing, augmented reality, 3D Printers, chatbots, Big Data and nanotechnology have been speeding up the process of digitalization. Special attention is being paid to Industry 4.0 which, according to Ulas⁶, is referred to as the fourth

2 P. Kilimis et al., *A Survey on Digitalization for SMEs in Brandenburg, Germany*, “IFAC-Papers OnLine” 2019, no. 52(13), pp. 2140–2145.

3 D. Schallmo, C. Williams, L. Boardman, *Digital Transformation of Business Models-Best Practice, Enabler, and Roadmap*, “International Journal of Innovation Management” 2018, no. 21(8), p. 4.

4 D. Ulas, *Digital Transformation Process and SMEs*, “Procedia Computer Science” 2019, no. 158, pp. 662–671.

5 F. Chukwunonso, A. Tukur, *Problems and prospects of adopting ICT in agriculture*, “African Journal of Agricultural Research and Development” 2012, no. 5, pp. 39–47.

6 D. Ulas, *Digital Transformation Process...*

industrial revolution, where the manufacturing process is digitalized, machines are directly connected to each other, and personalized manufacturing is possible. Its usage includes digitalization of products and services offered, new market models and digitalization and integration of simple technical – economical relation to complex technical – economical networks⁷. Stoldt et al.⁸ highlight that companies can implement two strategies to digitalize their business – either transform their processes and production sites incrementally or implement radical change by exchanging entire processes and systems with fully digitalized ones. These authors assumed that SMEs do not typically have the economic strength to accomplish such a revolution but are eager to employ novel technologies in their factories to raise their competitiveness.

Challenges faced by SMEs in their digital transformation

Although digital transformation can bring new opportunities for SMEs and open up new growth paths for development, still many SMEs find it difficult to know in which technologies to invest and how to secure financing for their digital transformation. Peillon and Dubrue⁹ propose a classification of the possible barriers to digitalization for SMEs, these include:

- technical/technological barriers – related to financial limitations, lack of technical resources readily available that could easily upgrade and adopt digital technologies;
- organisational barriers – connected to people's unwillingness to change and the need to change the innovation management of key business operations, products, processes, organisational structures that require new competencies, resources, and collaborations;
- human resource-oriented barriers – linked to lack of qualified employees and lack of digital competences;
- customer-related barriers – associated with customers' fears over a loss of control over information, such as privacy violations, security concerns and security of access to production and corporate systems.

7 F. Zezulka et al., *Industry 4.0 – An Introduction in the phenomenon*, “IFAC-PapersOnLine” 2016, no. 49(25), pp. 8–12.

8 J. Stoldt et al., *Planning for Digitalisation in SMEs using Tools of the Digital Factory*, “Procedia CIRP” 2018, no. 72, pp. 179–184.

9 S. Peillon, N. Dubrue, *Barriers to digital servitization in French manufacturing SMEs*, “Procedia CIRP” 2019, no. 83, pp. 146–150.

SMEs are lagging behind in digital innovation, its implementation process remains slow, and thus SMEs are at a risk of being left out of digital supply chains. SMEs also tend to have misconceptions about the complexity and costs of digitalization¹⁰.

Challenges faced by agri-food and packaging SMEs

The above challenges are especially present in agri-food and packaging, traditional industries that offer fast-moving consumer goods (FMCG) and are considered an important economic driver for many European regions. Demartini et al.¹¹ states that currently, digitalization trends in food industry include internet of things (IoT), traceability, water management, big data or sustainability. Although the digitalization of the agri-food sector may provide many of benefits, it also brings several challenges, which have been subjects of different research studies. Rotz et al.¹² focused on the technical and organisational challenges of digitalization in the agri-food sector. The application of digital and Industry 4.0 solutions in agri-food and packaging value chains is wide ranging – it can help to extend shelf life, monitor freshness, display information on quality, improve safety, and improve convenience. However, SMEs find it challenging to design new, digitalized business models adjusted to current economic realities. Moreover, they have problems in knowing which technology would be suitable for their business and how and where to find the right technology suppliers. These problems apply also to Polish SMEs; therefore, it is important to answer the following research question:

R1: What are the challenges faced by agri-food and packaging SMEs in the incorporation of digital innovations?

Challenges faced by ICT SMEs

Digital transformation is also challenging for those companies representing the information and communication technologies (ICT) industry that offer digital solutions for agri-food and packaging companies. According to Brewster et al., a key challenge for ICT implementation in the agriculture industry is information management related to heterogeneity and the sizeable number of actors along the supply chain¹³.

10 P. Kilimis et al., *A Survey...*

11 M. Demartini et al., *Food industry digitalization: from challenges and trends to opportunities and solutions*, "IFAC-PapersOnLine" 2018, no. 51(11), pp. 1371–1378.

12 S. Rotz et al., *Automated pastures and the digital divide: How agricultural technologies are shaping labour and rural communities*, "Journal of Rural Studies" 2019, no. 68, pp. 112–122.

13 C. Brewster, S. Wolfert, H. Sundmaker, *Identifying the ICT challenges of the Agri-Food sector to define the Architectural Requirements for a Future Internet Core Platform*, "Proceedings eChallenges e-2012" 2012, pp. 1–8.

In addition, the potential applications of ICT solutions in agri-food and packaging are wide and varied, including, among others, software for supply chain or financial management, mobile applications for farm management, agricultural land use optimization, precision agriculture applications, all of which fall into categories of ICT-enabled services¹⁴. Another reason is connected to the location disparity between agri-food and ICT companies. Agri-food SMEs are often located in rural areas with poor internet infrastructure and insufficient power supply. A lack of awareness of the hi-tech solutions – especially among rural farmers, low level of digitalization of agri-food companies and low incomes of rural farmers, together with the high costs of ICT infrastructure, insufficient personnel to handle ICT facilities and the absence of content in local languages on the internet make digital transformation a challenge¹⁵. On the other hand, ICT companies are often located in urban areas, do not fully comprehend the technological needs of the agri-food sector and suffer from lack of knowledge on how to translate the benefits of digital solutions in an easy and understandable way. Therefore, another research question is proposed for exploration in this study:

R2: What are the challenges faced by ICT SMEs in providing solutions for digitalization of agri-food and packaging SMEs?

New collaboration tools within Industry 4.0

In order to stay competitive, absorb high quality know-how and gain access to external resources, facilities, infrastructures, and services, SMEs tend to collaborate with academic, private, public and non-governmental organisations to increase innovation in manufacturing processes. One of the ways of achieving such collaboration is by joining clusters which, according to Porter¹⁶, influence competitiveness by increasing the efficiency and productivity of companies, interconnecting scientific units, other enterprises and customers, and stimulating the formation of new businesses. Peillon and Dubrue¹⁷ argue that clusters could be of great help in supporting SMEs on their pathway toward digitisation in order to be able to build digital strategies.

There is also a growing need to help industry – including agri-food and packaging sectors – to develop innovative products that integrate different

14 M. Salampasis, A. Theodoridis, *Information and Communication Technology in Agricultural Development Preface*, “Procedia Technology” 2013, no. 8, pp. 1–3.

15 *Ibidem*.

16 M.E. Porter, *Clusters and the new economics of competition*, “Harvard Business Review” 1998, no. 76(6), pp. 77–90.

17 S. Peillon, N. Dubrue, *Barriers to digital servitization...*

technologies. As innovation requires extensive collaboration between a diverse group of stakeholders from disparate fields¹⁸, being part of collaborative networks, such as clusters, stimulates the circulation of knowledge and the creation of new links between private, public, academic and business support organisations from given or connected sectors. As world history shows, great discoveries and most new ideas are achieved by identifying new connections between existing products and combining them in a novel way. This cross-sectoral and cross-industry approach is important to generate innovations which are mostly a recombination of existing knowledge¹⁹ and is likely to occur at the boundaries where different industries meet. According to Enkel and Gassman²⁰, pre-existing solutions from other industries are creatively imitated and retranslated in cross-industry innovation to meet the needs of a company's current market or products.

Taking into account today's turbulent business environment, characterized by rapid technological changes and increased globalization²¹, SMEs need agile methods to react quickly and flexibly to unexpected changes²² and to translate ideas and knowledge into marketable products and services in a fast and efficient way. This could be done by applying the co-creation concept defined by Roser et al.²³ as an interactive, creative and social process between stakeholders that is initiated by companies at different stages of the value creation process. These co-creation activities are considered a form of collaborative innovation.

In recent years, the necessity for interdisciplinary teams to address concrete challenges has become more and more apparent, and hackathons are the answer. Hackathons are considered to be an emerging approach in supporting multidisciplinary innovation²⁴, and are seen as an interdisciplinary experience where

18 U. Iqbal et al., *A hackathon promoting Taiwanese health-IoT innovation*, "Computer Methods and Programs in Biomedicine" 2018, vol. 163, pp. 29–32.

19 J.A. Schumpeter, *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, McGraw-Hill, New York 1939.

20 E. Enkel, O. Gassmann, *Creative imitation: exploring the case of cross-industry innovation*, "R&D Management" 2010, no. 40, pp. 256–270.

21 T. Mufudza, *Dynamic Strategy in a Turbulent Business Environment*, [in:] L.E. Okechukwu, Y.A. Hasan (eds), *Strategic Management – a Dynamic View*, IntechOpen, 2019, <http://doi.org/10.5772/intechopen.81250>

22 N. Niewöhner et al., *Design fields of agile innovation management in small and medium sized enterprises*, "Procedia CIRP" 2019, vol. 84, pp. 826–831.

23 T. Roser, R. DeFillippi, A. Samson, *Managing your co-creation mix: Co-creation ventures in distinctive contexts*, "European Business Review" 2013, no. 25(1), pp. 20–41.

24 U. Iqbal et al., *A hackathon promoting...*

the knowledge and skills gained could be applied in real world settings²⁵. Celi et al.²⁶ define hackathons as intense, short, collaborative events focused on creating innovative solutions for pressing issues, where problems are solved in a limited time frame of 24–48h through intense participant collaboration²⁷. The word ‘hackathon’ is the combination of two words, ‘hack/hacking’ and ‘marathon’, and was used for the first time for this purpose at a software engineering event. Currently, the concept of hackathons has been adapted by SMEs, large companies, public administrations, startups, scientific institutions and other organisations and communities interested in solving quickly-defined challenges or for working collectively on innovations. Taking into account the iterative approach of agile methods and their high flexibility, these tools could be particularly suitable for developments in times of rapid technological change and be used to boost cross-industry cooperation. Nevertheless, taking into account the limited time frame of these events, many challenges remain unsolved, as the participation process demands additional time for building the necessary trust. Moreover, the process of collaboration with a wide variety of stakeholders is a very intense and demanding one²⁸. Taking into account the above, the following question is proposed for study:

- R3: In what way can hackathons influence cross-industry collaboration concerning digital innovations in agri-food and packaging SMEs?

Research method

The research was concentrated on a single case encompassing the DIGICLUSTERS project financed by the European Union under the COSME Programme. In line with Yin²⁹, the research was based on a number of different activities carried out between October 2018 and October 2019, which covered:

- a literature review;
- participant observation;

25 M.P. Lyndon et al., *Hacking Hackathons: Preparing the next generation for the multidisciplinary world of healthcare technology*, “International Journal of Medical Informatics” 2018, vol. 112, pp. 1–5.

26 L.A. Celi et al., *Crowdsourcing knowledge discovery and innovations in medicine*, “Journal of Medical Internet Research” 2014, no. 16(9), e216, <https://doi.org/10.2196/jmir.3761>

27 J.L. Zapico, D. Pargman, H. Ebner, E. Eriksson, *Hacking sustainability: Broadening participation through Green Hackathons*, Fourth international Symposium on End-User-Development, IT University of Copenhagen, Copenhagen, June 10–13, 2013.

28 K. Pogačar, A. Žižek, *Urban Hackathon – Alternative Information Based and Participatory Approach to Urban Development*, “Procedia Engineering” 2016, no. 161, pp. 1971–1976.

29 R.K. Yin, *Case Study Research: Design and Methods*, Sage, Thousand Oaks 2003.

- summary of results of the CAWI – a survey based on a questionnaire provided to the agri-food, packaging, and ICT SMEs from Poland, Lithuania, Latvia, and Spain;
- collection of challenges gathered from cross-industry hackathons;
- summaries of evaluations from four regional cross-industry hackathons.

The research had an exploratory character, due to its novel topic and the lack of similar studies in this region of Europe. The studied companies were SMEs and members of seven European cluster organisations involved in the implementation of the DIGICLUSTERS project – a European Strategic Cluster Partnership for smart investment (ESCP-S3) aimed at speeding up the industrial modernisation of agri-food packaging sectors towards Industry 4.0, and digital transformation financed from the European Union under the COSME Programme (Table 1).

Table 1. Cluster organisations participating in the DIGICLUSTERS project

	Cluster organisation	Sector	Country
1	Latvian IT Cluster	ICT/IT	Latvia
2	OnGranada Tech City	ICT/IT	Spain
3	AgroBioCluster	Food	Poland
4	Smart Food Cluster	Food	Lithuania
5	Food Quality Products Cluster	Food	Latvia
6	Lithuanian Printing Industries	Packaging	Lithuania
7	Lithuanian Innovation Centre	ICT/IT	Lithuania

Source: own elaboration.

Table 2. CAWI study participants

	SMEs	Number of questionnaires received
1	Agri-food and packaging SMEs	44
2	ICT SMEs	45
TOTAL		99

Source: own elaboration.

Intelligence gathering within the hackathons included an online survey, interviews during the execution of four cross-industry hackathons, formal and informal meetings and online peer-reviews between project partners. One of the information gathering tools was the CAWI – survey, including two types of respondents: SMEs from the agri-food and packaging sector and SMEs from ICT/ Industry 4.0. The study took place between January and March 2019. The cluster organisations sent a link to the survey to their members and gathered 44 answers from agri-food and packaging firms and 45 from ICT SMEs, specifying, among

others, the challenges faced in relation to digital transformation. The questionnaires were completed mostly by SMEs owners, managing directors, innovation specialists and export managers.

Findings

DIGICLUSTERS partnerships are focused on linking digital, hi-tech solutions with traditional industries (agri-food and packaging) with the goal of smoothing the way for innovations and ideas while overcoming any associated disruptive effects. In order to achieve this, the project was divided into three parts: preparation, implementation and sustainability. To identify the needs of SMEs in terms of digitalization and to stimulate the implementation of co-creation in digital innovations, several activities were undertaken by project partners parallelly in Poland, Latvia, Lithuania and Spain. These led to the identification of the concrete challenges faced by agri-food, packaging and ICT SMEs in their digital transformation towards Industry 4.0.

Challenges faced in relation to the incorporation of digital solutions by SMEs from the agri-food and packaging sector

Although agri-food and packaging companies agree that their competitiveness is dependent upon the implementation of technological solutions – especially automation, sensor and wireless technologies – they encounter several challenges in their digital transformation. One of which is linked to keep up with the fast emergence of new technologies, especially those related to virtualization/simulation, robotics, blockchains, machine learning/artificial intelligence and augmented reality. They find the technological language difficult to understand, as the ICT sector tends to communicate their solutions in terms of technological features and not in terms of benefits for solving specific problems. In addition, the lack of previous experience in the digitalization and innovation process and the poor digital capabilities are considered barriers that are especially experienced by companies based in rural areas. SMEs highlighted that they have difficulties in finding the right technology suppliers to solve their problems. The technological challenges that the Agri-food and packaging companies reported include those that dealt with the virtual management of the production process, electronic document flow, B2B platforms, smart visual quality control, online customer support or the need of behavioral and predictive analysis.

The companies also highlighted the lack of meeting places where agri-food, packaging and ICT industries could discuss their needs and find related solutions. The

lack of knowledge about existing innovation networks or clusters that provide digital solutions was also presented as another important bottleneck in the implementation of digital innovations. Agri-food and packaging companies are aware that these challenges make them less competitive and innovative when considering expansion at European or international level. The companies also have a low evaluation of their own competences, which makes them reticent to engage in new projects.

Challenges faced by SMEs from the ICT sector

ICT companies also face several challenges in relation to the digitalization of agri-food and packaging SMEs. The first and foremost bottleneck is lack of experience, as most ICT companies have not collaborated with companies from the agri-food and packaging sector. This absence of customer orientation, together with a lack of communication skills and awareness of a client's needs reduce the possibilities of successfully identifying problems, and, as a consequence, the possibilities of providing the right technological solutions for agri-food and packaging companies. According to ICT SMEs, financial barriers are also considered obstacles in implementing digital solutions, since agri-food and packaging companies are often dealing with limited financial resources. ICT companies also highlighted the lack of access to agri-food networks and other associations as a barrier to implementing solutions in the value chain.

Tools applied in collaboration

With the goal of resolving some of these challenges and to facilitate collaboration, the project partners adapted the concept of hackathons designed to stimulate cross-sectoral, cross-border and cross-cluster cooperation between high-tech (digital innovation hubs – DIH), biotech and ICT) and traditional (agro, food & packaging) clusters and their members. The main beneficiaries in the process of applying digital solutions to agri-food and packaging were expected to be SMEs. Thus, four cross-industry regional hackathons – one in each participating country – took place between April and October 2019.

All of the mentioned events included a staged experimentation process called X-Industry Hackathons that promoted the incorporation of innovation drivers: Industry 4.0 and digital solutions to food & packaging sectors to improve productivity, better flexibility, agility, and increase profitability. The main process included collecting the cases where implementation challenges were faced by agri-food and packaging companies, the search for IT solutions and preparing the logistic and technical organisation of hackathons. Taking into account the different business environment, territorial and organisational potential, each participating country adapted the concept of hackathons to their regional needs and available timeframe.

Table 3. DIGICLUSTERS cross-industry hackathons

	Clusters involved	Place	Date
1	Latvian IT Cluster	Riga (Latvia)	March – April 2019
	Food Quality Products Cluster		
2	AgroBioCluster	Warsaw (Poland)	April – October 2019
3	Smart Food Cluster	Vilnius (Lithuania)	June – October 2019
	Lithuanian Printing Industries		
	Lithuanian Innovation Centre		
4	OnGranada Tech City	Granada (Spain)	September – October 2019

Source: own elaboration.

The companies from agri-food, packaging and ICT sectors highlighted their interest in cooperation with companies from Lithuania, Latvia, Poland and Spain as they believed that cross-industry collaboration with ICT companies would increase their competitiveness in both local and international markets. They expressed the necessity to identify real business collaboration opportunities, facilitate communication between traditional industries and technologically advanced ones, and to engage in joint activities, concerning cross-industry and cross-border collaboration between clusters, ICT and agri-food and packaging enterprises.

During these regional hackathons cross-industry teams worked on different challenges related to the incorporation of both incremental digital innovations (for instance, digitalization of company documents) or disruptive technologies (for instance, related to the application of artificial intelligence in production processes).

The cluster organisations were as having the key role of promoters and facilitators (Figure 1), creating a collaborative workspace for agri-food, packaging and ICT companies.

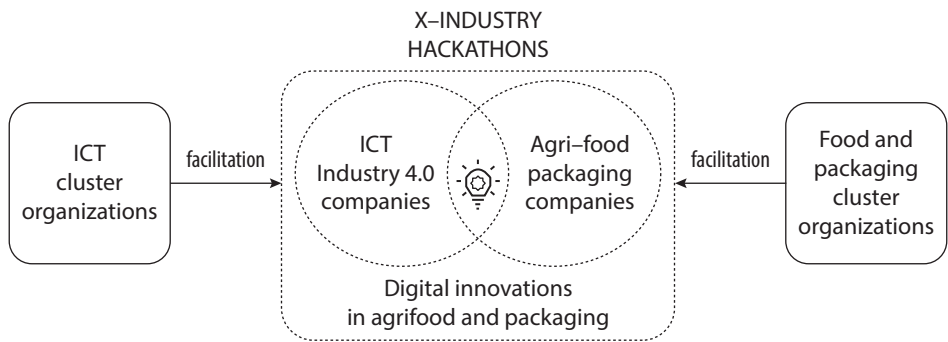


Figure 1. Role of actors participating in hackathons to stimulate innovations

Source: own elaboration.

The cluster organisations' role also includes sharing information about international markets and stimulating international activities for their members, for instance by organising trade missions, international networking, establishing new contacts or performing market research.

Conclusions

The agri-food, packaging and ICT companies that belong to European clusters face several technological, financial and managerial challenges on their way to digital transformation. Primarily, they need help in incorporating digital solutions, technological updates, and tools in their business processes to satisfy customers' needs and demands. These technological solutions can be provided by ICT companies in order to modernize products and services and enhance productivity.

This case study has shown that the most important challenges include technological, organisational and human resource-oriented barriers, which is in-line with the studies of Peillon and Dubrue³⁰. In the context of B2B relations, ICT firms play a supportive role in providing digital solutions to value chain companies of the agri-food and packaging sector. As the process is complex and the FMCG environment highly dynamic and competitive, challenges are also faced connected with lack of experience, poor contact with agri-food and packaging companies, financial limitations and insufficient digital competences among agri-food companies and limited venues and opportunities to network and establish new contacts. The most important challenges are in line with the technical and organisational challenges described by Peillon and Dubrue.

As for the third research question – the role of hackathons is:

- to interconnect different stakeholders and create a dynamic environment that encourages cross-industry collaboration;
- to stimulate the creation of new ideas, concepts and prototypes by combining SMEs' competences;

to support the generation of incremental and radical innovations related to digital innovations in agri-food and packaging.

The study showed that, among these many functions, hackathons most effectively promote new contacts, match companies and stimulate their collaboration in digital transformation. However, the introduction of these new collaboration tools also poses several challenges, which relate to the time needed for organisation and the skills necessary to build trust and engagement of between a wide variety of different stakeholders. Such tools have only recently begun to be implemented and, thus,

30 S. Peillon, N. Dubrue, *Barriers to digital servitization...*

there is a need to continue the research on cross-industry cooperation and on the application of such agile tools for the development of innovations.

Limitations and future research

Although this article covers an existing gap in the literature, it also has several limitations that may serve as an inspiration for future research. First, the results draw on a sample of agri-food, packaging and ICT companies, hence the findings might be industry specific. Therefore, future studies should explore this topic in different industries. In addition, the method is qualitative and could be supplemented with additional quantitative analysis of similar tools or the experience of other European clusters.

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Abstract

The article presents exploratory research that is aimed at identifying the challenges existing in the process of stimulating cross-industry collaboration between European agri-food, packaging and ICT SMEs in their digital transformation towards Industry 4.0. Taking as an example the European Strategic Cluster Partnership for smart investments called DIGICLUSTERS, the article presents qualitative research based on a single case study. The case examines a cluster-facilitated, agile approach to speeding up the prototyping and implementation of digital innovations in agri-food and packaging companies. Within this framework, the article shows that fostering cross-industry cooperation between traditional and hi-tech companies operating in clusters brings several benefits, but also entails technological, financial and managerial challenges. The originality of this article is in its examination of cross-industry hackathons as a new collaboration tool to stimulate digital innovations in agri-food and packaging SMEs towards Industry 4.0.

Keywords: SMEs, management challenges, digitalisation, hackathons, cross-industry collaboration, Industry 4.0, clusters

Value capture dynamics – opportunity-driven changes¹

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Introduction

A firm's performance is shaped by both the creation of value and its appropriation. New value is created through novel combinations of resources. However, the necessary conditions for any purposive deployment of such combinations involves not only the existence of a particular opportunity and motivation, but equally the expectation that some value from that deployment will be captured². Thus, the issue of value appropriation can be sited at the forefront of the decision-making process on resource deployment. Given that appropriation is about securing resources that allow investment in future value creation³, there is a growing understanding in recent management literature for recognizing the processual nature of value appropriation⁴. Yet, this process brings with it the difficult task of defining its dynamics. Appropriability conditions vary, not only across industries and geographical regions but also timeframes⁵. Hence, the effectiveness of the appropriation

- 1 Research project "Dynamics and determinants of the process of appropriating value from projects implemented in the inter-organizational networks" financed by national Science Centre of Poland (NCN) on the basis of the decision 2013/11/D/HS4/03965.
- 2 P. Moran, S. Ghoshal, *Value creation by firms*, "Proceedings of the Academy of Management" 1997, pp. 41–45.
- 3 S.M. Wagner, A. Eggert, E. Lindemann, *Creating and appropriating value in collaborative relationships*, "Journal of Business Research" 2010, no. 63, pp. 840–848.
- 4 R. Makadok, R. Coff, *The theory of value and the value of theory: Breaking new ground versus reinventing the wheel*, "Academy of Management Review" 2002, vol. 27, no. 1, pp. 10–13; M. Najda-Janoszka, *Dynamic capability-based approach to value appropriation*, Jagiellonian University Press, Krakow 2016; D. Di Gregorio, *An integrative, multi-level model of value creation and value appropriation*, "Journal of Applied Business and Economics" 2013, vol. 15, no. 1, pp. 39–53.
- 5 A. Arbussa, G. Coenders, *Innovation activities, use of appropriation instruments and absorptive capacity: Evidence from Spanish firms*, "Research Policy" 2007, no. 36, pp. 1545–1558; T. Fischer, *Managing Value Capture: Empirical Analyses of Managerial Challenges in Capturing*

instruments used may vary at different stages of even a single business project. It implies potential discontinuities and tensions in the value appropriation process, as each appropriation mechanism conveys the possibility of potential inefficiency⁶. Thus, shifts in the circumstances in which a given firm operates may trigger path-breaking changes, not only in the area of value creation activities but also across value capture practices. Assuming that firms do pursue opportunities where value capture is uncertain, extends the discussion from a merely exploitative to an explorative perspective⁷. Opportunity driven value capture can have many entrepreneurial features⁸, as it may involve innovation, alertness as well as information-based advantages⁹. Hence, the aim of this study is to enhance the understanding of the dynamics of value appropriation by identifying those decision-making practices and strategic behaviours that are entrepreneurial in nature. The conceptual discussion is supported by rich empirical data to bring a more applied dimension to the important issue of opportunity driven value appropriation.

Theoretical background

Business practice evidences no general rule for the symmetry between value creation and value capture, as firms can appropriate equal, less or more value than they have actually created¹⁰. Although these potential discrepancies can be observed at the level of a single transaction (monetary exchange), they also develop across organizational activities performed over a longer time span¹¹, since both costs and benefits vary in their timing and usually cannot be associated directly with a single exchange at a particular point in time¹². Moreover, the spectrum of value claimants is much broader than just two sides of a transaction (i.e. producer and customer), since all parties engaged in the value creation process

Value, Gabler Verlag – Springer, Heidelberg 2011; M. Najda-Janoszka, *Dynamic capability...*; M. Najda-Janoszka, J. Gancarczyk, *Addressing the challenges of industrial transition processes: the case of photovoltaics industry*, "Problemy Zarządzania – Management Issues", vol. 17, no. 1, pp. 42–56.

6 D. Leonard-Barton, *Core capabilities and core rigidities: A paradox in managing new product development*, "Strategic Management Journal" 1992, no. 13, pp. 111–126.

7 Y. Eshima, B.S. Anderson, *Firm growth, adaptive capability, and entrepreneurial orientation*, "Strategic Management Journal" 2017, no. 38, pp. 770–779.

8 *Ibidem*.

9 *Ibidem*; M. Najda-Janoszka, *Dynamic perspective of value appropriation*, "Procedia – Social and Behavioral Sciences" 2016, no. 230, pp. 14–21.

10 D.P. Lepak, K.G. Smith, M.S. Taylor, *Value creation and value capture: a multilevel perspective*, "Academy of Management Review" 2007, vol. 32, no. 1, pp. 180–194.

11 M. Najda-Janoszka, *Dynamic capability...*

12 D. Ford et al., *Managing Business Relationships*, Wiley & Sons, New York 2011.

through deployment of owned/controlled resources can be regarded as legitimate claimants of the created value¹³. Given that the decision upon resource deployment is determined by the reasonable expectation of a return on investment value distribution also involves suppliers, employees and complementors, in terms of the benefits generated beyond their opportunity costs¹⁴. Stickiness and time dependency of resources (accumulation and deployment) suggest time-compression diseconomies when it comes to extracting value from those resources, meaning value is not being captured instantaneously – as it takes time to appropriate the extracted value streams¹⁵. The parties engaged in value creation undertake a wide array of activities over time and space, aimed at appropriating as much of the value created attributable to the resources they control¹⁶. Thus, in the recent management literature there is a growing understanding for defining value capture as a process¹⁷ which can follow, precede or occur simultaneously with value creation (e.g. patent sharks, capture by value maximization)¹⁸. Hence, value appropriation is not a simple extrapolation of activities performed within the value creation process – the nature of performed activities can be characterized by a distinct dynamic and may require a completely different kind of knowledge and capabilities¹⁹. Authors argue that the dynamics of value capture is expressed in both types of activities, those focused on developing and implementing specific mechanisms for value extraction and retention, and those aimed at reconfiguration of previously deployed lines of action²⁰. External and internal contingencies may both strengthen or weaken the efficiency of implemented modes

13 P.G. Klein et al., *Who is in charge? A property rights perspective on stakeholder governance*, “SO! APBOX Special Issue” 2012, vol. 10, no. 3, pp. 304–315; R. Garcia-Castro, R.V. Aguilera, *Incremental value creation and appropriation in world with multiple stakeholders*, “Strategic Management Journal” 2015, no. 36, pp. 137–147.

14 P.G. Klein et al., *Who is in charge?...*

15 R. Makadok, R. Coff, *The theory of value...*; M. Najda-Janoszka, *Dynamic perspective...*

16 D. Di Gregorio, *An integrative, multi-level model...*; C. Ellegaard, Ch.J. Medlin, J. Geersbro, *Value appropriation in business exchange – literature review and future research opportunities*, “Journal of Business & Industrial Marketing” 2014, vol. 29, no. 3, pp. 185–198.

17 M.B. Lieberman, N. Balasubramanian, R. Garcia-Castro, *Toward a Dynamic Notion of Value Creation and Appropriation in Firms: The Concept and Measurement of Economic Gain*, “Strategic Management Journal” 2018, no. 6, pp. 1546–1572; R.W. Coff, *The co-evolution of rent appropriation and capability development*, “Strategic Management Journal” 2010, vol. 31, no. 7, pp. 711–733.

18 C. Ellegaard, Ch.J. Medlin, J. Geersbro, *Value appropriation in business exchange...*; W. Czakon, *Sieci w zarządzaniu strategicznym*, Wolters Kluwer Polska, Warszawa 2012.

19 M. Blyler, R.W. Coff, *Dynamic capabilities, social capital, and rent appropriation: ties that split pies*, “Strategic Management Journal” 2003, no. 7, pp. 677–686.

20 *Ibidem*; M. Najda-Janoszka, *Dynamic capability...*

for value capture²¹. Development, implementation and reconfiguration of value capture mechanisms may occur differently depending on the type of trigger and spectrum of the engaged external and internal stakeholders²². Introduced changes can be of an incremental nature, leading to extrapolation of current procedures (e.g. expanding patent portfolio), or can be disruptive or innovative, rendering deployed lines of actions obsolete (e.g. radical changes in the area of cost management)²³. Incremental as well as innovative reconfigurations can be guided by defensive (protection of existing value streams) or offensive (extension of existing value streams) logic. In both cases alertness and information-based advantages play the central role²⁴. Hence, a managerial willingness to pursue uncertain opportunities for value appropriation can be linked with the entrepreneurial orientation of a firm (EO)²⁵, since entrepreneurial firms engage in activities that are innovative, risk taking and proactive²⁶. However, although acting entrepreneurially reflects the pursuit of both value creation and capture, the scholarly focus tends to concentrate on the former one, leaving appropriation as an outcome not considered an integral part of the entrepreneurial process. Moreover, pursuing an opportunity for value capture is generally mentioned in the context of unproductive venture activity, seeking undue value²⁷. Nevertheless, recent research has developed the argument that entrepreneurial orientation as a resource consuming posture can be understood as “the strategic mechanism through which firms capture value in new and uncertain opportunities”²⁸. Hence, while it might be that a firm seizes an attractive opportunity for appropriating value without contributing to its generation, entrepreneurial behaviour can also be observed when a firm

21 T. Fischer, *Managing Value Capture...*; M. Najda-Janoszka, *Dynamic capability...*; D. Leonard-Barton, *Core capabilities...*

22 D.P. Lepak, K.G. Smith, M.S. Taylor, *Value creation...*; M. Najda-Janoszka, *Dynamic capability...*; K. Mazur, *Tworzenie i przywłaszczanie wartości. Perspektywa relacji: pracownik – organizacja*, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2011; M. Najda-Janoszka, J. Gancarczyk, *Addressing the challenges of industrial transition processes...*

23 C.G. Gilbert, *Unbundling the Structure of Inertia: Resource Versus Routine Rigidity*, “Academy of Management Journal” 2005, vol. 48, no. 5, pp. 741–763.

24 D. Di Gregorio, *An integrative, multi-level model...*

25 Y. Eshima, B.S. Anderson, *Firm growth...*; W. Dyduch, *Value creation and capture in entrepreneurial organizations*, “Management Issues” 2016, vol. 14, no. 3, pp. 11–23.

26 J.G. Covin, D.P. Slevin, *A conceptual model of entrepreneurship as firm behavior*, “Entrepreneurship: Theory and Practice” 1991, no. 16, pp. 7–25.

27 K.M. Hmieleski, D.A. Lerner, *The dark triad and nascent entrepreneurship: An examination of unproductive versus productive entrepreneurial motives*, “Journal of Small Business Management” 2016, vol. 54, no. 1, pp. 7–32.

28 Y. Eshima, B.S. Anderson, *Firm growth...*, p. 772.

strives to protect and strengthen created/co-created value streams²⁹. The entrepreneurial response may involve various, creative rearrangements of used appropriation mechanisms as well as the introduction of new resources and capabilities to enhance the capture of created value.

Methodology

The review of the extant literature suggests that the dynamic nature of the value appropriation process remains, to a large extent, underexplored. There is a paucity of studies exploring the reconfiguration of resources and the activity patterns involved in value appropriation. Given that this research investigates links not previously addressed in the literature³⁰ and the explored issues are highly contextualized³¹, the study followed a qualitative approach using a field-based case study method. In order to provide a fine-grained, in-depth analysis, while still moving beyond idiosyncrasy, the research was governed by a longitudinal, multiple case design research strategy.

To ensure the observation of a repeatable performance, the selection criteria focused on identifying firms operating in a highly dynamic context that generates multiple triggers for changes in the action patterns of an organisation (intensive use of knowledge and technology, involvement in cross-organizational value creation processes) and exhibiting a substantial track record (minimum 5 years). From the initial sample of 11 firms six were excluded because of incomplete suitability with the selection criteria or unwillingness to share detailed information. The final case set consisted of 5 firms. The names of the investigated firms were not disclosed due to the high sensitivity of the collected data.

To ensure the richness and credibility of the gathered information, yet reduce any systematic bias, data were collected from three main sources: open-ended interviews, archival firms' internal documentation and direct observations. The selection of firms for the main study involved 11 short (30–45 min) preliminary interviews with each candidate. After defining a set of 5 companies, two waves (2013, 2014–2015) of a total of 24 in-depth, semi-structured interviews (2–3 hours) were conducted in person. The interviewees represented three distinct groupings – top managers and project managers of selected firms, as well as project managers of cooperating partners. In order to minimise the risk of retrospective bias, the research involved direct observations and examination of firms' internal documents.

29 *Ibidem*; D. Di Gregorio, *An integrative, multi-level model...*

30 C.G. Gilbert, *Unbundling the Structure of Inertia...*

31 R.K. Yin, *Case Study Research. Design and Methods*, Sage Publications Inc., Thousand Oaks 2014.

13 direct observations performed over two years (2013–2015) comprised a passive participation in project planning and evaluation meetings, visiting on-site investments, observing developed product maintenance and servicing. Document analysis covered a total of 71 files, such as financial statements and project documentation. Moreover, for additional cross-examination of the gathered data the research included information retrieved from public documents, i.e. press releases, industry statistics and reports.

Results

The extracted data were grouped into time-sequenced arrays to outline changes in value appropriation (Table 1). The observed action patterns were coded according to the exhibited dominant logic as either defensive or offensive. When rationale was primarily protection of existing value streams, the approach was coded as defensive, e.g. firm C “a lot of pressure was put on the sales force to protect the main market [...] we had to deal not only with new distributors, some of our suppliers bypassed our services”. In contrast, if the arguments given clearly underlined the extension of developed value streams, the approach was described as offensive, e.g. firm E “developed patent evaluation service enables optimization of licensing revenues”. Although an offensive approach was indicated most often, the observed defensive actions also exhibited entrepreneurial features – firms B, C, D. Triggers for change in the value capture process were identified owing to the information provided by managers during interviews. The timeframe of those triggers was verified with the use of firms’ internal documentation as well as public reports. The introduced changes in value appropriation concerned the quantity, diversity, and combination of formal and informal isolating mechanisms, as well as diverse procedures aimed at cost reduction, or increased value for customers.

Searching for evidence of opportunity driven value appropriation followed Anderson et al. understanding of entrepreneurial orientation as comprising behavioural and attitudinal components³². Managerial attitude towards risk was identified as either a high or low proclivity to take actions when outcomes were uncertain. To be designated at a high level the gathered data had to indicate a willingness to commit substantial resources to risky, wide-ranging projects, e.g. firm A – “the idea was there, costly but it was a good idea”, firm D – “the core idea for the firm was technology development, despite the fact that it was extremely challenging for a small firm to secure its highly innovative solutions against highly interested competitors”. Reluctance to take bold actions and instead exhibit a “wait and see”

32 B.S. Anderson et al., *Reconceptualising entrepreneurial orientation*, “Strategic Management Journal” 2015, no. 36, pp. 1579–1596.

position was categorized as low proclivity toward risk, e.g. firm A – “the crisis does not last forever, we just need to survive this difficult period”. The evidence indicated that the managerial responses exhibited toward risk was contingent upon the context³³.

The behavioural component of EO was assessed depending upon the degree of innovativeness proactiveness and based on the dichotomy of features presented (0, 1). The active introduction of improvements or completely new modes for value capture (e.g. complexity of offering, lead time advantage, access to complementary resources), undertaking forward looking actions aimed at pre-empting other players, was considered innovation proactivity, e.g. firm B – “we introduced a number of purposeful actions aiming at creating a coherent system of security and a culture of discretion”. The observed incremental changes that followed the actions undertaken by other market players were interpreted as conservative and reactive behaviour e.g. firm A – “we did not expect the situation to change so fast [...] the capital shrank quickly and we had no choice but to cut the prices [...] the ultimate goal for now is to maintain a stable level of revenues”. The following table (Table 1) presents the evidence of the decision-making practices and strategic behaviours in the area of value capture that exhibit entrepreneurial features.

Table 1. Collected evidence of opportunity driven value appropriation

Firm	Occurrence	Dominant approach to value capture	Trigger for change	Area of introduced change	Examples
A	2004–2005	Offensive	New business launch	• Cost optimization • Cash flow harmonization	“[...] getting income was not easy. We even engaged people working voluntarily” “A combination of several quite small projects a long with one larger one worked well for the cash flow”
	2008	Offensive	Intensification of competition EU funds for innovations	• Cost optimization • Control of access to complementary resources	“[...] an original, comprehensive solution developed in response to the need to increase the efficiency of the firm and its position among the growing number of competitors”

33 J.G. March, Z. Shapira, *Managerial perspectives on risk and risk-taking*, “Management Science” 1987, no. 33, pp. 1404–1418.

Table 1 (continued)

Firm	Occurrence	Dominant approach to value capture	Trigger for change	Area of introduced change	Examples
B	2008–2010	Offensive	New business launch	Developing a know-how protection system	“Each new project requires an intelligent integration of a comprehensive concept of the DPC with the expert knowledge of professionals of a given industry [...] copyright in that case just does not do the job”
	2010–2011	Defensive	Payment backlogs	- Cost optimization - Commencing litigations	“We continued with big projects [...] we commence litigation regardless of the size or position of our partner”
	2011–2014	Offensive	Payment backlogs	- Cost optimization - Value streams diversification - Cash flow harmonization	“[...] revenue from hotel services represent a financial buffer [...] we turned to smaller projects – big ones are divided and contracted separately”
	2013–2015	Offensive	Market growth	- Value streams diversification - Reconfiguration of the know-how protection system	“[...] we entered completely new ground [...] we introduced a number of purposeful actions aiming at creating a coherent system of security and a culture of discretion”
C	1987–1995	Offensive	Launching and expanding a new venture	Lead time advantage	“[...] we were pioneers, the firm targeted mainly the banking sector to build a strong, lasting position”

Firm	Occurrence	Dominant approach to value capture	Trigger for change	Area of introduced change	Examples
	2005–2008	Offensive	Market growth, intensification of competition	- Supply management – strengthening bargaining position - Backward integration - Value streams diversification - Cash flow harmonization	“[...] we need to be always aware of any mistakes made by our competitors, any equipment failure on their side, because we must be there at once with a better offer”
	2009–2012	Defensive with rapid shift toward offensive	Financial crisis, EU funds for innovations	- Cost optimization - Value streams diversification - Cash flow harmonization	“We sensed quite early the first symptoms of this financial crisis on our markets and we used the time to arrive as fast as possible at comprehensive protective solutions”
	2014–2015	Offensive	Market growth technology advances	- Value streams diversification - Control of access to complementary resources	“[we need to go there] were big opportunities for high margins are still hiding [and waiting for us] [...] we need a meticulous insight into technology advances for our new solutions that go far beyond electricity consumption management”
D	1991–2005	Defensive	Expanding a new venture	Developing a know-how protection system	“[...] being small we had to be extremely fast to incorporate patented inventions into production”, “our protection system goes far beyond patents”
	2012–2015	Defensive	Regulatory changes Market saturation	- Cost optimization - Supply management (procurement division) - Subcontracting	“[...] for the first time we experienced a drop in profits, it was shocking but mobilizing, the firm developed a procurement division, expanded further R&D in the area of miniaturization”

Table 1 (continued)

Firm	Occurrence	Dominant approach to value capture	Trigger for change	Area of introduced change	Examples
E	2010–2012	Offensive	Public infrastructure development	• IP management • Control of access to complementary resources	“[...] our solutions have to be not only highly reliable but compatible with the range of our other products, the developed patent evaluation service enables optimization of licensing revenues”
	2013–2015	Offensive	Technology advancements	• IP management • Cost optimization • Control of access to complementary resources	“[...] the support costs from the R&D of our parent company drained our project budgets, we had to opt for our own R&D”, “it is not only about us and competing firms, it is also about us standing up to X (the parent company)”

Source: own elaboration.

Discussion and conclusions

The introduction to the article emphasised the scarcity of evidence of discontinuities and variability of the value capture process. Previous research has been overly focused on the moment of transaction³⁴ and the individual effectiveness of selected value protection tools³⁵. The current study helps to expand the understanding that receiving and retaining value streams involves a wide range of resources and capabilities developed across organizational functions. The data show that firms appropriate value streams through a wide range of mechanisms, engaging various organizational areas, e.g. secrecy by data encryption (firms B, D, E), complexity of produced solution (protection against imitation) (firms A, B), reorganization in pursuit of cost and time delivery optimization (firm D) and patents (firms D, E). Recent management literature suggests that value appropriation secures resources that allow investment in future value creation³⁶. According to the material collected, value capturing activities undertaken by the investigated firms not only followed or co-occurred, but also even preceded value

34 C. Ellegaard, Ch.J. Medlin, J. Geersbro, *Value appropriation in business exchange...*; R.W. Coff, *The co-evolution...*

35 T. Fischer, *Managing Value Capture...*

36 S.M. Wagner, A. Eggert, E. Lindemann, *Creating and appropriating value...*

creation³⁷. Not all inventions patented by firm D were directed straight to production – some were used to pre-empt potential competitors³⁸ and commercialized later on, when the firm was ready with complementary resources. Similarly, a procurement division to enhance cost management, developed by the same firm, preceded a major product modification related to the materials used, and thus requiring a radically new portfolio of suppliers. In the case of firm E, hiring their own R&D specialists enabled substantial cost cutting in current projects (responding to the expensive R&D backup from the parent company), yet, at the same time, it provided additional support for developing proprietary know-how for future projects. The gathered data also provide evidence for value capturing by value maximization³⁹. Striving to improve its market position while facing a growing number of competitors, firm C rearranged its value streams in a way that strengthened the complementary activity of servicing to the extent that it became the main source of value for the firm.

The information obtained during the interviews enabled us to link the undertaken activities with the initial triggers, the perception of those triggers and the motivation and intention underlying the decision process. The managers mentioned a number of minor events that firms reacted to within existing action patterns of value capturing. The evidenced engagement in an on-going, systematic process of environmental scanning enabled the relatively early detection of the first signs of disruptive changes. Alertness and information-based advantages were of particular importance for the introduced changes in value appropriation⁴⁰. Furthermore, all introduced reconfigurations concerned the enhancement of capturing value streams that were/will be created or co-created by those firms⁴¹. Just a single piece of evidence for an opportunistic appropriation of undue value was found with regard to the behaviour of a strategic partner of firm B (payment withheld).

The investigated firms engaged in opportunity driven reconfiguration of action patterns for value capture and exhibited strong proactive and innovative postures fuelled by a managerial willingness to pursue uncertain, risky initiatives. The obtained results are in line with the arguments that EO can be used not only for the exploration of new opportunities but also to capture value from them⁴².

37 C. Ellegaard, Ch.J. Medlin, J. Geersbro, *Value appropriation in business exchange...*

38 C. Grimpe, K. Hussinger, *Resource complementarity and value capture in firm acquisitions: the role of intellectual property rights*, "Strategic Management Journal" 2014, no. 35, pp. 1762–1780.

39 W. Czakon, *Sieci w zarządzaniu...*

40 D. Di Gregorio, *An integrative, multi-level model...*; M. Najda-Janoszka, J. Gancarczyk, *Addressing the challenges of industrial transition processes...*

41 M. Najda-Janoszka, J. Gancarczyk, *Addressing the challenges of industrial transition processes...*

42 Y. Eshima, B.S. Anderson, *Firm growth...*

The study has potential limitations due to the relatively small sample. However, the rich data gathered provide valuable exploratory insights into the processual character of value appropriation and a powerful evidence of entrepreneurial features of value capture. Further studies could build on these while investigating the dynamics of the processes of value creation and capture in firms operating in platform ecosystems.

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Abstract

The study addresses the gap in the research concerning the dynamics of the value capture process. The aim is to enhance the understanding of the dynamics of value appropriation by identifying those decision-making practices and strategic behaviours that are entrepreneurial in nature. The conceptual discussion is supported by the empirical research governed by a multiple case design. The longitudinal study generated valuable insights into the processual character of value appropriation, as well as into its variable, not always linear, occurrence with value creation. The collected data provide rich evidence of opportunity-driven changes in the value capture action lines.

Keywords: entrepreneurial orientation, value capture, value appropriation, opportunity

Identification of new business models in micro and small enterprises in the energy sector

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Introduction

The aim of the article is the initial identification of new business models among micro and small enterprises operating in the energy sector in Poland. The authors focused on micro and small enterprises which make products and deliver services including energy efficiency, energy production on the microscale, and energy savings. These enterprises very often operate within a cooperation network, which could influence their business models. The initial study was conducted by means of a direct survey answered by thirty businesses in November 2019. This study is a part of comprehensive research conducted at the Wrocław University of Science and Technology by a research team consisting of Szalbierz, Kubiński and the authors of this paper. The research in this paper is a preliminary study to major future research aiming to identify and classify new business models in the Polish energy sector. The results cannot be generalized because the initial research was done on too small a sample, but they are a good starting point for the next stage in our research.

The term *business model* (BM) has been widely known and used for over 60 years. Numerous analyses of business models in various industries have been conducted in the literature; however, only a few papers have concerned the energy sector. In the case of the Polish energy sector, only a few research¹ projects analyzing business models can be found. The subject of the research in both cases was

1 E.g.: B. Nogalski, A. Szpitter, J. Brzóška, *Modele i strategie biznesu w obszarze dystrybucji energii elektrycznej w Polsce*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2017;

energy companies. There is no research investigating micro and small enterprises, whose activities concern energy efficiency, energy savings or energy production on the microscale.

The energy sector is a key sector in the national and EU economies due to its important role in economic prosperity and its major environmental impact. Recently, three key developments have transformed the energy sector in many countries: clean energy transition, market liberalization, and digitization. These developments have enabled new BMs in the regulatory landscape. In Europe in particular (a forerunner in both clean energy transition and market liberalization), new players have entered the markets, and existing electricity supply companies have been restructured as new business models have emerged. Additionally, a general technological transformation (called digitization) has occurred, with new technology allowing analog processes and information to be transformed into digital processes, and, in specific cases, opening up new possibilities to reach the aim of sustainability and liberalized markets efficiently. Outstanding examples in the energy sector include smart grid infrastructures, virtual power plants, renewable energy source integration, connected devices, and technologies to increase demand flexibility².

Thus, new BMs have emerged, many of which combine digitization with contributions to the sustainable transformation of the energy sector in the liberalized environment³. In this context, *new* means that the energy transition and/or digitization enabled the BM, which appeared within the timeframe 2000 to 2019. The new BM contributes renewable energy or products that improve energy efficiency, reduces consumption, and/or provides social and environmental benefits⁴.

In the ongoing research the authors of this paper have aimed to answer the following research questions: (1) “What are the BMs in the Polish microscale energy sector?”, (2) “What are the directions of the BMs’ change in the context of the co-operation network?”.

E. Ropuszyńska-Surma, M. Węglarz, *A virtual power plant as a cooperation network*, “Marketing and Management of Innovations” 2018, no. 4, pp. 136–149.

2 IEA, *Digitalization and Energy*, IEA, Paris 2017, <https://www.iea.org/reports/digitalisation-and-energy> (dostęp: 4.09.2020).

3 N.M.P. Bocken et al., *A literature and practice review to develop sustainable business model archetypes*, “Journal of Cleaner Production” 2014, no. 65, pp. 42–56.

4 M. Richter, *Business model innovation for sustainable energy: German utilities and renewable energy*, “Energy Policy” 2013, no. 62, pp. 1226–1237.

Literature review

Business Models

Since Bellman, Clark, Malcolm, Craft, and Ricciardi (1957) introduced the term *business model*, the BM has become a kind of simplified and aggregated representation of the essential activities of a company. Numerous papers confirm the importance of BMs in practice because they are related to ensuring and growing competitive advantage. In general, there is no one common definition of BM. Definitions of BMs differ, depending on the three basic perspectives of technology, organization and strategy. Until 2002, the most popular were technologically-oriented BMs. The importance of the strategy-oriented concept increased after 2002; however, only after 2005 was the concept of organization-oriented BM formulated. In recent years, an increasingly holistic approach to defining the BM can be observed. A comprehensive analysis of different BMs and their components was conducted by Wirtz et al.⁵ and Shafer et al.⁶

At the early stages of development of the technology-oriented concept, the authors identified the BM as a small part of a company, but later they increasingly started to perceive the BM as a representation of the company. Special importance is placed on the architecture of the flow of the products, services, information, and benefits (including cash) generated by the individual entities included in the model⁷. According to Afuah and Tucci⁸, the BM is perceived as a method for the increase and exploitation of a company's resources for preparing new products or services for customers, in order to obtain added value (expanding the competitive advantage or increasing profitability). Amit and Zott⁹ claimed that the model is a set of actions that should be taken by a company, the relation between them, and the entities responsible for the different activities.

5 B.W. Wirtz et al., *Business Models: Origin, Development and Future Research Perspectives*, "Long Range Planning" 2016, no. 49, pp. 36–54.

6 S.M. Shafer, H.J. Smith, J. Linder, *The power of business models*, "Business Horizons" 2005, vol. 48(3), pp. 199–207.

7 P. Timmers, *Business models for electronic markets*, "Electronic Markets" 1998, vol. 8, no. 2, pp. 3–8; P. Weill, M.R. Vitale, *Place to Space – Migrating to e-Business Models*, Harvard Business School Publishing Corporation, Boston 2001.

8 A. Afuah, C.L. Tucci, *Internet Business Models and Strategies*, McGraw-Hill/Irwin, New York 2003.

9 R. Amit, C. Zott, *Value creation in E-business*, "Strategic Management Journal" 2001, vol. 22(6/7), pp. 493–520.

From the organization-oriented perspective¹⁰, the BM is seen as a tool for the abstraction of the entire company as a kind of a system that solves problems of strategy for the business, such as identifying the customer, recognizing their needs, delivering satisfaction, and changing value into cash. The concept focuses on the cause and effect relationships and on the reasons for value creation. The fundamental elements of the model¹¹ are customer segments, value proposition, channels, customer relations, revenue streams, cost structure and key resources, activities and partners.

The authors, who have conducted their research in strategic management¹², see the BM as a highly abstract tool which shows a picture of a company's competitive conditions. The key concept is that the BM is a direct result of a strategy but is not a strategy in itself. Besides, a strategic BM is defined by strategic resources, relations with buyers and the value chain. A BM can be seen as a "story" that explains how the company operates and what is especially relevant for its success¹³. Another opinion is that the model is perceived as a list of functions, such as formulating a competitive strategy and a value chain structure, estimating the cost structure and potential profit, and describing the position of the company¹⁴. Moreover, the model could be described by the manner in which the company delivers value to customers, encourages customers to pay for this value, and converts those payments into profit¹⁵. A more extensive review of BM definitions is given by Brzóska¹⁶, Nogalski, Spitter, and Brzóska¹⁷.

Business models in the energy sector

Only a small number of the BMs analyzed concern the energy sector, alongside a broad range of other industries. Hence, important specifics of the sector, such as clean energy transition, liberalization and digitization, are very rarely taken into account.

10 C. Baden-Fuller, S. Haefliger, *Business Models and Technological Innovation*, "Long Range Planning" 2013, vol. 46(6), pp. 419–426.

11 A. Osterwalder, Y. Pigneur, *Business Model Generation*, Wiley & Sons, New Jersey 2010.

12 G. Hamel, *Leading the Revolution*, Harvard Business School Press, Boston 2000.

13 J. Magretta, *Why business models matter*, "Harvard Business Review" 2002, vol. 80(5), pp. 86–92.

14 H. Chesbrough, R.S. Rosenbloom, *The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies*, "Industrial and Corporate Change" 2002, vol. 11(3), pp. 529–555.

15 D.J. Teece, *Business models, business strategy and innovation*, "Long Range Planning" 2010, no. 43, pp. 172–194.

16 J. Brzóska, *Innowacje jako czynnik dynamizujący modele biznesowe*, Wydawnictwo Politechniki Śląskiej, Katowice 2014.

17 B. Nogalski, A. Szpitter, J. Brzóska, *Modele i strategie biznesu...*

Richter¹⁸ analyzed BMs in the context of the transformation of the electric power sector into a more sustainable energy production based on renewable energies. The review of the BM showed the existence of two basic choices: utility-side BMs and customer-side BMs. Another author focused on the identification and classification of new business opportunities emerging from the coevolution of the energy and digital transitions¹⁹. Potential BMs that enhance the value of PV to key stakeholders and, thus, increase market penetration (e.g., by incorporating energy storage, controls, and other technologies which allow the system to be independently controlled and dispatched) have been reported by Frantzis et al.²⁰ Burger and Luke²¹ presented empirical analysis of the most common BMs for the deployment of demand response and energy management systems, electricity and thermal storage, and solar PV distributed energy resources. They classified revenue streams, customer segments, electricity services provided, and resources for over a hundred BMs.

In the worldwide literature, analysis of the impact of regulations on the emergence of new BMs can be found. Using the example of the German *Energiewende*, Schmid et al.²² point out that the specific design of the regulatory framework determines which technologies are viable for business cases and that future developments will be shaped by policies. Analyzing specific cases, Jacobsson and Lauber²³ discuss regulation-enabled wind turbine and solar BMs in Germany. Hillenbrand et al.²⁴ emphasize that the profitability of BMs based on self-consumption (pre-sumption models) depends on the design of the regulation, and Losneret al.²⁵ assess the impact of regulation on virtual power plant BMs.

- 18 M. Richter, *Utilities' business models for renewable energy: A review*, "Renewable and Sustainable Energy Reviews" 2012, no. 16, pp. 2483–2493.
- 19 E. Facchinetti, *Eleven business opportunities emerging from the energy transition*, "Network Industries Quarterly" 2018, no. 20, pp. 21–27.
- 20 L. Frantzis et al., *Photovoltaic Business Models*, NREL, 2009, <http://www.nrel.gov/docs/fy08osti/42304.pdf> (accessed: 4.01.2020).
- 21 S.P. Burger, M. Luke, *Business models for distributed energy resources: A review and empirical analysis*, "Energy Policy" 2017, no. 109, pp. 230–248.
- 22 E. Schmid, B. Knopf, A. Pechan, *Putting an energy system transformation into practice: The case of the German Energiewende*, "Energy Research and Social Science" 2016, no. 11, pp. 263–275.
- 23 S. Jacobsson, V. Lauber, *The politics and policy of energy system transformation – Explaining the German diffusion of renewable energy technology*, "Energy Policy" 2006, no. 34, pp. 256–276.
- 24 See in R. Leisen, B. Steffen, C. Weber, *Regulatory risk and the resilience of new sustainable business models in the energy sector*, "Journal of Cleaner Production" 2019, no. 219, pp. 865–878.
- 25 M. Losner, D. Bottger, T. Bruckner, *Economic assessment of virtual power plants in the German energy market – A scenario-based and model-supported analysis*, "Energy Economics" 2017, no. 62, pp. 125–138.

BM in the Polish energy sector were analyzed by Nogalski, Szpitter, and Brzóska²⁶. They focus their interest on large-scale corporate energy companies and distributed energy resources. Their analysis included BMs in energy distribution for the following companies: RWE AG, Vattenfall AB, PGE S.A., Tauron Polska Energia S.A., Energa S.A., Enea S.A., and BMs in distributed energy: household photovoltaic installations, local biogas plants, low energy office buildings (passive). Generally, they identified (1) large-scale energy companies BMs, and (2) prosumer (distributed energy sources) BMs (e.g., a community's biogas plant). Ropuszyńska-Surma and Węglarz²⁷ proposed a new BM for a Virtual Power Plant under Polish conditions from the perspective of energy companies, which are the owners of all the infrastructure. An interesting classification of BMs for the integrated energy market is given by Matusiak²⁸, who identified five BMs:

- Prosumer;
- ESCO (Energy Saving Company);
- Market aggregator;
- Electric car user;
- Generator (mainly using renewable energy sources).

The Polish authors highlight the significant role of Polish legislation as a factor influencing and creating BMs in our country.

The research methodology

The survey

In order to investigate micro and small enterprises operating in the energy sector, we designed a questionnaire with 35 questions divided into 4 parts. Part A is related to the enterprise's variables such as type of activity, number of employees, and belonging to a cooperation network. Part B is related to elements of business models, part C is related to network relations and connections, and part D is related to the enterprise's innovation. The authors used categorical questions, open-ended questions, multiple-choice questions and questions using 4-, 5- and 6-point Likert scales. The survey was addressed to enterprises belonging to the Lower Silesia Renewable Energy Cluster and enterprises located in technological parks.

26 B. Nogalski, A. Szpitter, J. Brzóska, *Modele i strategię biznesu...*

27 E. Ropuszyńska-Surma, M. Węglarz, *A virtual power plant...*

28 B.E. Matusiak, *Modele biznesowe na nowym, zintegrowanym rynku energii*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2013, p. 120.

Altogether, thirty surveys were returned. All the respondents answered the questions in parts A and B, and most of them (29) answered the questions in part C, but only some of them (17) answered the questions in part D. Only energy sector enterprises were selected for further study, which resulted in a mere 15 surveys for analysis.

The major problem ensuing from this was that the results cannot form the basis for statistical analysis, because for most of the variables, the number of observations is insignificant. Therefore, the results cannot be generalized for all micro- and small energy enterprises. They are, however, treated as an introduction to further research.

Business Model Canvas

To describe the BM, a scheme called the Business Model Canvas, which describes the essential elements of the model and the relations between them, was used. The BM consists of nine elements: customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure. The core of the BM is *value proposition* because the consumers and other stockholders pay for it. They do not pay only for the key product, but for other added value e.g., product performance, cleaner air, services, brand and prestige, design, product availability or convenience of use. Every BM should ensure revenue. Then the customer segments, customer relations and distribution channels are described. These allow different activities addressed to customers to be planned. The business can create and provide value only if it possesses or has relatively cheap access to resources (technology, capital, human, natural, knowledge) and cooperates with other entities (business partners).

Identification of a new BM in the energy sector – survey results

Business Model Canvas – customer-side BM

The review of the BM literature showed that BMs are divided into two types: utility-side BMs and customer-side BMs. The former is based on a small number of large projects, while the latter is based on a large number of small projects. We focused on customer-side BMs among micro and small enterprises because they are at an initial stage of development.

According to the categorical questions, the enterprises can be divided into three categories, which are the customer segments households (46.7%), industrials (40%), and services (13.3%). For the enterprises in the study, the major value proposition for their customers is satisfaction with the quality of product/service (60%) and cost reduction (53.3%). Less important value propositions for them are price (40%), risk reduction (33.3%), performance, customization, accessibility, and convenience/usability (26.7%), newness (20%), brand/status (6.7%).

The most popular customer channel among the sample is direct sale by the sales force (86.7%). Less frequently used channels are direct sale by web sales (33.3%), indirect sale via a wholesaler (20%) and indirect sale via partner stores (13.3%). The most common way of maintaining a relationship with the customers is personal assistance and dedicated personal assistance (both 60%). Only 20% of the enterprises indicated co-creation, which means engaging the customers in assisting in the design of products. Single enterprises indicated on-line user communities and automated services.

Almost all the respondents indicated that they obtain revenue mainly from selling a product or service (93.3%). A single enterprise pointed to brokerage fees as the main revenue stream. Among the resources allowing the enterprise to create and offer a value proposition, the respondents selected human resources (66.7%), and intellectual resources (60%). Less important are physical assets (26.7%) and financial assets (12.3%). As the most important activities a firm must undertake to operate successfully, the respondents pointed to making and delivering the product and problem solving (both 60%). The enterprises also indicated designing the product (33.3%) and a platform or network related to key activities (6.7%).

Considering the network of suppliers and partners that make the business model work, the majority of respondents pointed to buyer-supplier relationships to assure reliable supplies (86.7%). A less important type of partnership is strategic alliances between non-competitors (20%) and strategic partnerships between competitors (13.3%).

In terms of cost structure, here the respondents ranked six types of costs from the most important to the least. The word *importance* means their share of total costs. These six types of separated cost were (1) costs of system maintenance, (2) materials and resources costs, (3) labor costs, (4) external services costs, (5) other operational costs, (6) CAPEX (capital expenditures). For each type of cost, an average rating as a weighted average was calculated. 6 points were assigned to the type of the highest importance and 1 point signified the least important type of cost. The maximum total for each cost could equal 90, with the minimum 15. The sum was divided by the number of respondents. The average share of each cost in the total cost is shown in Figure 1. Additionally, the standard deviation was calculated for each cost.

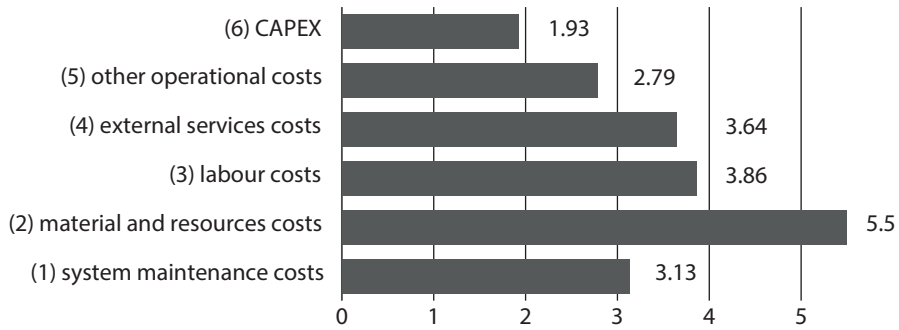


Figure 1. Average importance of each type of cost for enterprises

Source: own calculations.

The average materials and resources costs have the largest share in the total costs and the smallest standard deviation (0.9). The smallest share belongs to CAPEX with a standard deviation totaling 1.1. Labor costs have the most distributed range with a standard deviation equaling 1.55.

Five respondents from the energy sectors stated that they participate in cluster or cooperation networks with nine declaring that they do not. All the companies from the energy sector responded to the question concerning the expected benefits of cooperation networking. Those benefits are:

- new business contacts (73% of respondents);
- joint ventures (cooperation) (66.7%);
- access to distribution channels (46.7%);
- consulting and marketing (26.7%).

Here, respondents could choose the following other options: (a) competitor protection, (b) legal consultation, (c) cost reduction, (d) managerial knowledge, (e) communication skills. Only in single cases were the options mentioned above indicated.

Consumer-side BM

The data were split into three categories according to the following customer segments: households, industrials, services. The results are compared in Table 1. Due to the small numbers of consumers, two segments (industry and services) were aggregated.

Table 1. The features of BM elements for two consumer segments

Customer segments	Households (B2C)	Industrials & Services (B2B)
Value proposition	Newness (14.3%) ^a Performance (14.3%) Customization (0) Satisfaction with quality (57.1%) Price (42.9%) Cost reduction (42.9%) Risk reduction (14.3%) Accessibility (28.6%) Convenience/usability (28.6%) Brand/status (14.3%)	Newness (25%) Performance (37.5%) Customization (50%) Satisfaction with quality (62.5%) Price (37.5%) Cost reduction (62.5%) Risk reduction (50%) Accessibility (25%) Convenience/usability (25%) Brand/status (0)
Customer channels	Direct sale – sales force (85.7%) Direct sale – web sales (28.6%) Indirect sale – partner stores (14.3%) Indirect sale – wholesaler (14.3%)	Direct sale – sales force (87.5%) Direct sale – web sales (37.5%) Indirect sale – partner stores (12.5%) Indirect sale – wholesaler (25%)
Customer relationship	Personal assistance (57.1%) Dedicated personal assistance (57.1%) Communities (14.3%) Automated services (0) Co-creation (14.3%)	Personal assistance (62.5%) Dedicated personal assistance (62.5%) Communities (0) Automated services (12.5%) Co-creation (25%)
Key activities	Designing (14.3%) Making and delivering the product (71.2%) Problem solving (57.1%) Platform/network (14.3%)	Designing (50%) Making and delivering the product (50%) Problem solving (62.5%) Platform/network (0)
Key resources	Physical assets (28.6%) Intellectual resources (42.9%) Human resources (57.1%) Financial assets (28.6%)	Physical assets (25%) Intellectual resources (75%) Human resources (75%) Financial assets (0)
Types of partnership	Strategic alliances between non-competitors (28.6%) Coopetition: strategic partnerships between competitors (14.3%) Buyer-supplier relationships to assure reliable supplies (85.7%)	Strategic alliances between non-competitors (12.5%) Coopetition: strategic partnerships between competitors (12.5%) Buyer-supplier relationships to assure reliable supplies (87.5%)
Cost structure (X, Y) where: X – average weighted costs Y – standard deviation	Cost of system maintenance (4.00, 1.20) Materials and resources costs (5.43, 1.05) Labor costs (4.29, 1.39) External services costs (3.57, 1.18) Other operational costs (2.43, 0.73) CAPEX (1.29, 0.70)	Cost of system maintenance (2.38, 1.32) Materials and resources costs (5.57, 0.73) Labor costs (3.43, 1.59) External services costs (3.71, 1.28) Other operational costs (3.14, 1.55) CAPEX (2.57, 1.05)

^a The values in brackets show the percentage number of respondents who selected this option.

Source: own calculation.

Results of research

Although the sample was small and unrepresentative, a difference in the BM can be observed if the energy companies are divided according to key consumers. Two consumer segments were specified: households (B2C), industrial and services (B2B). Both of them deliver satisfaction with **quality as a proposal of value**, but the companies focused on B2B consumers also deliver **cost reduction as value proposition**. A less important value proposition in both segments is brand. In both segments, direct sale via sales forces is the most popular customer channel in the BM. Web sales is ranked second, but this kind of customer channel is more popular in B2B segments than in B2C.

Taking into consideration the customer relationship in the BM, personal assistance and dedicated personal assistance are indicated most frequently in both segments. A completely different situation is related to key activities in both segments, because making and delivering products are the most important activities in B2C segments, whereas in the B2B segments it is problem solving. Human resources are the most significant key sources in both segments, but, additionally, intellectual resources are important only in the B2B segments. The buyer-supplier relationships to assure reliable supplies are the most important kind of partnership in both segments. However, while the materials and resources costs have the greatest share of total costs in both segments, it does not seem surprising that the share of costs is different in both segments. In the B2C segment, the subsequent costs are labor costs, costs of system maintenance, external services costs and other operational costs. While in the B2B segment external services costs are ranked second, and the next are labor costs, other operational costs, and system maintenance costs. For both segments, CAPEX is the smallest part of total costs.

It came as a surprise to learn that the energy companies indicated that new business contacts and joint ventures are the most highly expected benefits to come from cooperation networks. **Conclusions**

In the paper, the authors focused on customer-side BMs among micro and small enterprises. The majority of the respondents operating in the energy sector are not innovation enterprises; only 33.3% of them create or deploy innovations. Therefore, the results are unsurprising. The authors obtained the classical business model where (1) the value proposition is satisfaction with quality, price, cost and risk reduction; (2) the revenue stream is selling a product or service; (3) the communication channel with customers is direct sale by sales force; (4) the method for maintaining their customer relationships is personal assistance and dedicated personal assistance; (5) the most important aspects are human and intellectual resources; (6) the key activities are making and delivering the product and problem solving; (7) the key type of partnership is the buyer-supplier relationship to ensure reliable supplies.

The authors indicated certain differences between two BMs for two customer segments. In the case of the value proposition, the BM for B2B consumers, unlike B2C consumers, focused on cost and risk reduction, and customization. In the case of key resources, the BM for B2B consumers, in contrast to B2C consumers, is based on intellectual resources. The most important activity in the BM for B2C consumers is making and delivering the products – in contrast to the BM for the B2B segments, where it is problem solving.

An interesting result was that human resources are perceived as significant despite the share of labor costs being at a medium level. In the case of costs, CAPEX has the smallest share of total costs, which could be related to the low level of innovation among the respondents.

The greatest problem was the small sample size for the majority of the variables. The insignificant number of observations resulted in a lack of statistical analysis. The analysis here should be seen as an introduction to further research. The authors are aware that the research will have to be repeated in a more extensive form, and suggest that the survey should be conducted by means of direct interviews. This work will be continued.

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Abstract

The initial identification of new business models in micro- and medium-sized energy enterprises is the aim of this paper. Based on the literature review, different definitions of business models were presented and a range of research conducted by other authors focusing on the business models in the energy sector was shortly described. The state of the art allows to identify a research gap suggesting that this type of companies has not yet been studied. Presented results of the research were addressed to micro- and medium-sized energy enterprises producing or delivering services connected with e.g. energy efficiency. The research was conducted with the use of a direct questionnaire on 30 respondents in November 2019. It was identified that the business models of these enterprises are classical. Two types of models were distinguished i.e. for companies whose key customers are households (B2C model) and business (B2B model).

Keywords: business model, new business model, business model canvas, energy sector

Challenges of international market selection – the perspective of Mexican and Brazilian multilatinas

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Introduction

In the last decade, a different breed of challenger businesses and brands started to be seen on the world stage. New multinational companies (MNCs) began to emerge not from the United States, Europe or Japan, but from emerging countries such as China, Russia, Turkey, Brazil, and Mexico¹. While emerging multinational companies (EMNCs) from Asia have been researched by many authors and institutions, Latin American multinationals have not been deeply investigated². The focus on emerging multinational enterprises (MNEs) from emerging countries into a host country belonging to the same income group, with some similar cultural characteristics, although geographically distant, is potentially enlightening for the understanding of the internationalization process in the new

1 A. Chattopadhyay, R. Batra, A. Ozsomer, *The New Emerging Market Multinationals – Four Strategies for Disrupting Markets and Building Brands*, McGraw-Hill Education, New York 2012.

2 R.V. Aguilera et al., *Multilatinas and the internationalization of Latin American firms*, “Journal of World Business” 2017, vol. 52(4), pp. 447–460.

millennium. Therefore, those companies are perceived as an interesting subset of emerging market multinationals. The current theories suggest that emerging market multinationals may behave differently from multinationals from developed markets³. However, a great deal of the emerging market MNE research has focused on firms from China, which is a vastly different context. As indicated by Guillen and Garcia-Canal⁴, the motives for vertical investments are quite easily understood. However, the horizontal ones are harder to explain mainly because of the intangible assets that are required and that are not possessed by the companies representing the group of emerging countries (or at least were of different type than those possessed by enterprises from rich economies). While most of the research on international business is based in the headquarters of MNEs located mostly in rich countries, only a few attempts have been made at looking at the subsidiaries and the recipient countries. That is the research gap we want to fulfill using the CAGE framework.

Latin American multinationals were denominated “Multilatinas” by Cuervo-Cazurra⁵ and described as companies that were born in the Americas, in countries previously colonized by Portugal, Spain or France, and with added-value operations abroad. This paper will focus on the Mexican and Brazilian Multilatinas, since they represent the two largest economies in Latin America. More than half of the Multilatinas from the America Economia Top 100 ranking from 2017 are from Brazil and Mexico, which has an impact on the value of their total sales⁶. This research will study the internationalization patterns of 31 Multilatinas companies from Brazil and 26 from Mexico that belong to the ranking mentioned.

According to Casanova et al.⁷, Multilatinas expand first into neighbouring countries and afterwards to other locations on other continents. However, the reasons behind this are not clear. This research aims to explore the process of market selection expansion of Mexican and Brazilian Multilatinas. We will try to understand why these multinationals expand into bordering locations (e.g. the United States and Central American countries in the case of Mexican Multilatinas, and South American countries for Brazilian Multilatinas) at the beginning of their expansion

3 M. Guillén, E. García-Canal, *The American Model of the Multinational Firm and the 'New' Multinationals from Emerging Economies*, “Academy of Management Perspectives” 2009, vol. 23(2), pp. 23–35.

4 *Ibidem*.

5 A. Cuervo-Cazurra, *Multilatinas*, “Universia Business Review” 2010, no. 25, pp. 14–33.

6 America Economia, *Rankings*, 2017, <https://www.americaeconomia.com/rankings> (accessed: 1.02.2020).

7 L. Casanova et al., *From Multilatinas to Global Latinas: The New Latin American Multinationals*, IDB Working Paper Series, 2009, pp. 4–234.

into foreign markets and which external factors contribute to their market selection. This means that among all the internationalisation decisions, we will only focus on the market selection.

Literature review

Multilatinas are a specific case of EMNC – “companies born in the Americas, in a country previously colonized by Portugal, Spain or France and have added value operations abroad”⁸. As indicated by Guillén and García-Canal⁹, it is worth investigating that type of companies, as their conditions for development were totally different than those used by enterprises originating at rich economies. Most authors have defined Multilatinas as Latin American companies with operations in two or more countries.

One of Casanova’s¹⁰ findings was that Multilatinas first expand to their “natural markets”, such as neighbouring Latin American countries, or the United States for Mexican companies, as Hispanic immigrants have been a crucial market for Multilatinas. This goes in line with Johanson and Vahlne¹¹ Uppsala model of internationalization in an incremental and gradual manner.

Before expanding to new geographies, many Mexican and Brazilian Multilatinas were small, local family-owned businesses, while others due to governmental intervention were state-owned monopolies. Protectionist policies from the Brazilian and Mexican governments allowed Multilatinas to retain their market share and prevent foreign companies from competing with them in their local markets. Due to the size of the Brazilian and Mexican public sectors, these countries generated several state-owned Multilatinas. Unlike their European counterparts, investments, employment and sales are deeply anchored to the Brazilian and Mexican state legacy, which permitted very profitable businesses¹². The strong leadership of Multilatinas and their willingness to take risks were very important, first to their natural markets (the United States and Central America for Mexican companies and South America for Brazilian companies) and then to more distant geographies such as Europe

8 A. Cuervo-Cazurra, *Multilatinas*, p. 16.

9 M. Guillén, E. García-Canal, *The American Model...*

10 L. Casanova, *Global Latinas: Latin America's Emerging Multinationals*, Palgrave Macmillan, London 2009.

11 J. Johanson, J. Vahlne, *The Internationalization Process of a Firm – a Model of Knowledge, Foreign and Increasing Market Commitments*, “Journal of International Business Studies” 1977, vol. 8(1), pp. 23–32.

12 L. Casanova et al., *From Multilatinas to Global Latinas...*

and Asia¹³. During that period the cost of capital fell as Multilatinas started acquiring other companies, and undertaking mergers and joint ventures with strategic partners from the markets they wanted to expand to¹⁴. Today Multilatinas are global players, but most Multilatinas still get their revenues from their home countries¹⁵.

Brazilian and Mexican Multilatinas differ from most EMNCs because their revenues derive mostly from the export of resource products, such as textiles, mechanical parts or agricultural goods. Also, construction companies were heavily financed by the state, backed many times by state-owned resource companies, such as Petrobras and VALE (a mining company that was privatized in the 1990s) in Brazil and PEMEX in Mexico¹⁶.

To understand the phenomenon of international expansion of Multilatinas, it is worth to investigate the push and pull expansion factors as proposed by Santiso¹⁷. Some authors argue that, companies internationalize due to internal factors in their home markets¹⁸, namely due to conditions such as impositions by the local government, lack of demand for their products or high market concentration. According to Hutchinson and Fleck¹⁹, pull motives make enterprises select markets abroad because of international influences; these factors are the result of policies from other countries to attract investment. Competitive pressures in Mexico and Brazil, combined with pull factors from international markets, such as sales diversification, lower labour costs in neighbouring Latin American countries and the export of resources and capabilities, meant new production facilities were some of the biggest drivers for internationalization²⁰. Push factors such as production costs, government policies,

13 L. Casanova, *Global Latinas...*; A. Cuervo-Cazurra, *The multinationalization of developing country MNEs: The case of multilatinas*, "Journal of International Management" 2008, vol. 14(2), pp. 138–154.

14 J. Santiso, *The emergence of Latin multinationals*, "Cepal Review" 2008, no. 95, pp. 7–30.

15 J. Castro Olaya, I. Cuéter, *Internationalization Patterns of Multilatinas*, "AD-Minister" 2012, no. 21, pp. 33–54; A. Cuervo-Cazurra, *Liberalización Económica y Multilatinas*, "Globalization, Competitiveness and Governability" 2007, no. 1, pp. 66–86; R. Rivera, R. Soto, *Empresas Multilatinas: Caracterización y Examen de Casos de Interés*, 2010, http://www.tesis.uchile.cl/tesis/uchile/2010/ec-rivera_ra/pdf/Amont/ec-rivera_ra.pdf (accessed: 18.11.2019).

16 R.V. Aguilera et al., *Multilatinas...*

17 J. Santiso, *The emergence...*

18 A. Treadgold, *Retailing Without Frontiers*, "Retail and Distribution Management" 1988, vol. 16(6), pp. 8–12.

19 K. Hutchinson, E. Fleck, *An investigation into the initial barriers to internationalization Evidence from small UK retailers*, "Journal of Small Business and Enterprise Development" 2013, vol. 16(4), pp. 544–568.

20 M. Morales, *Liderazgos latinoamericanos: ALBA-TCP y Unasur como opciones de la integración regional*, "Confinde de Relaciones Internacionales y Ciencia Política" 2013, no. 9, pp. 37–66.

lack of resources and the increase in local production costs in Mexico and Brazil were also responsible for Multilatinas' expansion to other markets²¹. Additionally, the decreasing cost of capital enabled Mexican and Brazilian Multilatinas to obtain financing at lower costs, which allowed more acquisitions abroad²². In fact, the reasons for Mexican and Brazilian Multilatinas' internationalization vary. During the 1990s the economic liberalization was an important pull factor. The macroeconomic environment allowed Mexican and Brazilian Multilatinas to internationalize to diversify their operational risk, because the local Brazilian and Mexican economies were unstable at the time. The creation of the North American Free Trade Agreement (NAFTA) allowed Mexican Multilatinas to invest easily in the United States and Canada²³.

Research design

To investigate the research gap defined, a CAGE framework was used. As mentioned by O'Farrell, Wood, and Zheng²⁴, market selection research is essential for the outcome of an expansion to a new market and one of the tools useful in that process is CAGE model. The CAGE framework measures the Cultural, Administrative, Geographical and Economic distance between two countries²⁵ and was introduced in order to address a company's decision-making process when developing cross-border strategies, which measures the distance between two countries taking into account Cultural, Administrative, Geographical, and Economic criteria. The distinction between bilateral and unilateral measures is also made. Bilateral measures relate to the CAGE differences between two or more countries, while unilateral describes only the characteristics of one country and do not relate that country to others. The reason for this distinction is the fact that other frameworks focus on the difference between countries according to unilateral factors, which goes in line with push and pull factors, previously mentioned.

Cultural distance is the different languages, ethnicities or social networks among people in a community, religion or national work system, or the values, norms and dispositions of a society. The characteristics of a product are different according to the country, because of the different standards for electrical goods, such

21 United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2016 – Investor nationality: Policy challenges*, United Nations Publication, 2016, https://unctad.org/en/PublicationsLibrary/wir2016_en.pdf (accessed: 5.12.2019).

22 J. Santiso, *The emergence...*

23 J. Castro Olaya, I. Cuéter, *Internationalization...*

24 P. O'Farrell, P. Wood, J. Zheng, *Internationalization by Business Service SMEs: An Inter-Industry Analysis*, "International Small Business Journal" 2015, vol. 16(2), pp. 109–128.

25 P. Ghemawat, *Distance Still Matters*, "Harvard Business Review" 2001, no. 79, pp. 137–147.

as household appliances, or different packaging²⁶. **Administrative criteria** mention the lack or existence of colonial ties between countries, the existence or non-existence of a regional trading bloc such as the European Union, NAFTA or MERCOSUL, or the differences in terms of legal systems or political hostility between the country of origin and the country the company wants to expand into²⁷. Being part of a closed economy or a home bias towards investment makes individuals and companies invest more in their own country. Products or services affected by administrative criteria are those with a high involvement of the government, including producers of necessity goods, such as electricity, discoverers of natural resources, such as iron ore, oil or natural gas, agricultural companies or crucial companies for national security, such as telecommunications companies²⁸.

Geographical criteria form another dimension described in the CAGE framework. The distance between countries, the difference in time zones between countries and the existence of shared borders are very relevant and facilitate, or not, the occurrence of trade between two or more countries. Unilaterally, if a country is landlocked this will have a negative influence on trade, as will poor internet accessibility or weak transportation links with other geographies²⁹. Perishable or fragile products as fruit, tiles or glass, financial services that require good communication and connectivity or the transportation of goods such as cement that require extensive logistics are greatly affected by geographical distance³⁰.

The economic criteria described by Ghemawat³¹ mention the difference in resources and the available infrastructure in two or more countries and the size and evolution of their gross domestic product (GDP) and GDP per capita. The economic distance between two countries also shows the differences in the cost and quality of the resources available (i.e. natural, human, financial and information resources) and therefore affects the workforce and other company costs³².

This study will use a case research approach, considering that we are trying to understand if a specified framework applies to Multilatinas from Brazil and

26 *Ibidem*.

27 P. Ghemawat, *Differences Across Countries: The CAGE Distance Framework. Redefining global strategy: crossing borders in a world where differences still matter*, Harvard Business School, Boston 2007.

28 P. Ghemawat, *The globalization of business education: through the lens of semiglobalization*, "Journal of Management Development" 2008, vol. 27(4), pp. 391–414.

29 P. Ghemawat, S. Altman, *Geographic Distance and Regionalization*, [in:] P. Ghemawat (ed.), *The Laws of Globalization and Business Applications*, Cambridge University Press, Cambridge 2016, pp. 321–357.

30 P. Ghemawat, *Differences Across Countries...*

31 P. Ghemawat, *Distance...*

32 P. Ghemawat, *Differences Across Countries...*

Mexico. Available studies in these two types of Multilatinas will be used along with secondary data derived from companies from those countries: "Secondary data can include any data that are examined to answer a research question other than the question(s) for which the data were initially collected"³³. Statistical information about a number of organizations or geography is also considered as a type of secondary data³⁴. Using the results from the America Economia Top 100 ranking, it is possible to assess where Mexican and Brazilian Multilatinas expanded and relate that to the literature and data reports previously investigated for the research, in order to deduce possible reasons for the expansion into certain locations instead of others. The computation of the CAGE framework using the CAGE comparator developed by Ghemawat³⁵ will permit us to see which countries have the lowest CAGE distance to Brazil and to Mexico.

Findings and discussion

When expanding to new markets, companies have two different approaches. According to Bradley³⁶, international market behaviour can be systematic or opportunistic. Brazilian and Mexican Multilatinas expand using these two approaches.

The opportunistic approach is when companies grasp an opportunity in a foreign market. This selection occurs following a stimulus, like a request for prices, product information or media information³⁷, and has been made by Latin American companies since their existence. They have been opportunistic buyers of industrial assets when many foreign MNCs withdrew from Central and South America because of unstable political and economic circumstances, and Multilatinas took that chance to expand their market position. When using this approach the managers of Multilatinas already have experience in the selection of international markets and networking plays a vital role. The higher the experience of the manager in internationalization, the higher the chance of using an opportunistic approach³⁸.

The systematic approach happens when there is a method or logical process of choosing a new market. Systematicity is a way of market planning to accomplish

33 T.P. Vartanian, *Secondary Data Analysis*, Oxford University Press, New York 2010, p. 3.

34 S. Boslaugh, *Secondary Data Sources for Public Health: A Practical Guide*, Cambridge University Press, New York 2007.

35 P. Ghemawat, *Differences Across Countries...*

36 F. Bradley, *International Marketing Strategy*, Prentice Hall, Harlow 1991.

37 *Ibidem*.

38 K. Hutchinson et al., *Internationalization Motives and Facilitating Factors: Qualitative Evidence from Smaller Specialist Retailers*, "Journal of International Marketing" 2007, vol. 15(3), pp. 96-122.

the company’s marketing goals³⁹. Multilatinas investigate the most appropriate markets as well the industry and the firm’s sales potential in a region, taking into account the company’s reality and objectives, according to Hutchinson and Fleck⁴⁰.

The conceptual framework outlined in Table 1 describes the CAGE criteria and how they are related to the international market selection process. It illustrates whether Mexican and Brazilian Multilatinas are indeed affected by the criteria described by CAGE approach.

Table 1. Characteristics from Brazil and Mexico that allowed or made difficult the expansion to other markets

Brazil	Mexico
Cultural criteria	
• Portuguese speaking country with the largest population in the world • The only country that speaks Portuguese in South America Former colony ties with Portugal and former Portuguese colonies • High diversity of ethnicities in Brazil allows companies to offer a diverse range of products and services all around the world	• People speak Spanish as in most of Latin America • Former colony ties with Spain and other former Spanish colonies • There are many Mexican and of Mexican origin living in the United States • Mexico is a predominantly Catholic country • Spanish speaking country with the largest population
Administrative criteria	
• High levels of corruption and government influence • High rates of crime • Belongs to Mercosul • High tariffs for imports of certain goods and services • Ranked 125th on the Easiness to do Business ranking	• High levels of corruption and government influence • High tariffs for imports of certain goods and services • Belongs to NAFTA • High rates of crime • Ranked 49th on the Easiness to do Business Ranking
Geographical criteria	
• Biggest Country in Latin America • Borders most South American countries and has access to the Atlantic Ocean • The remoteness of Amazon Forest difficult transportation to many border countries • Decreasing of commodity prices have been damaging the Brazilian Economy	• 3rd biggest country in Latin America in terms of geographical size • Borders the United States, Belize and Guatemala • Access to the Caribbean Sea and the Pacific Ocean • Geographically close to most Central American countries, the United States and Canada • The decrease in commodity prices has been damaging the Mexican Economy

39 F. Bradley, *International Marketing...*

40 K. Hutchinson, E. Fleck, *An investigation...*

Brazil	Mexico
Economic criteria	
• Biggest GDP in Latin America • Very rich in natural resources as oil, copper, gold and silver • Low Income per Capita • The huge gap between low and high-income citizens • The government has been privatizing many Brazilian companies • Brazil is the country with the highest number of Multilatinas	• 2nd Biggest GDP in Latin America • Low Income per capita, but higher than most central American countries & the Caribbean • Many Mexican companies have been privatized by the government • Mexico country with the highest number of Multilatinas after Brazil

Source: own work.

Cultural distance affects the preference for a product or service, but it affects it differently according to the type of good or service. For example, cultural distance matters more when products have high linguistic content (TV programs) or have high importance for cultural identity, as traditional dishes from a certain country or region⁴¹. Companies start their internationalization by entering markets they comfortably comprehend better, and there they will sense better opportunities because their perceived market uncertainty is lower⁴². Also, cultural similarities generate better marketing for companies.

For Casanova⁴³, “natural markets” have common historical links and languages, as well as geographical proximity. Multilatinas expand to bordering countries because of the same language and a similar culture, according to Cuervo-Cazurra⁴⁴. Latin America has been a natural market for Latin American companies that opt to expand to neighbouring countries, or even Mexican companies expanding to the United States due to the Hispanic population living there. The US market is a place where Mexican companies can deal with the familiarity of consumer tastes. According to Frankel and Rose⁴⁵, countries that share the same language have 200% more trade than others that do not have a common language. Multilatinas started competing in markets with a linguistic and cultural affinity as a way to test out the process of internationalization⁴⁶.

41 P. Ghemawat, *Distance...*

42 E. Brewer, *On Lending to Small Firms*, “Journal of Small Business Management” 2007, vol. 45(1), pp. 42–46.

43 L. Casanova, *Global Latinas...*

44 A. Cuervo-Cazurra, *Multilatinas*.

45 J. Frankel, A. Rose, *Estimating the Effect of Currency Unions on Trade and Output*, “NBER Working Paper Series” 2000, no. 3, pp. 1–51.

46 L. Casanova et al., *From Multilatinas to Global Latinas...*

Analysing the results from the Top 100 America Economia ranking for 2017, it is possible to identify that Mexican companies have operations in regions whose countries speak the same language, Spanish. That is, 88% of Mexican Multilatinas from the ranking have expanded to South America (Brazil not included), 73% to Central America and the Caribbean, and 81% to the United States, a country with a huge Hispanic community that shares a border with Mexico. The language's influence in Brazil is not perceivable in Latin America, since it is the only Latin American country where people speak Portuguese and not Spanish. Mexico also shares the same colonizer, Spain, as most countries from Central America, the Caribbean and South America, and it could be the reason for a high number of Mexican Multilatinas in these areas. According to Frankel and Rose⁴⁷, trade between two countries with the same colonizer is 190% higher.

Mexican and Brazilian Multilatinas expand less to regions where a common language and any colony/colonizer relationships do not exist, such as the Asia Pacific, West and Central Asia and Oceania. Mexican Multilatinas do not expand much to Africa – only 8% while 35% of Brazilian Multilatinas choose that continent. This might be happening because African countries such as Angola, Mozambique, S. Tomé and Príncipe and Guinea-Bissau speak Portuguese and were also former colonies of the Portuguese Empire.

A small percentage of Brazilian Multilatinas expand to Central America and the Caribbean (around 19% against 73% of Mexican Multilatinas in that region) is the fact that the cultural distance between Mexico and Central America and the Caribbean is smaller than between Brazil and Central America and the Caribbean. Brazil was colonized by the Portuguese, while Central America and the Caribbean were colonized by the English, French and Spanish, so the language is different and they do not have former colonial ties. The language might not be the strongest factor in South America, as Brazilian Multilatinas are more present in countries where Spanish is spoken, with 100%, contrasting with Mexican Multilatinas, with 88%⁴⁸. Religion, social norms and beliefs are similar throughout Latin America, but are very different when considering other geographical locations such as West and Central Asia, where the main religion is Islam, or the Asia Pacific, where people have a different moral code than in Latin America.

When analysing the **administrative criteria**, it is worth mentioning that companies from former colonizers are ten times more likely to trade with companies from their colonies⁴⁹. This fact can explain the high percentage of Brazilian Multilatinas

47 J. Frankel, A. Rose, *Estimating the Effect of Currency Unions...*

48 America Economia, *Top 100 Ranking 2016*, 2016, <https://rankings.americaeconomia.com/2016/multilatinas/> (accessed: 20.11.2019).

49 P. Ghemawat, *Distance...*

that have operations in Europe (92%), as Brazil was a former Portuguese colony. Mexico was a former Spanish colony, but the percentage of Mexican Multilatinas in Europe is much lower: around 54%. So the colony-colonizer relationship factor is not always a rule. According to the ranking presented by World Bank⁵⁰, Brazil and Mexico are not very well ranked in 2018, compared to New Zealand (1st), the United States (6th) or some Asian Tigers such as Hong Kong (5th), South Korea (4th) and Singapore (2nd). Mexico occupies the 50th position and is the highest-placed Latin American country, while Brazil is in 125th place out of 191 countries. It is worth mentioning that the creation of barriers, nontariff barriers, quotas or embargoes by Latin American governments from countries such as Brazil, Argentina, Cuba, Colombia and Venezuela has not been a problem for the creation of successful Multilatinas and their expansion into other Latin American countries⁵¹. The high ease of doing business in the United States, as well as in most European countries, might be one of the reasons why Brazilian and Mexican Multilatinas have expanded there.

Many Asia Pacific countries have a very good classification in the Ease to do Business ranking, and therefore it could explain the high percentage of Brazilian Multilatinas in the Asia Pacific (69%). The highest number of people of Japanese origin outside Japan is in Brazil⁵², even if the two countries are very far from each other geographically and the cultural distance between its people is very low (since language, culture, food are very different). This factor might have influenced Brazilian companies' to expand into Japan. Brazil belongs to the BRIC grouping, as does China, and they have political and economic ties⁵³.

The **geographical** distance influences the communication and transportation costs, especially when Multilatinas have to deliver bulky goods to other locations, or need a high degree of coordination between employees. The further someone is from a country, the harder it is to do business there⁵⁴. But distance is also about accessibility; access to the ocean, for example, is a way of boosting trade between countries. If a country has a common border with another one, the trade between those countries is expected to be 80% higher. The same way, two countries

50 World Bank, *Ease of Doing Business rankings*, <http://www.doingbusiness.org/rankings> (accessed: 5.12.2019).

51 ECLAC U.N., *Statistical Yearbook for Latin America and the Caribbean*, 2007, <https://www.cepal.org/en/publications/922-anuario-estadistico-america-latina-caribe-2007-statistical-yearbook-latin-america> (accessed: 19.09.2019).

52 Central Intelligence Agency, *CIA World Fact Book*, 2017, <https://www.cia.gov/library/publications/resources/the-world-factbook/index.html> (accessed: 20.11.2019).

53 United Nations Conference on Trade and Development (UNCTAD), *World Investment Report...*

54 P. Ghemawat, *Distance...*

with access to the ocean see a 50% increase in trade among them⁵⁵. The transportation and communications infrastructures between countries are also important⁵⁶ and contribute for the explanation of some expansion patterns.

All Brazilian companies from the ranking are present in the rest of South America, but that does not happen with Mexican companies, 88% of whom are in the South American region (Brazil not included). Probably due to higher geographical proximity, Brazilian companies are more attracted to South American countries than Mexican ones, as Brazil shares a border with all South American countries except Ecuador and Chile. Its border is 15,719 km long and the Brazilian territory occupies 48% of South America⁵⁷. The only major obstacle that might hinder the connection between Brazil and other South American countries, such as Venezuela, Colombia and Peru, is the immense Amazon rainforest. Mexico borders the United States, Belize and Guatemala, but is geographically close to most Central American countries through the Caribbean Sea.

It is possible to conclude that Brazilian and Mexican multinationals have more operations in regions from the American continent than regions on other continents. The only exception is the low presence of Brazilian Multilatinas in Central America and the Caribbean. Mexican Multilatinas expand more to South American countries (excluding Brazil) than to Central America and the Caribbean, meaning that geographical distance criteria are not the most important, as no border is shared between Mexico and South America.

According to the Boston Consulting Group⁵⁸, Brazilian Multilatinas are more focused on South American countries. On the other hand, Mexican Multilatinas are more concentrated in the United States, due to geographical proximity and other factors. But in the Top 100 America Economia ranking from 2016, which only considers 100 Multilatinas, Brazilian companies are more present in the United States than Mexican ones, so geographical criteria are not, again, the main explanation for this market selection.

According to Frankel and Rose⁵⁹, there are **economic** factors that boost trade between countries. Those with weak infrastructure can damage cross-border economic activity⁶⁰, which could explain the low percentage of Mexican and Brazilian multinationals with operations in Africa (8% and 35%, respectively) and the preference for the European continent and even for countries in the Asia Pacific.

55 J. Frankel, A. Rose, *Estimating the Effect of Currency Unions...*

56 P. Ghemawat, *Distance...*

57 Central Intelligence Agency, *CIA World Fact Book*.

58 Boston Consulting Group, *The 2009 BCG Multilatinas*, Boston 2009.

59 J. Frankel, A. Rose, *Estimating the Effect of Currency Unions...*

60 P. Ghemawat, *Distance...*

Companies do not usually like investing in countries with high levels of corruption, which might deter Multilatinas from the African continent, where bribery and corruption are more evident. However that seems not to deter Multilatinas from investing in other Latin American countries⁶¹. Rich countries also trade more among themselves, as there is a positive correlation between GDP per capita and the international trade of a country. Poor countries also trade more with rich countries than with each other⁶², and in fact, not counting the Latin American region, Multilatinas have more operations in the United States and Europe compared to other regions around the world.

Using the CAGE comparator developed by Ghemawat⁶³, the distance between Mexico and other countries according to the CAGE distance for the commerce of merchandise was calculated. The same calculation was also done for Brazil. Most countries with the lowest CAGE distance to Mexico speak the same language (Spanish), have colonial ties (were part of the Spanish Empire) or belong to the same continent. The two countries with the lowest CAGE distance border Mexico (Guatemala and Belize). Only 8 of the first 25 countries with the lowest CAGE distance for exports of merchandise do not speak a different language to Mexico. In addition, the other two members of NAFTA (the United States and Canada) have a low CAGE distance with Mexico.

In case of Brazil, nine countries with the lowest CAGE distance share a border with Brazil, Chile in 10th place belongs to the same continent, and Portugal in 11th place shares the same language and has colonial ties with Brazil. Most countries with the lowest CAGE distance from Brazil speak the same language (Portuguese). Most countries (such as Portugal, Angola, and Mozambique) from the former Portuguese Empire are on the list of countries. All the first nine countries with the lowest CAGE distance from Brazil share a common border with the country. Also, the other members of MERCOSUL (Argentina, Paraguay, and Uruguay) are the countries with the lowest CAGE distance from Brazil.

Theoretical findings

The contribution of this paper is a conceptual analysis of the application of the CAGE framework, exploring external Cultural, Administrative, Geographical, and Economic factors Ghemawat⁶⁴. We tried to understand if that framework

61 United Nations Conference on Trade and Development (UNCTAD), *World Investment Report...*

62 P. Ghemawat, *Distance...*

63 P. Ghemawat, *Differences Across Countries...*

64 P. Ghemawat, *Distance...*

could be used to evaluate how its factors influence international market selection for Mexican and Brazilian Multilatinas. It is worth mentioning that Multilatinas are different to multinationals from the developed world and emerged later than those in Asian developing countries, such as South Korea, China and Taiwan. They are mostly family-owned conglomerates and many of them are or were state-owned. The research conducted, through secondary data analysis, made it possible to conclude that Multilatinas expanded mostly into bordering countries. CAGE criteria influence a Multilatina's expansion, as results from the CAGE framework for merchandise exports for Brazil and Mexico showed that countries with the lowest CAGE distance belong to the regions where Multilatinas expanded the most in general. Brazilian Multilatinas from the top 100 sample expanded more into the United States than the Mexican ones, which was one of the most surprising findings, even if the sample only has the largest Multilatinas in Latin America and does not consider the small and medium-sized companies from the region. Brazilian companies did not expand much into Central American countries and the Caribbean, even those with similar cultures, but different languages and a lack of economic interest could be a reason for this. Brazilian and Mexican multinationals have different expansion patterns. Brazilian Multilatinas are more predominant in Europe and in the Asia Pacific than Mexican. Mexican companies expand more to Central America and the Caribbean.

The CAGE characteristics of Brazil and Mexico have some differences, on one hand, but also some similarities, on another hand. Culturally speaking, Brazil and Mexico speak different languages and belong to different continents. Administratively, though, both countries experience high levels of corruption and rates of crime. Multilatinas from these countries also pay high tariffs for the import of goods and services. Geographically Brazil and Mexico belong to different continents and border different countries.

Thus, the main theoretical contribution of the study presented is the confirmation that CAGE framework assist in explaining the geographical pattern of international market selection decisions of Multilatinas and can be used as a predictor for other countries.

Limitations and further research

The research methodology only analysed secondary data and did not use other data-collection methods, which could have led to complementary findings⁶⁵. Additionally, this study's sample was based on only 100 Multilatinas from the America

65 S. Boslaugh, *Secondary Data Sources...*

Economia ranking from 2017. So it did not include all Multilatinas and no small and medium-sized companies from Latin America. The CAGE framework only showed the CAGE distance for the exports of merchandise, also limiting the research findings.

The process of market selection made by Multilatinas should be tested for a specific sector, to evaluate how CAGE factors influence Multilatinas' market selection. Different companies' size should also be considered. To this aim, interviews should also be performed as additional method of data collection. Another avenue of research would be investigating European countries to verify whether the same insights can be proposed.

The research presented provided contribution to the literature on recent trends in FDI and that could be further developed as suggested by Kyrkilis and Grujic⁶⁶. An interesting issue would also include investigating the usefulness of the other models described – i.e. Uppsala model of the internationalization process, for contemporary emerging MNEs which may range from more modern retailers to tech-based firms. It would be interesting to compare the findings with those presented in the study described, where the CAGE framework was investigated.

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66 D. Kyrkilis, N. Grujic, *Do National Borders Matter? Distance as FDI Determinant: The Case of Serbia*, [in:] S. Roukanas, P. Polychronidou, A. Karasavvoglou (eds), *The Political Economy of Development in Southeastern Europe. Contributions to Economics*, Springer, Cham 2018, pp. 35–50.

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Abstract

Multilatinas have become a phenomenon that has caught the attention of many authors and researchers around the world. This paper was developed to understand their international market selection process and the challenges they face. We hypothesized that these companies ground their international expansion on the basis of physical proximity. The CAGE framework developed by Ghemawat measures the distance between two countries according to Cultural, Administrative, Geographic and Economic criteria and was the main indicator for this research. The literature review allowed for the exploration of concepts related to Multilatinas' expansion, such as emerging market multinational companies management, internationalization process, market selection, and the CAGE framework. The systematic and opportunistic way of selecting markets were also studied in the development of a framework used to understand how managers from Mexican and Brazilian Multilatinas decide on market selection and which factors they take into account in that decision process. It was possible to verify that countries where Mexican and Brazilian Multilatinas expand are the ones with the lowest overall CAGE distance.

Keywords: Emerging Market Multinationals, Multilatinas, Market Selection Challenges, CAGE model

Dual mission of startups: defining and situating the concept

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Introduction

The dynamic development of new technologies and the emphasis on increasing innovation in the recent years are triggered by a growing interest of consumers and enterprises and lead to the increase of innovative entrepreneurship. Special attention is paid to young entities, testing their business models, known as startups.

On the other hand, over the last two decades, social entrepreneurship has been a field of study for scientists from a variety of disciplines, including non-profit, ethics, corporate social responsibility, entrepreneurship and strategy, among others¹, resulting in a rich set of publications written from various perspectives. Social business studies focus on combining business methods and positive social change goals and use entrepreneurial dynamics to create social value through social innovation.

It must be noted, that social entrepreneurship is a concept defined in many different ways by different scholars². The first approach representatives identify social entrepreneurship as not-for-profit initiatives in search of alternative funding strategies, or management schemes to create social value³. The second approach defines social entrepreneurship as a socially responsible practice of commercial businesses

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- 1 J.C. Short, T.W. Moss, G.T. Lumpkin, *Research in Social Entrepreneurship: Past Contributions and Future Opportunities*, "Strategic Entrepreneurship Journal" 2009, vol. 3(2), pp. 161–194.
 - 2 J.G. Dees, J. Elias, *The challenges of combining social and commercial enterprise*, "Business Ethics Quarterly" 1998, vol. 8(1), pp. 165–178.
 - 3 J. Austin, H. Stevenson, J. Wei-Skillern, *Social and commercial entrepreneurship: Same, different, or both?*, "Entrepreneurship: Theory & Practice" 2006, vol. 30, no. 1, pp. 1–22.

engaged in cross sector partnerships⁴, while the third group of researchers refers to social entrepreneurship as a means to alleviate social problems and catalyze social transformation⁵.

The growing interest in social motives of entrepreneurship on a global scale has been caused by economic, social and political changes over the past decades. Two types of changes affect the entrepreneurial approach: problems that call for innovative approaches, and developments which aim at problem solving⁶. Those two types of developments enhance the growth of interest in social startups, while the awareness of constantly growing wealth distribution inequality and growing ecological awareness and urgency to make changes are two important drivers of social startups. Alternative ways of dealing with social, economic, and environmental problems are the source of innovations created by social startups.

Therefore, it is interesting what is the potential of social enterprises to solve social changes using effective and innovative business tools. Especially startups, testing their business models, are a new field of study for exploiting opportunities of value creation by meeting social needs, stimulating social change, or creating new socially aware organizations. Authors find this problem to be a research gap and want to contribute to its understanding.

This paper studies existing definitions in pursuit of conceptual clarity. Its aim is to use the existing definitions of social entrepreneurship and corporate social responsibility and through them explain what is understood as a dual-mission startup or a startup with social mission. Based on a critical analysis of the literature, the authors want to solve a theoretical ambiguity. The presented paper will enable scholars in the field to better understand the concept and articulate knowledge and ideas.

Social entrepreneurship as shared value creation

A large area of study grouped under the name “social entrepreneurship” is defined as an activity or organization with social values and aims employing business concepts and tools in some form⁷. Social Entrepreneurship, which started as a niche concept three decades ago, has nowadays become a blueprint for corporate

4 J. Mair, I. Marti, *Social entrepreneurship research: a source of explanation, prediction, and delight*, “Journal of World Business” 2006, no. 41, pp. 36–44.

5 S.H. Alvord, L.D. Brown, C.W. Letts, *Social entrepreneurship and societal transformation an exploratory study*, “The Journal of Applied Behavioral Science” 2004, vol. 40(3), pp. 260–282.

6 A. Nicholls (ed.), *Social entrepreneurship: New models of sustainable social change*, Oxford University Press, Oxford 2006.

7 A. Grove, G.A. Berg (eds), *Social Business*, Springer-Verlag, Berlin – Heidelberg 2014.

development⁸. It crosses academic disciplines, and challenges traditional assumptions of economic and business development⁹. Social entrepreneurship research has developed also across social sciences in organization studies¹⁰, strategic management¹¹, entrepreneurship¹², business ethics¹³, and anthropology¹⁴.

To clarify the scope of social entrepreneurship, Dees¹⁵ points out key elements of social entrepreneurship as follows: adopting a mission to create and sustain social value, pursuing new opportunities to serve that mission, engaging in a process of continuous innovation, acting boldly without being limited by resources, and exhibiting heightened accountability. At the same time, a considerable part of academic research reached no agreement on the domain, boundaries, forms and meanings of social entrepreneurship¹⁶. Some of the definitions focus on the shared value creation specifically, while others argue that a maximization of social value creation distinguishes between social and traditional entrepreneurship¹⁷. Numerous definitions of social entrepreneurship underline the notion of primacy of social value creation over financial value creation. Haugh¹⁸ stated, that social entrepreneurship is a simultaneous pursuit of economic, social, and environmental goals by enterprising ventures.

- 8 M. Pirson, *Social Entrepreneurship – a blueprint for humane organizations?*, [in:] H. Spitzack et al. (eds), *Humanism in Business: Perspectives on the Development of a Responsible Business Society*, Cambridge University Press, Cambridge 2008, pp. 248–259; M. Porter, M. Kramer, *The Big Idea: Creating Shared Value*, “Harvard Business Review”, January – February 2011, no. 1, pp. 1–17.
- 9 P.A. Dacin, M.T. Dacin, M. Matear, *Social Entrepreneurship: Why We Don’t Need a Theory and How We Move Forward From Here*, “Academy of Management Perspectives” 2008, vol. 24(3), pp. 37–57; R. Dart, *The legitimacy of social enterprise*, “Nonprofit Management and Leadership” 2004, vol. 14(4), pp. 411–424; M.G. Grimes et al., *Studying the origins of social entrepreneurship: compassion and the role of embedded agency*, “Academy of Management Review” 2013, vol. 38, no. 3, pp. 460–463; T. Wry, J.G. York, *An identity-based approach to social enterprise*, “Academy of Management Review” 2017, vol. 42, no. 3, pp. 437–460.
- 10 J. Battilana, M. Lee, *Advancing research on hybrid organizing – Insights from the study of social enterprises*, “The Academy of Management Annals” 2014, vol. 8, no. 1, pp. 397–441.
- 11 S.A. Zahra, *The virtuous cycle of discovery and creation of entrepreneurial opportunities*, “Strategic Entrepreneurship Journal” 2008, vol. 2, no. 3, pp. 243–257.
- 12 J. Austin, H. Stevenson, J. Wei-Skillern, *Social and commercial entrepreneurship...*
- 13 E. Chell, L.J. Spence, F. Perrini, J.D. Harris, *Social entrepreneurship and business ethics: Does social equal ethical*, “Journal of Business Ethics” 2016, vol. 133, no. 4, pp. 619–625.
- 14 S. Smith-Nonini, *Inventing Eco-Cycle*, “Anthropology in Action” 2016, vol. 23, no. 1, pp. 14–21.
- 15 J.G. Dees, *The meaning of “Social Entrepreneurship”*, Draft Paper, 2001, https://centers.fuqua.duke.edu/case/wp-content/uploads/sites/7/2015/03/Article_Deess_MeaningofSocialEntrepreneurship_2001.pdf (accessed: 3.10.2020).
- 16 P.A. Dacin, M.T. Dacin, M. Matear, *Social Entrepreneurship...*; J. Mair, I. Marti, *Social entrepreneurship research...*
- 17 P.A. Dacin, M.T. Dacin, M. Matear, *Social Entrepreneurship...*
- 18 H. Haugh, *New strategies for a sustainable society: The growing contribution of social entrepreneurship*, “Business Ethics Quarterly” 2007, vol. 17(4), pp. 743–749.

Some researchers as Thompson and Doherty¹⁹ go even further, arguing that social entrepreneurship is a social value creation concept only and its organizational forms should exist in the non-profit domain, because any shared value creation ambition would compromise the legitimacy of the promoted social cause. On the other hand, Boschee and McClurg²⁰ claim that the difference between a social and a traditional enterprise is specifically identified in the primacy of social performance measures.

The concept of social entrepreneurship is also raised by Porter and Kramer²¹, who suggest that the purpose of the corporation needs to be redefined. They postulate that corporations should pursue shared value creation rather than pursuing solely financial value. They argue that managers should perceive their organization as an entity which is socially embedded and therefore to remain competitive and secure organizational longevity, they should actively pursue potential for value creation for all stakeholders. They believe that economic value can only be created in a sustainable way and with full engagement of stakeholders. Therefore, they are often discovering shared value opportunities much faster than established corporations, because they are not limited by the traditional business thinking²². Social entrepreneurs also try to create shared value by pursuing dual objectives²³.

Those dual identities, entrepreneurial and social, represented by social enterprises complement Albert and Whetten's²⁴ statement about company's utilitarian and normative identities²⁵. The first ones are a manifest of economic identity (rationality, revenue maximization, cost minimalisation), addressing customer service, staff expertise, product/service quality, and industry and market factors²⁶. On the other hand, a normative identity is found in companies using ideologies to create and

19 J. Thompson, B. Doherty, *The diverse world of social enterprise: A collection of social enterprise stories*, "International Journal of Social Economics" 2006, vol. 33(5/6), pp. 399–410.

20 J. Boschee, J. McClurg, *Toward a better understanding of social entrepreneurship: Some important distinctions*, SE-Alliance White Paper 2003.

21 M. Porter, M. Kramer, *The Big Idea*....

22 J. Elkington, P. Hartigan, *The power of unreasonable people: how social entrepreneurs create markets that change the world*, Harvard Business School Press, Boston 2008.

23 S.K. Alter, *Social Enterprise models and their mission and money relationships*, [in:] A. Nicholls (ed.), *Social Entrepreneurship – new models for sustainable social change*, Oxford University Press, Oxford 2006, pp. 205–232; M. Pirson, *Social Entrepreneurship*...; K. Rangan et al., *Business Solutions for the Global Poor: Creating Social and Economic Value*, John Wiley & Sons, Hoboken 2007.

24 S. Albert, D. Whetten, *Organizational identity*, "Research in Organizational Behavior" 1985, vol. 7, pp. 263–295.

25 T.W. Moss et al., *Dual Identities in Social Ventures: An Explanatory Study*, *Entrepreneurship Theory and Practice*, Baylor University, Waco 2010, pp. 1042–2587.

26 P. Foreman, D.A. Whetten, *Members' identification with multiple-identity organizations*, "Organization Science" 2002, no. 13, pp. 618–635.

control organizational patterns, where employees manifest high engagement and commitment²⁷. Company's success is therefore assessed by the degree to which the organization meets the needs of its identity²⁸. Foreman and Whetten²⁹ talk about family and artistic normative identities which encompass social relationships, community involvement, education and training, commitment to the organization's ideals, artistic prowess, aesthetic autonomy, and reputation³⁰.

The characteristics of a social entrepreneur

Most definitions describe social entrepreneurs as entrepreneurs with a social mission³¹. Dees³² was more idealistic when presented a view of social entrepreneurs as change agents in the social sector, which is in contrast with a pragmatic approach that presents social entrepreneurship as the generation of earned income by ventures in the pursuit of social outcomes³³. Though motivations standing behind social entrepreneurs are internal to the entrepreneur, they cannot be easily observed³⁴.

Social entrepreneurs are influenced by a community logic focused on community needs, development, prosperity, trust, cooperation, collaboration and value creation³⁵ as well as a market (or economic) logic associated with efficiency, competition, wealth accumulation, profit maximization, and value capture³⁶. Therefore,

27 S. Albert, D. Whetten, *Organizational...*

28 M.A. Glynn, *When cymbals become symbols: Conflict over organizational identity within a symphony orchestra*, "Organization Science" 2000, no. 11, pp. 285–298.

29 P. Foreman, D.A. Whetten, *Members' identification...*

30 T.W. Moss et al., *Dual Identities...*

31 F.M. Santos, *A positive theory of social entrepreneurship*, "Journal of Business Ethics" 2012, vol. 111(3), pp. 335–351.

32 G.J. Dees, *The meaning...*

33 F.M. Santos, *A positive theory...*

34 A. Groot, B. Dankbaar, *Does Social Innovation Require Social Entrepreneurship?*, "Technology Innovation Management Review" 2014, vol. 4, no. 12, pp. 17–26.

35 C. Marquis, M. Lounsbury, R. Greenwood, *Introduction: community as an institutional order and a type of organizing*, [in:] C. Marquis, M. Lounsbury, R. Greenwood (eds), *Communities and Organizations*, Emerald Group Publishing Limited, Bingley 2011, pp. ix–xxvii; T. Reay, P. Jaskiewicz, C. Hinings, *How family, business, and community logics shape family firm behavior and "rules of the game" in an organizational field*, "Family Business Review" 2015, vol. 28, pp. 292–311; A.C. Pache, F. Santos, *Inside the hybrid organization: selective coupling as a response to competing institutional logics*, "Academy of Management Journal" 2013, vol. 56, no. 4, pp. 972–1001; E. Garrow, Y. Hasenfeld, *Managing conflicting institutional logics: social service versus market*, [in:] B. Gidron, Y. Hasenfeld (eds), *Social Enterprises: An organizational perspective*, Palgrave/Macmillan, London 2012, pp. 121–143; F. Santos, *A positive theory...*

36 P.H. Thornton, W. Ocasio, M. Lounsbury, *The Institutional Logics Perspective: A New Approach to Culture, Structure and Process*, Oxford University Press, Oxford 2012; E.Y. Zhao,

social entrepreneurs manage existing tension caused by combining community and economic logics, and their activities are aimed at integrating competing logics³⁷.

Not only conflicting logics, but also received feedback differentiate social entrepreneurs from market entrepreneurs and non-profit actors. When market entities base on feedback from the marketplace (i.e., customer feedback), and non-profit organizations are informed by their beneficiaries, social entrepreneurs need to be informed by both – the marketplace and the beneficiaries³⁸. This means that in addition to trying to satisfy their beneficiaries, social entrepreneurs pursue financial viability by selling products or offering services and, therefore, their behaviors must be attuned to the profit and loss signals of the market³⁹. This emphasis on creating positive value through business mechanisms influences their communication processes and interactions with suppliers.

Social entrepreneurs wanting to communicate with their stakeholders, such as beneficiaries, employees, volunteers, and investors⁴⁰, need to create a complex and positive narrative explaining their mission and integrating their business and social meaning⁴¹. This means that their communication process must be concentrated on both financial and social welfare returns on investment⁴².

Corporate Social Responsibility

The trend towards making companies more socially responsible can be broadly observed in the late XX and the XXI century. Numerous researches have attempted to give an overview of the concept of corporate social responsibility⁴³. CSR has

M. Lounsbury, *An institutional logics approach to social entrepreneurship: market logic, religious diversity, and resource acquisition by microfinance organizations*, "Journal of Business Venturing" 2016, vol. 31, no. 6, pp. 643–662.

37 E.Y. Zhao, M. Lounsbury, *An institutional logics approach...*

38 P.T. Roundy, M. Bonnal, *The singularity of social entrepreneurship: Untangling its uniqueness and market function*, "The Journal of Entrepreneurship" 2017, vol. 26, no. 2, pp. 137–162.

39 A.R. Hall, *Mountains of disappointment: The failure of state-led development aid in Appalachia*, "The Journal of Private Enterprise" 2014, vol. 29(2), pp. 83–100.

40 A.K. Achleitner et al., *Unlocking the mystery: An introduction to social investment*, "Innovations: Technology, Governance, Globalization" 2011, vol. 6, no. 3, pp. 145–154.

41 P.T. Roundy, *The stories of social entrepreneurs: Narrative discourse and social venture resource acquisition*, "Journal of Research in Marketing and Entrepreneurship" 2014, vol. 16, no. 2, pp. 200–218.

42 P.T. Roundy, M. Bonnal, *The singularity of social entrepreneurship...*

43 A.B. Carroll, K.M. Shabana, *The business case for corporate social responsibility: A review of concepts, research and practice*, "International Journal of Management Reviews" 2010, vol. 12(1), pp. 85–105; A. Dahlsrud, *How corporate social responsibility is defined: An analysis of 37 definitions*, "Corporate Social Responsibility and Environmental Management" 2008, vol. 15(1), pp. 1–13;

an undeniable positive effect on both society and business, but it depends on the management and shareholders whether the company will get involved in social responsibility and to what extent. Although the primary goal of a company is to maximize profits, the primary mission should be acquiring financial independence by creating value for stakeholders⁴⁴. A true CSR strategy is envisioned to benefit all parties (business and society)⁴⁵, because not the maximization of profit, but profit sharing is the main objective of business⁴⁶.

CSR researchers debate whether corporate social responsibility strategy can be perceived in the same way as any other company strategy, but they agree that CSR is a higher level of a business strategy based on win-win cooperation with its environment. Social responsibility is associated to mission and competences of a company, but at the same time it can attract profit and value for investors⁴⁷, and create a balance between profitability and morality⁴⁸. CSR also enables to improve competitiveness through building strong relationship between companies and their stakeholders⁴⁹. In general, CSR is understood as building a strong connection between business decisions and ethical values, legal requirements, respecting stakeholders and protecting natural environment⁵⁰.

T.M. Devinney, *Is the Socially Responsible Corporation a Myth? The Good, the Bad, and the Ugly of Corporate Social Responsibility*, "Academy of Management Perspectives" 2009, vol. 23(2), pp. 44–56; I. Freeman, A. Hasnaoui, *The Meaning of Corporate Social Responsibility: The Vision of Four Nations*, "Journal of Business Ethics" 2011, vol. 100(3), pp. 419–443; K. Jefe, *An Overview of Corporate Social Responsibility*, "The International Journal Of Humanities & Social Studies" 2017, vol. 5, pp. 287–296; M.T. Khan et al., *Corporate Social Responsibility (CSR) – Definition, Concepts and Scope (A Review)*, "Universal Journal of Management and Social Sciences" 2012, vol. 2(7), pp. 41–52; D. Silberhorn, R.C. Warren, *Defining Corporate Social Responsibility: A View from Big Companies in Germany and the UK*, "European Business Review" 2007, vol. 19(5), pp. 352–372.

44 A. Grove, G.A. Berg (eds), *Social Business*.

45 K. Jefe, *An Overview...*

46 A. Sharma, R. Kiran, *Corporate Social Responsibility Initiatives of Major Companies of India with Focus on Health*, "Education and Environment. African Journal of Basic & Applied Sciences" 2012, vol. 4(3), pp. 95–105.

47 L. Bakos, *Decision-making and Managerial Behaviour Regarding Corporate Social Responsibility in the Case of Small and Middle-Sized Companies*, "Procedia-Social and Behavioral Sciences" 2014, no. 124, pp. 246–254; R. Kiran, A. Sharma, *Corporate Social Responsibility: A Corporate Strategy for New Business Opportunities*, "Journal of International Business Ethics" 2011, vol. 4(1), pp. 10–17.

48 M. Mozes, Z. Josman, E. Yaniv, *Corporate Social Responsibility Organizational Identification and Motivation*, "Social Responsibility Journal" 2011, vol. 7(2), pp. 310–325.

49 M. Battaglia et al., *Corporate Social Responsibility and Competitiveness within SMEs of the Fashion Industry: Evidence from Italy and France*, "Sustainability" 2014, vol. 6(2), pp. 872–889; A.B. Carroll, K.M. Shabana, *The business case...*

50 P. Buřa, M. Sady, *Think Globally, Act Locally – How International Corporations Adjust Their CSR Strategies to the Local Markets*, [in:] N. Delener, C. Schweikert (eds), *Shaping the next wave*

Even though the concept is concentrated on social performance, its primary motivation remains maximization of profits. Social entrepreneurship is therefore a higher level of social responsibility, where the social mission is the primary goal.

Dual mission startups

Although numerous academics attempt to describe the phenomenon of startups, there is still no consensus on its definition. Deloitte report *The diagnosis of the ecosystem of startups in Poland*⁵¹ defines startups as “undertakings conducted to manufacture new products or services in highly uncertain conditions, with a history of no more than 10 years”. Blank defined it as “a temporary organization in search of a scalable, repeatable, profitable business model”⁵². Ries understands it as “a human institution designed to create a new product or service under conditions of extreme uncertainty”⁵³. Crowne⁵⁴ sees a startup as a company with limited experience but seeing a market opportunity, operating with insufficient resources, and influenced by stakeholders (investors, customers, competitors). Glinka and Piaseczny⁵⁵ see a startup as a young or newly created firm which is determining and testing its business assumptions. Still, a very important factor differentiating a startup from a conventional company is an ambition to grow⁵⁶.

Startups with dual mission do not fall under the traditional definition of doing business – instead of merely providing financial benefits to stakeholders and implementing socially responsible practices in their operations, they are designed to solve social and ecological problems. The merit good that they aim for, is popularly defined as an activity or object that benefits society (e.g. providing education,

of globalization: using current trends to reconnect with markets and create value, GBATA, Huntington Station 2018, pp. 60–70.

51 Deloitte, *Raport: Diagnoza ekosystemu startupów w Polsce*, 2016, <https://www2.deloitte.com/pl/pl/pages/zarzadzania-procesami-i-strategiczne/articles/innowacje/startup-ankieta2016-2.html> (accessed: 7.10.2020).

52 S. Blank, B. Dorf, *The startup owner's manual: The step-by-step guide for building a great company*, BookBaby, Pescadero 2012.

53 E. Ries, *The lean startup: How today's entrepreneurs use continuous 40 innovation to create radically successful businesses*, Crown Books, New York 2011.

54 M. Crowne, *Why software product startups fail and what to do about it. Evolution of software product development in startup companies*, Engineering Management Conference, vol. 1, IEEE, Cambridge 2002.

55 B. Glinka, J. Piaseczny, *Tworzenie przedsiębiorstwa: szanse, realizacja, rozwój*, Wydawnictwa Uniwersytetu Warszawskiego, Warszawa 2015.

56 K. Rostek, A. Skala, *Differentiating Criteria and Segmentation of Polish Startup Companies*, “Problemy Zarządzania” 2017, vol. 15, no. 1(65), issue 1, pp. 192–208.

drinking water, access to healthcare). Just like in nonprofits, social startups are dissatisfied with *status quo* responses to problems usually encountered personally, whether in the family or in the community⁵⁷, therefore they are motivated to change the *status quo* using market economics⁵⁸. As part of their basic market activity, they contribute to solving the most important local and global challenges, showing a new face of business in the society – increasing value by improving the quality of life of citizens and the quality of the natural environment. In the era of global growing awareness of social and environmental problems, the proposed innovative social solutions of startups are attracting an increasing number of investors.

Rok uses another term to describe those kind of startups. In his report on dual mission Polish startups he refers to them as “positive impact startups” and defines them as “an economic activity, thanks to which – through innovation for sustainable development using technology and increasing the level of reliability and efficiency – people acting with passion in the name of the common good lead to a rapid increase in the value of the company/organization, the quality of people’s life and the environment within their sphere impacts”⁵⁹. This definition is a reflection how the authors of this paper perceive a dual mission startup.

Startups with a social mission imprinted in their DNA strive to achieve social goals. They have a chance to succeed only if their passion and vision are followed by a concrete business strategy and are fully accepted by the employees. The interaction between social mission and business model that will allow their survival and development.

Therefore, a question arises on how to measure the effects of social impact. In this case, product or service indicators, as well as implemented social change (actual contribution to reducing the given social problem) should be measured. Impact assessment can be measured from two perspectives: a direct impact through own activities, and indirect impact (i.e. cooperation with business and non-commercial partners in order to extent their impact). In both cases not only reducing negative impact, but primarily creating positive impact is the core value.

57 A. Guclu, G. Dees, B. Anderson, *The process of social entrepreneurship: Creating opportunities worthy of serious pursuit*, Center for the Advancement of Social Entrepreneurship, Fuqua School of Business, Durham 2002.

58 A. Katre, P. Salipante, *Start-up Social Ventures: Blending Fine-Grained Behaviors From Two Institutions for Entrepreneurial Success*, Baylor University, Waco 2012, p. 972.

59 A. Andrzejewska et al., *Startupy Pozytywnego Wpływu 2019*, Koźmiński Business Hub, Warszawa 2019, p. 17.

Legal forms of dual mission startups – the case of Poland

Both Spear⁶⁰ and Vidal⁶¹ found that social enterprises choose diverse legal forms. Spear found out that the choice of a legal form is not always rational and consulted with professionals, advisers, or support organizations. Vidal found that the legal form of the enterprise is not an indicator of single or multiple stakeholder structure⁶².

Polish startups with social mission often operate globally from the beginning of their existence, which also determines their legal form. Started by innovators who perceive the world as a global market of products and services, these startups benefit from possibilities of a global mindset in terms of both, clients and suppliers. Some of those companies grow and scale fast, rapidly building its market value and through that also social impact, others remain as early startups searching for a business model, and others cease to exist after a few months. They take many different legal forms. The dilemma of the legal form of such startup may evolve around such factors as: available financial means, number of people involved in creation of the company, as well as social and market goals to achieve.

A sole proprietorship is one of the most popular forms of running a business. In Poland it can be created by Internet and there is no need to own initial capital, but at the same time the owner takes full responsibility of the company's assets and liabilities, and is not able to have a partner.

Another possible form is a **civil law partnership**, which is associated with entities such as a limited liability company or limited partnership. The founders are jointly and severally liable (each of the partners in full for the liability) with all their assets. The civil law partnership itself has no legal subjectivity, so all partners must participate when concluding agreements.

Limited liability companies are entities with separate legal subjectivity, therefore to conclude contracts only an authorized representative is necessary. This type of company must be registered in the National Court Register on the basis of a model contract available in electronic form or a contract in the form of a notarial deed. The advantage of this form of business activity is the separation of company assets and limiting the liability of the founders. **An association conducting**

60 R. Spear, *Social entrepreneurship: A different model?*, "International Journal of Social Economics" 2006, vol. 33(5/6), pp. 399–410.

61 I. Vidal, *Social enterprise and social inclusion: Social enterprises in the sphere of work integration*, "International Journal of Public Administration" 2005, vol. 28(9), pp. 807–825.

62 P. Braunerhjelm, U. Stuart Hamilton, *Social Entrepreneurship – a survey of current research*, Swedish Entrepreneurship Forum Working Papers Series, 2012, no. 09, p. 30.

business activity is another possible legal form. It can be founded by a group of at least 7 people. It does not require initial capital, and must be registered in the National Court Register. The generated profit can only be used to achieve the statutory objectives and cannot be divided among its members. They can use public funds by participating in the implementation of public tasks. Associations may also apply for public benefit organization status, which enables them to receive 1% of the tax transferred by taxpayers.

A **foundation** is a legal form established to achieve socially or economically useful goals. It is created by folding statements in the form of a notarial deed or by calling it in a will and has a legal personality since registration in the National Court Register. A foundation is allowed to conduct business activities to achieve its goals. Just like association, after obtaining the status of a benefit organization it can receive 1% tax transferred by taxpayers.

Poland has also introduced recently a new legal form, specifically intended for work integration social enterprises: a **social cooperative**, which is also a legal entity, and its functioning is regulated by the Act on social cooperatives and also must be registered in the National Court Register. The minimum number of founders must be at least three natural persons or two legal entities. A social cooperative conducts its activities based on the personal work of its members and employees, and it can be founded by representatives of any group in need: long-term unemployed, ex-convicts, former alcohol or drug addicts, members of integration center, the disabled and their guardians, jobseeker up to 30 years of age or older than 50, and newly adults leaving a foster family, an orphanage or a care institution. A restriction to profit distribution is that the profit generated by the cooperative can only be used for the purposes strictly described in the legal Act⁶³, including, among others, professional reintegration of cooperative members, social and educational-cultural activities as well as socially useful activities. Its balance surplus cannot be distributed among members of a social cooperative and possible losses must be covered by them up to the amount of their shares, but are not personally responsible for the cooperative's obligations. State budget or local government can support a social cooperative financially (by grants and loans). Social cooperatives are entitled to perform public tasks, similarly to associations and foundations, and to produce goods and services on a not-profit maximizing basis.

Besides the presented traditional legal forms, there are several entities that do not have a legal personality and act as substructures of associations, foundations and other voluntary organizations, e.g. vocational enterprises for the handicapped

63 Ustawa z dnia 27 kwietnia 2006 r. o spółdzielniach socjalnych [Act of 27 April 2006 on social cooperatives] (Dz.U. 2006 Nr 94, poz. 651).

(zakłady aktywności zawodowej, or ZAZ), social integration centers (centra integracji społecznej, or CIS), social integration clubs (kluby integracji społecznej, or KIS), job-seeking clubs (kluby pracy, or KP) and workshops of vocational therapy (warsztaty terapii zajęciowej, or WTZ)⁶⁴.

Regardless of the business models and legal entities they adopt, open innovations are highly important in order to enable cooperation with the environment. At various stages of product and service development, dual mission startups should consult with engaged users as co-creators of value (user-driven innovation). Customers opinion and feedback enables those startups to bring their solutions to the market much more effectively, but dual mission startups also need to learn from their beneficiaries, who should also be engaged in the process as a sort of consultants. This solution, based on the vision of sustainable development, contributes to changing quality and lifestyle of the society, as well as production and consumption patterns.

Conclusions

Business ventures are influenced by a strong corporate social responsibility wave, forcing them to rethink the postulation that doing social good and making a profit are mutually exclusive⁶⁵. Being socially responsible is now required by various stakeholders, and at the same time having a social conscience is also good for business. Academics believe that social ventures incorporate business and charity goals into their operations to create positive social impact for the society⁶⁶. Some researchers argue that combining social and economic missions is beneficial⁶⁷, while others perceive that dual missions detract from each other⁶⁸. Still, creating

64 J. Defourny, M. Nyssens, *Social Enterprise in Europe: Recent Trends and Developments*, "Social Enterprise Journal" 2008, vol. 4, no. 3, pp. 202–228.

65 S.A. Zahra et al., *Globalization of social entrepreneurship opportunities*, "Strategic Entrepreneurship Journal" 2008, vol. 2(2), pp. 117–131.

66 J. Austin, H. Stevenson, J. Wei-Skillern, *Social and commercial entrepreneurship...*; J. Battilana, M. Lee, *Advancing research...*; N. Siebold, F. Günzel-Jensen, S. Müller, *Balancing dual missions for social venture growth: a comparative case study*, "Entrepreneurship & Regional Development" 2018, vol. 31, no. 9–10, pp. 710–734.

67 J. Battilana, S. Dorado, *Building Sustainable Hybrid Organizations: The Case of Commercial Microfinance Organizations*, "Academy of Management Journal" 2010, vol. 53(6), pp. 1419–1440; A.C. Pache, F. Santos, *Inside the hybrid organization...*

68 J. Austin, H. Stevenson, J. Wei-Skillern, *Social and commercial entrepreneurship...*; R. Stevens, N. Moray, J. Bruneel, *The Social and Economic Mission of Social Enterprises: Dimensions, Measurement, Validation, and Relation*, "Entrepreneurship Theory and Practice" 2014, vol. 39(5), pp. 1051–1082; I. Vickers, F. Lyon, *Beyond Green Niches? Growth Strategies*

both social and economic value leads to profit reinvestment in the social mission, which then facilitates large-scale social change⁶⁹.

The presented literature review's goal was to ideate the concept of startups with dual mission and show how they can operate in Poland. This is only a first stage of the study and hopefully it starts a discussion on the significance and understanding of dual mission startups in Poland.

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69 J. Battilana et al., *In Search of the Hybrid Ideal*, "Stanford Social Innovation Review" 2012, vol. 10(3), pp. 50–55.

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Abstract

The main business goal of a startup is usually fast development and ultimately generating satisfactory profits. However, there are startups whose main purpose is not only to maximize financial profits, but to have a positive social impact. This noble business idea has many representatives: inspirational startups operating in the field of eco-innovation, social innovation, social change and social entrepreneurship.

This article explores the ideation and practice of the concept of startups with dual mission. Literature review situates the idea within a broader context of socially responsible business practices, social innovation, social entrepreneurship and dual mission. The article is also an attempt to show what legal forms can be used for startups with dual mission in Poland.

Keywords: startups, dual mission, social entrepreneurship, social responsibility

PART 2
Modern approaches
methods and measures
supporting management

Scientific reasoning in management. The role of abduction in research process design

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Introduction

The researcher, when commencing work, most probably has a certain amount of knowledge in the field and intends to study some particular aspects. Popper claims that research does not begin with complete ignorance, but with partial, or even erroneous, knowledge¹. In the past, researchers referred to common, especially practical, knowledge; these days they identify problems by studying scientific literature. From publications they discover poorly-understood things or phenomena, or false or insufficiently justified statements. By finding beliefs or understandings of doubtful truthfulness they formulate questions to be resolved or state the lack of knowledge and form questions to be answered. Moreover, scientific problems are detected by observing things and phenomena. A necessary condition for detecting scientific problems is reasoning – both while reading and in the course of observation².

In addressing the issue of reasoning, we focus on the process of formulating a conclusion based on premises³. Scientific reasoning includes thought processes aimed at solving cognitive problems by deriving certain opinions from others⁴.

1 K. Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge*, Routledge, London 2002.

2 *Ibidem*.

3 K. Ajdukiewicz, *Język i poznanie*, vol. 2, Wydawnictwo Naukowe PWN, Warszawa 2006; J.G. Greeno, *Concepts in activities and discourses*, "Mind, Culture, and Activity" 2012, vol. 19, issue 3, pp. 310–313.

4 S. Stachak, *Podstawy metodologii nauk ekonomicznych*, Difin, Warszawa 2013, p. 164; O. Bueno, *Styles of reasoning: A pluralist view*, "Studies in History and Philosophy of Science Part

Ajdukiewicz distinguishes between simple reasoning and complex reasoning depending on whether one or more inference processes are used to solve a problem. Within simple reasoning, he distinguishes deductive (reliable), probabilistic and logically worthless reasoning. Figure 1 illustrates the division of reasoning that is logically valuable.

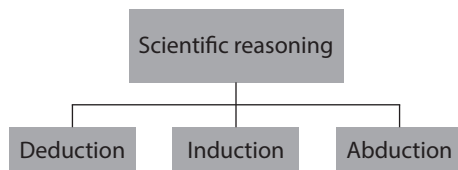


Figure 1. Division of reasoning

Source: author's elaboration.

In deductive reasoning, the premises constitute a logical rationale for the conclusion: the conclusion follows logically from the premises⁵. Probabilistic reasoning includes reductive reasoning in which the conclusion itself is a logical rationale for the premises, or in which the conclusion and some premises together become a logical rationale for other premises. Probabilistic reasoning does not guarantee the truthfulness of the conclusion. Ziemiński considers that despite the unreliability of such reasoning, in their case we have reasonable grounds to expect that with true premises the conclusion will also be true (which distinguishes probabilistic from logically worthless reasoning)⁶. This issue was well addressed by Vanharanta and Markopoulos⁷, Khan and Krell⁸, Nazarko⁹, Sułkowski¹⁰.

A" 2012, vol. 43(4), pp. 657–665; V. Tammik, *Appraisal of Research Depends Upon its Conceptualization*, "Integrative Psychological and Behavioral Science" 2014, vol. 48, issue 4, pp. 384–392.

5 A. Nelson, *Descartes on the limited usefulness of mathematics*, "Synthese" 2019, vol. 196, issue 9, pp. 3483–3504.

6 Z. Ziemiński, *Logika praktyczna*, Wydawnictwo Naukowe PWN, Warszawa 2006, p. 182.

7 H. Vanharanta, E. Markopoulos, *Visualization of the Wisdom Cube Scientific Knowledge Space for Management and Leadership*, "Advances in Intelligent Systems and Computing" 2020, vol. 961, pp. 14–25.

8 S. Khan, M. Krell, *Scientific Reasoning Competencies: a Case of Preservice Teacher Education*, "Canadian Journal of Science, Mathematics and Technology Education" 2019, vol. 19, issue 4, pp. 446–464.

9 J. Nazarko, *Regionalny foresight gospodarczy. Metodologia i instrumentarium badawcze*, Związek Pracodawców Warszawy i Mazowsza, Warszawa 2013.

10 Ł. Sułkowski, *Epistemologia i metodologia zarządzania*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2012; Ł. Sułkowski, *Paradygmaty i teorie w naukach o zarządzaniu*, [in:] W. Czakon (ed.), *Podstawy metodologii badań w naukach o zarządzaniu*, Wydawnictwo Wolters Kluwer, Warszawa 2013, pp. 268–290.

This article is dedicated to the applications of abductive reasoning, consciously or unconsciously omitted in management sciences, by means of which we attempt to bring sense to surprising phenomena and rationalise striking events¹¹.

Types of reasoning

The author used a standard bibliometric analysis of scientific literature from the Scopus database in order to characterise issues concerning scientific reasoning. Figure 2 illustrates the existence of key terms subject to a three-stage analysis.

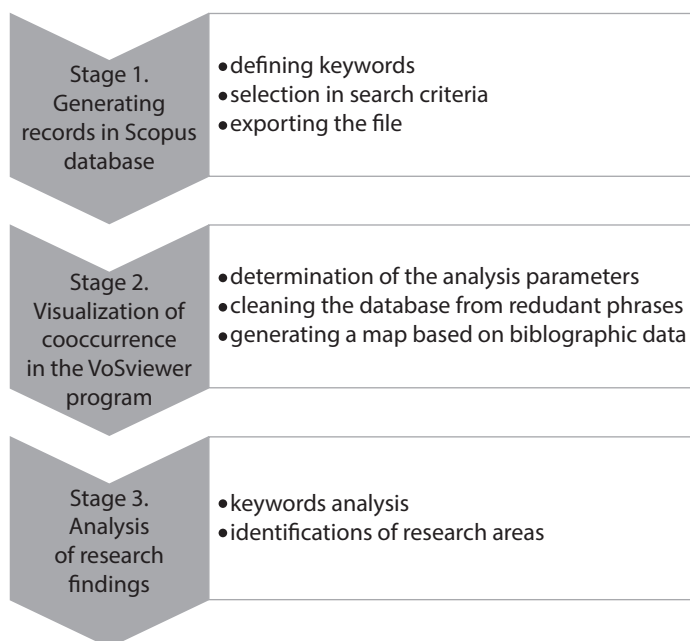


Figure 2. Stages of bibliometric analysis

Source: elaboration on the basis of E. Cichowicz, E. Rollnik-Sadowska, *Inclusive growth in CEE countries as a determinant of sustainable development*, "Sustainability" 2018, vol. 10, no. 11, 3973.

In the course of the analysis the number of articles was reduced down to 578. The author focused on such areas as 37: Social Sciences (19), Computer Science (13), Engineering (6), Economics, Econometrics, and Finance (3), Psychology (3), Business, Management, and Accounting (2), Decision Sciences (1). The tool used for data organisation and presentation was the VOSviewer programme. This software is particularly

11 M. Ciesielski, *Abdukcja w naukach o zarządzaniu*, "Przegląd Organizacji" 2014, no. 11, pp. 3–6.

useful in working on extensive volumes of data. It is a tool applied for creating and visualising bibliometric networks that use an advanced layout and clustering techniques in order to illustrate the existing references between keywords characterising articles from scientific databases. The software highlights the frequency and the co-existence of keywords that appear in the network¹². In the second phase, the author determined such analysis parameters as a minimum number of keyword occurrences (which was 5) and, consequently, achieved a number of keywords to select from which equals 60. Cleaning the database from redundant phrases allowed for the removal of such repeated words as names of countries and phrases that failed to be thematically coherent. This fostered the creation of a map of research trends on entrepreneurial attitudes (Figure 3).

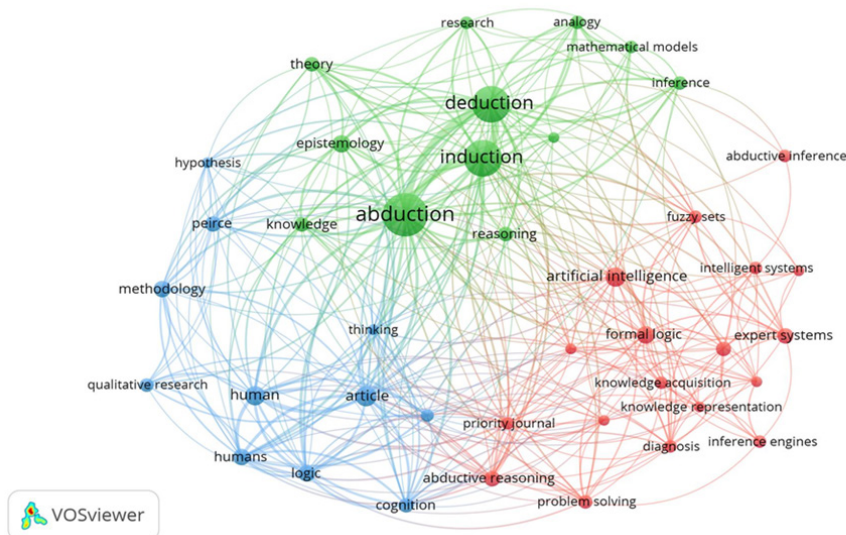


Figure 3. Map of research trends based on the co-occurrence of the authors' keywords in publications referring to scientific reasoning

Source: author's elaboration on the basis of VOSviewer software.

- 12 A.E. Gudanowska, *Modern research trends within technology management in the light of selected publications*, "Procedia Engineering" 2017, vol. 182, pp. 247–254; E. Glińska, D. Siemieniako, *Binge drinking in relation to services – bibliometric analysis of scientific research directions*, "Engineering Management in Production and Services" 2018, vol. 10(1), pp. 45–54; Ł. Nazarko, *Responsible Research and Innovation – a Conceptual Contribution to Theory and Practice of Technology Management*, "Business: Theory and Practice" 2019, no. 20, pp. 342–351; J. Siderska, K.S. Jadaa, *Cloud manufacturing: a service-oriented manufacturing paradigm. A review paper*, "Engineering Management in Production and Services" 2018, vol. 10(1), pp. 22–31.

The VOSviewer software allowed for distinguishing three clusters which, all together, included 35 words/phrases. The proposed cluster names relate to the majority of terms which a given cluster identified in the analysis of the co-occurrence of keywords indicated by the author. These clusters include:

- Cluster 1 – Logical reasoning – abduction, induction, deduction and related: epistemology, knowledge, research, models;
- Cluster 2 – Methodological issues – qualitative research, logic, thinking, hypotheses;
- Cluster 3 – Application of knowledge – formal logic, artificial intelligence, intelligent systems, knowledge acquisition, knowledge representation, abduction thinking, diagnosis, problem solving.

In management sciences it is possible to observe inaccuracies associated with the choice of proper reasoning¹³. Their empirical nature sometimes makes deductive reasoning inadequate to describe and evaluate the occurring phenomena. On the other hand, induction does not always allow for drawing conclusions that can be generalised. Therefore, attention was focused on abduction. Generalisations, hypotheses, laws, scientific theses do not arise as a result of a “simple” generalisation of observational sentences since they include new content – a “theoretical element”, i.e. new concepts, causes, relationships that we invent or create to explain what we have observed¹⁴.

From the initial sentences the researcher derives a sentence named a corollary or a sentence named a rationale. The corollary follows from sentences that are accepted by the rationale, while the rationale stems from sentences accepted by the corollary¹⁵. Deductive reasoning takes its course from the rationale to the corollary, reductive reasoning proceeds from the corollary to the rationale. The direction of deductive reasoning is the direction of a logical outcome, and the direction of reductive reasoning is the opposite (Tables 1 and 2).

In deductive reasoning, the truthfulness of the rationale is known to the researcher, of the corollary – unknown, while the corollary is (fully) justified by the rationale. In reductive reasoning, the opposite is true: the truthfulness of the rationale is unknown, of the corollary – known, and the rationale is justified (not fully) by the corollary¹⁶.

13 W. Gasparski, *Wiedza o organizacji i zarządzaniu oraz jej poznawcze ugruntowanie*, “Współczesne Zarządzanie” 2007, no. 1, pp. 34–47.

14 J.M. Bocheński, *Współczesne metody myślenia*, Wydawnictwo W drodze, Poznań 1992, pp. 102–136.

15 K. Krajewski, *Prawa nauki. Przegląd zagadnień metodologicznych i filozoficznych*, Wydawnictwo Książka i Wiedza, Warszawa 1998, p. 74.

16 S. Stachak, *Podstawy metodologii...*, p. 164.

If the predecessor is a generalisation of the successor, then this type of reduction is called induction, but if this is not the case, then we are dealing with non-inductive reduction¹⁷.

Table 1. Deductive reasoning

If A, then B	Reasoning	The sentence is true	If employees perform their task well, they will get a bonus
A	Premise (rationale)	The predecessor is true	Employees performed their task well
So B	Conclusion (corollary)	So the successor is also true	So, they will get a bonus (employee X, employee Y, employee Z will get a bonus)

Source: author’s elaboration.

Table 2. Reductive reasoning

If A, then B	Reasoning	The sentence is true	If employees perform their task well, they will get a bonus
B	Premise (corollary)	The successor is true	Employees will get a bonus
So A	Conclusion (rationale)	So the predecessor may be true	So – they may have performed their task well (may have performed because there might be a different reason)

Source: author’s elaboration.

Deduction is also referred to as “general to specific” reasoning, while induction – “from specific to general”. Most often we deal with deductive reasoning in the case of mathematical models of the world, the description of which is subject to ordering. A notable example is Euclid’s *Elements*¹⁸. However, rigorous adherence to deduction and the principle of maintaining the absolute truthfulness of conclusions very quickly encounters problems. An important complement to the methods of deductive reasoning involves methods of inductive and abductive reasoning.

In empirical sciences, induction is a thought process which involves deriving generalisations based on experiments or observations of facts.

This issue has been addressed by researchers since the very beginnings of humanity. However, until the end of the Middle Ages, the type of deductive reasoning proposed by Aristotle¹⁹ was considered indisputable. The said philosopher did consider the possibility of inductive reasoning, but only in the form of complete

17 J.M. Bocheński, *Współczesne metody...*, p. 103.
18 P. Błaszczuk, K. Mrówka, *Euklides, “Elementy”*. *Księgi V–VI*, http://www.eudoxos.pl/wp-content/uploads/2013/04/Euklides_V_VI.pdf (accessed: 15.07.2019).
19 Arystoteles, *Dzieła wszystkie*, vol. 1, Wydawnictwo Naukowe PWN, Warszawa 2003.

enumerative induction²⁰. The certainty of inductive reasoning is only complete when all cases can be investigated, which is quite unlikely in the research process. Bacon²¹, Hume²², Kant²³, Mill²⁴, Leake²⁵ devoted considerable attention to this problem.

Bacon brought development in the enumerative induction outlined by Aristotle by proposing a simple calculation procedure – incomplete induction. The more positive instances empirical generalisations have, the more supported they are. Incomplete induction is based on deriving approximate statements with the same degree of probability as was observed during the observations of individual specimens. It can be concluded that the more facts, events or processes are investigated, the more correct (true) an inductive conclusion is. Inductive conclusions are by their nature inaccurate. They are based on people's innate ability to find patterns and rules on the basis of a finite (and perhaps incomplete and inaccurate) sample derived from the observation. Incomplete induction is used for three reasons²⁶:

- unavailability of certain facts;
- the need to reduce the cost of research;
- obtaining test results in an unrealistically short time.

Bacon also initiated divagations on eliminative induction, which Mill later developed. Eliminative induction not only involves a simple compilation of certain facts, but also grouping them into specific systems. This is possible thanks to five methods of causal inference. These were called canons of induction or Mill's canons and are still widely recognised (the method of agreement, the method of difference, the method of agreement and difference, the method of residues and the method of concomitant variations). They make it possible to find cause-and-effect relationships between particular events, phenomena, features or their elements²⁷ (Table 3).

20 Z. Hajduk, *Ogólna metodologia nauk*, Wydawnictwo Katolickiego Uniwersytetu Lubelskiego, Lublin 2001.

21 F. Bacon, *Novum Organum*, serie: Biblioteka Klasyków Filozofii, PWN, Warszawa 1955.

22 D. Hume, *A Treatise of Human Nature*, Clarendon Press, Oxford 1965, <http://snd.hegemonikon.pl/wp-content/uploads/2016/03/David-Hume-Traktat-o-naturze-ludzkiej3.pdf> (accessed: 8.07.2019).

23 I. Kant, *Krytyka czystego rozumu*, <https://wolnelektury.pl/media/book/pdf/krytyka-czystego-rozumu.pdf> (accessed: 6.05.2019).

24 J.S. Mill, *System logiki dedukcyjnej i indukcyjnej*, vol. 1, serie: Biblioteka Klasyków Filozofii, PWN, Warszawa 1962.

25 D.B. Leake, *Abduction, Experience and Goals: A Model of Everyday Abductive Explanation*, "The Journal of Experimental and Theoretical Artificial Intelligence" 1995, no. 7, pp. 407–428.

26 S. Stachak, *Podstawy metodologii...*, p. 172.

27 J.M. Bocheński, *Współczesne metody...*, p. 119.

Table 3. Inductive reasoning

If A, then B	Reasoning	The sentence is true	If employees perform their task well, they will get a bonus
Example 1 Complete induction	Observation	Fact	Employee X will get a bonus Employee Y will get a bonus Employee Z will get a bonus
	Observation	Fact	Employee X performed their task well Employee Y performed their task well Employee Z performed their task well
B	Premise (corollary)	The successor is true	Employees will get a bonus
So A	Conclusion (rationale)	So the predecessor is true	So – they performed their task well
Question	What justifies truthfulness?		
Example 2 Incomplete induction	Observation	Fact	Employee X will get a bonus Employee Y will get a bonus Employee Z will get a bonus
	Observation Observation impossible	Fact	Employee X performed their task well Employee Y performed their task well Employee Z?
B	Premise (corollary)	The successor is true	Employees will get a bonus
So A	Conclusion (rationale)	So the predecessor may be true	So – they may have performed their task well (may have performed because there might be a different reason)
Question	What justifies truthfulness?		
Example 3 Eliminative induction	Observation stage 1	Fact	Employee X will get a bonus Employee Y will get a bonus
	Observation stage 2	Fact	Employee X will get a bonus Employee Z will get a bonus
	Observation	Fact + elimination of repetitive (inconsistent) observations	Employee X performed their task well
B	Premise (corollary)	The successor is true	Employees will get a bonus
So A	Conclusion (rationale)	So the predecessor may be true	So – employee X may be performing their tasks well because they got another bonus
Question	Why is the statement likely/possible?		

Source: author's elaboration.

Hume and Kant brought incomplete eliminative induction under critical analysis. Hume proposed a new approach, which is an alternative stating that either knowledge is certain and concerns ideas (abstracts, e.g. mathematical objects), or it is uncertain and concerns facts from reality. He took a negative stance towards

justifying inductive conclusions, assuming that they are not the results of reasoning, but of a habit, as correlates of generated associations. Kant believed that not only is the transition from single to general sentences inductive, but also every non-formal form of deriving general statements.

Modern understanding of inductive reasoning has drifted away from Kant and Hume's ideas towards inductive logics, which, instead of answering the question "what justifies truthfulness?" attempt to answer the question "why is the statement likely/possible?". This type of approach was represented, among others, by Carnap²⁸.

Abduction is, to a great extent, the logic of the context of the discovery. Although it is believed that Pace was the first to use this term, it is Peirce who is considered to be the forerunner of contemporary research on abduction²⁹. Abduction is reasoning in which we strive (as best we can) to explain surprising phenomena. It is defined in such a manner, among others, by Aliseda³⁰, Hintikka³¹, Josephson and Josephson³², Leake³³, Thagard³⁴, Urbański³⁵, Minnameier³⁶.

Let us say we have observed an event and then wish to find out why it occurred, or why it was as such and not different. In management sciences, this type of reasoning is often unconsciously used by researchers. A good practical example is the Mayo experiments, described in every textbook on management sciences. He observed a "strange phenomenon" – as working conditions worsened, the productivity of the workers increased. Mayo formulated a series of abductive hypotheses. The hypothesis which was the best explanation initiated the so-called trend of interpersonal relations in management sciences³⁷. An exemplary scheme of abductive reasoning is illustrated in Table 4.

28 L. Carnap, *Logiczna struktura świata*, Wydawnictwo Naukowe PWN, Warszawa 2011.

29 M. Urbański, *Paula Thagarda koncepcja rozumowania*, "Studia z Kognitywistyki i Filozofii Umysłu" 2012, vol. 6(1), pp. 97–120.

30 A. Aliseda, *The Logic of Abduction: An Introduction*, Springer Handbooks, Heidelberg – Berlin 2017, pp. 219–230; A. Aliseda, *Abductive Reasoning. Logical Investigations into Discovery and Explanation*, Springer, Dordrecht 2006.

31 J. Hintikka, *What is abduction? The fundamental problem of contemporary epistemology*, "Trans-actions of Charles S. Peirce Society" 1998, vol. 34(3), pp. 503–533.

32 J.R. Josephson, S.G. Josephson (eds), *Abductive Inference: Computation, Philosophy, Technology*, Cambridge University Press, Cambridge 1994.

33 D.B. Leake, *Abduction, Experience and Goals...*

34 P. Thagard, *Computational Philosophy Science*, MIT Press, Cambridge 1998.

35 M. Urbański, *Paula Thagarda koncepcja...*

36 G. Minnameier, *Forms of abduction and an inferential taxonomy*, [in:] L. Magnani, T. Bertolotti (eds), *Handbook of model-based science*, Springer, Berlin 2017, pp. 175–195.

37 M. Ciesielski, *Abdukcja w naukach...*, p. 4.

Table 4. Abductive reasoning

B	Phenomenon	Observed phenomenon is true	Employees got a bonus
If A then B	Hypothesis	Sentence is true	If employees perform their task well, they will get a bonus
So A	Conclusion (about the causes of the event)	The predecessor is most likely to be true	Employees performed their task well (employee X, employee Y, employee Z performed their task well)

Source: author’s elaboration.

The abductive method involves seeking a hypothesis from which one can deduce that a given phenomenon will occur when faced with a surprising phenomenon. If such a hypothesis were true, the seemingly mysterious phenomenon would be completely natural. Therefore, when such a hypothesis is found, it should be concluded that it is probably true. If there is more than one hypothesis, one should choose the one that provides a better explanation than the others. This principle is called the principle of inference in order to obtain the best explanation³⁸.

The abductive structure can be presented as follows:

- We observe a surprising phenomenon B
- If A were true, then the occurrence of B would be obvious
- So we have the reason to suspect that A is real³⁹.

Abduction is described as a two-phase process where the generation of abduction hypotheses constitutes phase one. Supported by knowledge, experience and intuition, the ability to observe is helpful in generating hypotheses, but does not guarantee their accuracy: hypotheses are, in fact, always just guesses. Phase two is the evaluation of these hypotheses. In this way the structure of the second phase of abduction adequately describes the scheme of eliminative induction: we reject unreliable hypotheses out of all the competitive hypotheses A1, A2, ..., AN. Those that remain should solve the abductive problem. “If we consider all hypotheses and reject the impossible, what remains,

38 A. Grobler, *Metodologia nauk*, Wydawnictwo Aureus, Wydawnictwo Znak, Kraków 2008, p. 102; M. Vitti Rodrigues, C. Emmeche, *Abduction and styles of scientific thinking*, “Synthese” 2019, https://www.cle.unicamp.br/index.php/sites/default/files/2019_MVR_CE_Styles_Abd.pdf (accessed: 6.05.2019); D.G. Campos, *On the distinction between Peirce’s abduction and Lipton’s Inference to the best explanation*, “Synthese” 2011, vol. 180(3), pp. 419–442; S. Paavola, *Fibers of Abduction*, [in:] T. Thellefsen, B. Sorensen (eds), *Charles Sanders Peirce in his own words: 100 years of semiotics, communication and cognition*, Walther de Gruyter, Berlin 2014, pp. 365–372.

39 M. Urbański, *Paula Thagarda koncepcja...*, p. 20.

however improbable, must be true”⁴⁰. Abduction allows to reach conclusions with regard to the potential causes of events. Abduction is the logic of the context of the discovery.

Abduction diagram

One can put forward arguments in favour of the complementarity of abduction as opposed to induction and deduction. The author of the idea of abductive reasoning, Peirce, proposed: “based on what is suggested by abduction, deduction creates forecasts that can be tested by induction”. He believed, therefore, that abduction, deduction and induction are the three stages of a single research method, of which abduction is the initial stage. The full model assumes the following form: **data (facts) – abduction – hypotheses – complete enumerative induction/deduction – forecasts – induction – data (facts)**. Figure 4 presents the abduction diagram.

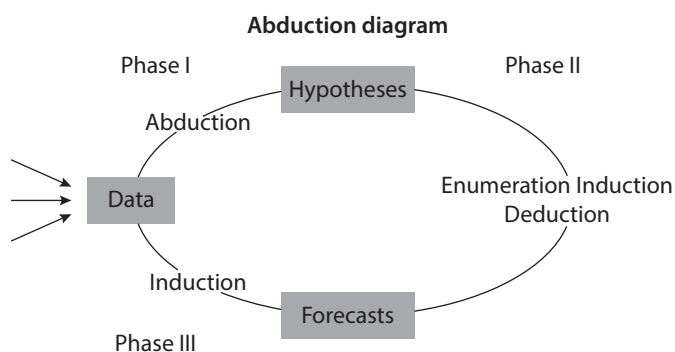


Figure 4. Abduction diagram

Source: author's elaboration on the basis of M. Ciesielski, *Abdukcja w naukach...*, p. 5; Ch. Hartshorne, P. Weiss (eds), *Collected Papers of Charles Sanders Peirce*, Harvard University Press, Cambridge 1931.

Here we deal with a three-phase process. The generation of abductive hypotheses constitutes phase one, which is not, in fact, reliable reasoning. The ability to observe, supported by knowledge, experience and intuition, is helpful in generating hypotheses but does not guarantee their accuracy. Hypotheses are in fact always plain guesses. In contrast, phase two is the evaluation of hypotheses. In a simple case, it may happen that the hypotheses generated in phase one are evaluated. The second phase of abduction adequately describes the scheme of eliminative induction in which we reject the unbelievable hypotheses out of all competitive ones: A1, A2, ..., AN. Those that remain should solve our abductive problem. The first

40 *Ibidem*, p. 163.

phase of abductive reasoning – the generation of hypotheses – is therefore certainly of a substantiating character. On the other hand, if the second phase follows the scheme of complete eliminative induction, from a formal point of view it is also deductive reasoning⁴¹. The hypothesis is then a reliable conclusion, deductively derived from the premises. At the next stage we can proceed to phase three – the examination of individual cases in order to verify the hypothesis.

Ciesielski observes that the lack of knowledge on the principles of abductive reasoning often leads to errors – mainly in the selection and stratification of a set of examined factors. He also adds that the cognitive scheme that includes abduction, deduction and induction – in a logical arrangement and relationship – is helpful in conducting the research process in the discussed discipline⁴².

Conclusions

From the time of Carnap knowledge in social sciences has consisted of a descriptive (observation of socio-economic phenomena) and a theoretical – or, explanatory – layer. Scientific knowledge speaks two languages: it is the language of observation – defining directly observable phenomena and concepts – and the language of theory, which consists of inferred concepts that are intended to explain directly-observed phenomena⁴³. It seems that hypotheses are related to the adoption of such a way of conducting science⁴⁴. Creating hypotheses uncovers deeper problems faced by the discipline of management sciences⁴⁵. Therefore, a conscious use of abductive reasoning may help to overcome these problems.

The deepening of merit-based knowledge in a given discipline should go hand in hand with methodological reflection and the development of a methodological workshop.

Management as a science that researches the social and economic sphere is, by definition, on the borderline of many disciplines, which predisposes it to reflect on the choice of the right form of reasoning. The number of cognitive and practical problems of the world of organisations forces the absorption of new instruments.

41 *Ibidem*, p. 168.

42 M. Ciesielski, *Abdukcja w naukach...*, p. 3.

43 S. Nowak, *Metodologia badań społecznych*, Wydawnictwo Naukowe PWN, Warszawa 2007, p. 75.

44 A.M. Jeszka, *Problemy badawcze i hipotezy w naukach o zarządzaniu*, "Organizacja i Kierowanie/Organization and Management" 2013, no. 5(158), pp. 31–39.

45 C. Frankfort-Nachmias, D. Nachmias, E. Hornowska, *Metody badawcze w naukach społecznych*, Zysk i S-ka, Poznań 2001, p. 35.

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Abstract

Management as a science that studies the social and economic sphere exists, by definition, on the borderline of many disciplines, which predisposes it to undertake considerations relating to the choice of the right way of thinking. The subject discussed in the text is hardly explored in management sciences, but it is very important due to the consequences resulting from the adoption of wrong methodological assumptions. Although the article is theoretical by nature, it raises significant issues concerning the preparation of the research process. The aim of the article is to broaden researchers' awareness of the application of scientific reasoning.

The empirical nature of management sciences makes deductive reasoning not always adequate for the description and evaluation of occurring phenomena, whereas inductive reasoning does not allow for drawing conclusions that can be generalised. Therefore, attention was focused on abduction. The author presents arguments for the complementarity of abduction as opposed to induction and deduction as well as a scheme of abductive reasoning.

It has been recognised that the number of cognitive and practical problems in the world of organisations forces the absorption of new instruments.

Keywords: scientific reasoning, deduction, induction, abduction, abduction diagram

Design Science Approach to Management

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Introduction

This paper introduces a model of research framing in management sciences. The model takes into account that the conventional approaches to management regarded as an explanatory science are not sufficient to fully examine and deal with contemporary ill-structured, complex, unambiguous and often open management and organization problems, especially in complex environment and uncertain conditions¹.

There is a critical need for novel theorizing on emerging problems within organizations and management that does not rely only on current assumptions and enable to develop new research approaches. The purpose of this research study is to develop and present a design science approach framework for management as a relatively new approach, which derives from design sciences and is understood both as a science and practice within an organization and management field.

While it nowadays seems to derive just from design, a design science approach has been actually present in management all along². Its significance in management research and literature has been growing since Herbert Simon's book entitled *The Science of the Artificial*³. It delivers a new scientific framework for the description, explanation and design innovative solutions of social, organizational and management problems.

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- 1 H.W. Rittel, M.M. Webber, *Dilemmas in a general theory of planning*, "Policy Sciences" 1973, no. 4(2), pp. 155–169; R. Buchanan, *Wicked Problems in Design Thinking*, "Design Issues" 1992, no. 8(2), pp. 5–21; A. Koźmiński, *Zarządzanie w warunkach niepewności*, Wydawnictwo Naukowe PWN, Warszawa 2004.
 - 2 H. Simon, *The sciences of the artificial*, MIT Press, Cambridge 1996; W. Gasparski, *Wiedza o organizacji i zarządzaniu oraz jej poznawcze ugruntowanie*, "Współczesne Zarządzanie" 2007, no. 1, pp. 34–47; J. Holmström, M. Ketokivi, A.P. Hameri, *Bridging practice and theory: a design science approach*, "Decision Sciences" 2009, no. 40(1), pp. 65–87.
 - 3 H. Simon, *The sciences...*

This research study was realized with conceptual research, wherein the existing knowledge was used as a source of reasoning leading to solve the scientific problem. It is caused by a reflective nature of the presented argument drawing on traditions of conceptual research and theoretical findings, which result from an intellectual deliberation in order to speculate within a specifiable problem domain. The method of analysis and synthesis was used to better understand this emerging and increasingly popular approach, which is still differently defined (among others as: design-led approach, design thinking, design management). Trying to answer the question, what the core of the design science approach is, and to sketch an overall framework of this approach, the fundamental reasoning patterns behind problem-solving in management were especially considered.

Management as a design science

Several authors position management among design sciences⁴. According to Gasparski, organizational theory or management science is a practical discipline (science) in the sense that Kotarbiński gave to this concept. He recalls Simon who referred to this family of disciplines as sciences of the artificial, distinguishing the sciences of the products of human activities from the sciences of the natural world⁵. Gasparski notes that both scientists (Simon and Kotarbiński) pointed to design as a methodological distinguishing feature of management sciences⁶. A similar point regarding management practice is maintained by Huff who claims that “for some time, there has been an interest in design as a primary descriptor of management practice”⁷.

Simon in *The sciences of the artificial*⁸ divided all sciences into normal/explanatory sciences and artificial/design sciences. Joan E. van Aken calls them accordingly explanatory sciences and design sciences⁹. Simon associates artificial sciences or the sciences of design with the term artificial. He claims:

4 H. Simon, *The sciences...*; W. Gasparski, *Wiedza o organizacji...*; A.G.L. Romme, *Making a difference: Organization as design*, “Organization Science” 2003, no. 14(5), pp. 558–573; J.E. van Aken, *Management research as a design science: Articulating the research products of mode 2 knowledge production in management*, “British Journal of Management” 2005, no. 16(1), pp. 19–36.

5 W. Gasparski, *Wiedza o organizacji...*, p. 34.

6 *Ibidem*.

7 A. Huff, D. Tranfield, J.E. van Aken, *Management as a design science mindful of art and surprise: A conversation between Anne Huff, David Tranfield, and Joan Ernst van Aken*, “Journal of Management Inquiry” 2006, no. 15(4), p. 413.

8 H. Simon, *The sciences...*

9 A. Huff, D. Tranfield, J.E. van Aken, *Management...*, p. 414.

My dictionary defines “artificial” as, “Produced by art rather than by nature; not genuine or natural; affected; not pertaining to the essence of the matter”. It proposes, as synonyms: affected, factitious, manufactured, pretended, sham, simulated, spurious, trumped up, unnatural. As antonyms, it lists: actual, genuine, honest, natural, real, truthful, unaffected. Our language seems to reflect man’s deep distrust of his own products. I shall not try to assess the validity of that evaluation or explore its possible psychological roots. But you will have to understand me as using “artificial” in as neutral a sense as possible, as meaning man-made as opposed to natural¹⁰.

Simon, examining the administration, noticed that the effectiveness of the performance depends on the effectiveness of the play and the effectiveness with which it is played (the context of the actions taken). Consequently, it is impossible to construct an empirical theory of administration modeled on natural sciences. He therefore asked the question how to build such a theory that would contain more than the normative rules of good acting. He binds this problem with the problem of artificiality¹¹. According to Simon, the world of artifacts is completely different from the natural world. As he notes:

The thesis is that certain phenomena are “artificial” in a very specific sense: they are as they are only because of a system’s being moulded, by goals or purposes, to the environment in which it lives. If natural phenomena have an air of “necessity” about them in their subservience to natural law, artificial phenomena have an air of “contingency” in their malleability by environment¹².

He noticed that the problem of artificiality was not specific to administration and organizations but that it infected a wider range of subjects¹³. He describes the results of his research as follows:

Finally, I thought I began to see in the problem of artificiality an explanation of the difficulty that has been experienced in filling engineering and other professions with empirical and theoretical substance distinct from the substance of their supporting sciences. Engineering, medicine, business, architecture, and painting are concerned not with the necessary but with the contingent not with how things are but with how they might be in short, with design. The possibility of creating a science or sciences

10 H. Simon, *The sciences...*, p. 4.

11 *Ibidem*, p. xii.

12 *Ibidem*, p. xi.

13 *Ibidem*, p. xii.

of design is exactly as great as the possibility of creating any science of the artificial. The two possibilities stand or fall together¹⁴.

Joan E. van Aken distinguishes three major categories of scientific disciplines: (i) formal sciences, (ii) explanatory sciences and (iii) design sciences¹⁵. In the formal sciences (such as philosophy and mathematics) scientists build systems of empirically void propositions tested if they are logically consistent. The explanatory sciences (such as natural sciences and most social sciences) describe, explain and possibly predict observable phenomena within its fields. In these sciences researchers develop propositions accepted by the scientific community as true on the basis of the empirical evidence. The role of design sciences (such as engineering sciences, medical sciences, psychotherapy and a significant part of management) is to develop knowledge for the design and realization of artifacts¹⁶.

Nowadays, the fundamental reason, why a different theoretical approach to management is needed, is the problem of relevance to practice. A number of authors draw attention to the problem of relevance of the organization and management research to practice¹⁷.

Joan E. van Aken pays attention to serious doubts about the actual relevance of present management theory as developed by the academic community. Management sciences are permanently losing their chance to matter to the real world of organization and business. This is a dismal picture of those sciences if we assume that their major responsibility is the thoughtful preparation and guidance of practitioner professionals. If management scientists and researchers are to deal in a domain that vitally affects societal well-being, they have to enter the world of practice affairs to carry out valuable and useful scientific research¹⁸.

Hambrick claims that we need "bridge theory and practice"¹⁹. He develops this statement among others with the words:

14 *Ibidem*.

15 J.E. van Aken, *Management research based on the paradigm of the design sciences: the quest for field-tested and grounded technological rules*, "Journal of Management Studies" 2004, no. 41(2), p. 224.

16 *Ibidem*.

17 A.G.L. Romme, *Making a difference...*; A. Huff, D. Tranfield, J.E. van Aken, *Management...*; J.E. van Aken, *Management research...*; D. Denyer, D. Tranfield, J.E. van Aken, *Developing design propositions through research synthesis*, "Organization Studies" 2008, no. 29(3), pp. 393–413; D.C. Hambrick, *What if the academy actually mattered?*, "Academy of Management Review" 1994, no. 19(1), pp. 11–16.

18 J.E. van Aken, *Management research...*, pp. 219–220.

19 D.C. Hambrick, *What if...*, p. 13.

It's been said that there are three kinds of people: those who make things happen, those who watch things happen, and those who wonder what happened. To a great extent, the role of a scholar is in the middle category: to observe, analyze, critique, and disseminate. This is important work, and we should never take our eyes off it. However, when an academic field has as its charge the thoughtful preparation and guidance of practitioner professionals, and when an academic field deals in a domain that vitally affects societal well-being, then that academic field must enter the world of practical affairs. Without being co-opted, it must strive for influence and impact. That is our challenge. We should matter. We must matter²⁰.

Hambrick writes about the need for co-optation with the environment or practice domain which resembles Simon's category of the contingency of artificial phenomena in their malleability by environment. The results of management research are being continuously molded not only by research purposes but also by the context, which delivers the framework that enables the interpretation of these results. Thus, management sciences are suggested to open up the closed loop of management academic community to the outside world, the world of practice²¹. However, it is not easy because, as van Aken remarks:

Management theory is either scientifically proven, but then too reductionistic and hence too broad or too trivial to be of much practical relevance, or relevant to practice, but then lacking sufficient rigorous justification²².

Similar conclusions are delivered by the conversation between Huff, Tranfield, and van Aken entitled *Management as a design science mindful of art and surprise* (2006). Tranfield claims that the main reason to accept the design perspective for management field is that it might increase the relevance of research results to practice²³. According to him, it is also important in terms of establishing a strong management identity within the social sciences. The management sciences need a shared sense of purpose and specified boundaries, as well as clarified quality criteria²⁴. Such a lack of shared purpose, identity and policy of management sciences pushes them to the margins of not only management practice but also social sciences.

Taking the all above into consideration, it seems to be essential to build a new synthesis of the existing achievements of management sciences from the

20 *Ibidem*, p. 16.

21 J.E. van Aken, *Management research...*, p. 220.

22 *Ibidem*, p. 221.

23 A. Huff, D. Tranfield, J.E. van Aken, *Management...*, p. 415.

24 *Ibidem*.

perspective of design science approach assumptions. For Romme remarks, “in view of the persistent relevance gap between theory and practice, organization studies should be broadened to include design as one of its primary modes of engaging in research”²⁵. Therefore, in the following chapters two conceptual paths will be presented: 1) regarding management practice in the form of rapidly developing design-led approach to management and innovation, and 2) design science research assumptions. This is a sketch of conceptual framework as a starting point for further conceptual research, what requires a deeper analysis and a broader description.

Design-led approach

Considering how Kotarbiński outlined the essence and boundaries of the theory of organization, reflection on the subject of research in contemporary management sciences seems absolutely necessary. According to Gasparski and Kotarbiński gave the following answers to the question, what is under the term organization theory²⁶:

- The subject of organization theory includes positively cooperating teams.
- The reference for the organization theory is to indicate the conditions of the effective performance of tasks for which the teams cooperate.
- The word organization means both an examined subject as an organized thing (which is a cooperating team) and the way of organizing (that is the structure/construction of the organized things).

The above statements can be a good starting point for further research on the analytical sense of the design-led approach to management understood as problem-solving activity. It is in line with the van Aken’s observation that management practice is “the art of getting things done by people”²⁷. Because managers often do what they do acting directly on the basis of their tacit knowledge, intuition and creativity, without much reflection or design²⁸, management sciences need deliver a solid design framework for the action.

At the same time, as argued above, design as an approach to both management science and practice is not new²⁹. Its significance in management research and

25 A.G.L. Romme, *Making a difference...*, p. 558.

26 W. Gasparski, *Wiedza o organizacji...*, p. 35.

27 A. Huff, D. Tranfield, J.E. van Aken, *Management...*, p. 413.

28 *Ibidem*.

29 H. Simon, *The sciences...*; W. Gasparski, *Wiedza o organizacji...*; J. Holmström, M. Ketokivi, A.P. Hameri, *Bridging practice and theory...*; A.G.L. Romme, *Making a difference...*; R.F. Shargraw Jr., M.M. Crow, E.S. Overman, *Public administration as a design science*, “Public Administration Review” 1989, no. 49(2), pp. 153–158; R. Verganti, *Design, meanings, and radical*

literature has been growing since Simon's book entitled *The Science of the Artificial*³⁰. As Holmström, Ketokivi, and Hameri claim, this is among others because of that the goal of making academic research relevant to the practice remains elusive³¹. According to van Aken, "there are serious doubts about the actual relevance of present-day management theory as developed by the academic community"³². Consequently, design has been gaining much attention among practitioners and scholars in the area of management and product development, business performance, and innovation management. These contributions are building a more grounded theoretical basis to the field of design management³³.

Several authors make no distinction between a design-led approach and gaining popularity design thinking³⁴. While design thinking seems to be a way of reasoning and acting in practice within problem-solving³⁵, design-led approach adapts this way of reasoning as a conceptual framework to describe and explain the processes of design thinking as empirical phenomena and refers to an emerging research agenda³⁶. There is no use of such distinction in this paper, and both terms are treated interchangeably and complementary.

Bucolo, Wrigley, and Matthews claim that:

[...] the value that design thinking brings to an organization is a different way of framing situations and possibilities, doing things, and tackling problems: essentially a cultural transformation of the way it undertakes its business³⁷.

innovation: A metamodel and a research agenda, "Journal of Product Innovation Management" 2008, no. 25(5), pp. 436–456.

30 H. Simon, *The sciences*...

31 J. Holmström, M. Ketokivi, A.P. Hameri, *Bridging practice and theory*...

32 J.E. van Aken, *Management research*..., p. 219.

33 R. Verganti, *Design, meanings*...

34 S. Bucolo, J.H. Matthews, *Using a design led disruptive innovation approach to develop new services: practicing innovation in times of discontinuity*, [in:] *Proceedings of the 11th International CINet Conference: Practicing Innovation in the Times of Discontinuity*, September 5–7, 2010, Zurich, pp. 176–187; S. Bucolo, C. Wrigley, *Using a design led approach to emotional business modelling*, [in:] *Leading innovation through design: Proceedings of the DMI 2012 International Research Conference*, August 8–9, 2012, Boston, pp. 323–333; S. Bucolo, C. Wrigley, J. Matthews, *Gaps in organizational leadership: linking strategic and operational activities through design-led propositions*, "Design Management Journal" 2012, no. 7(1), pp. 18–28.

35 L. Kimbell, *Rethinking design thinking: Part I*, "Design and Culture" 2011, no. 3(3), pp. 285–306; D. Kelley, T. Kelley, *Twórcza odwaga*, Wydawnictwo MT Biznes, Warszawa 2015; M. Wszółek, M. Grech, *Komentarz do wydania II*, [in:] T. Brown (ed.), *Zmiana przez design: Jak Design Thinking zmienia organizacje i pobudza innowacyjność*, Instytut Dziennikarstwa i Komunikacji Społecznej Uniwersytetu Wrocławskiego, Wrocław 2016, s. 11–20.

36 S. Bucolo, C. Wrigley, *Using a design led*...

37 S. Bucolo, C. Wrigley, J. Matthews, *Gaps in organizational leadership*..., p. 18.

Design led approach is a bridge that links traditionally understood design (as a way of reasoning and tackling problems) with management and social sciences, and fills up the gap between science and practice³⁸. This is possible for the reason that design can be thought as a liberal art of technological culture³⁹. Design understood like that is regarded as integrative and supple discipline, amenable to radically different interpretations in science and practice⁴⁰.

By using placements to discover or invent a working hypothesis within certain settings, design enable to establish a principle of relevance for available knowledge from the science, determining how such knowledge may be useful not only in a specific context but also in the more general category of cases⁴¹. As Buchanan says:

[...] in effect, the working hypothesis that will lead to a particular product is the principle of relevance guiding the efforts of designers to gather all available knowledge bearing on how a product is finally planned⁴².

According to Bason, design proved to have not one, but many shapes. He recalls Buchanan's findings that:

[...] design affects contemporary life in at least four areas: symbolic and visual communication, the design of material objects (construction), design of activities and organized services (strategic planning), and finally the design of complex systems or environments for living, working, playing and learning (systemic integration)⁴³.

As a result of being so integrative and supple, design can be an effective approach to creative, innovative and systematic ways of solving open, complex and unambiguous management problems⁴⁴. Through triggering, intensifying and sustain-

38 A. Huff, D. Tranfield, J.E. van Aken, *Management...*; J.E. van Aken, *Management research...*; S. Bucolo, C. Wrigley, *Using a design led...*

39 R. Buchanan, *Wicked Problems...*, p. 5.

40 *Ibidem*, p. 19.

41 *Ibidem*, p. 18.

42 *Ibidem*.

43 C. Bason, *Designing co-production: Discovering new business models for public services*, [in:] *Leading Innovation through Design Proceedings of the DMI 2012 International Research Conference*, Boston 2012, pp. 311.

44 J. Liedtka, T. Ogilvie, *Designing for growth*, Columbia University Press, New York 2011; T. Brown, *Zmiana przez design: Jak Design Thinking zmienia organizacje i pobudza innowacyjność*, Instytut Dziennikarstwa i Komunikacji Społecznej Uniwersytetu Wrocławskiego, Wrocław 2016.

ing creativity in almost all areas of human life⁴⁵, design is thought as an approach, methodology or even philosophy of creative thinking and doing, and is currently used to solve a wide range of problems⁴⁶.

Design Science Research

As aforesaid, according to Holmström, Ketokivi, and Hameri, the goal of making academic research relevant to the practice remains elusive. This is because theoretical and academic research interests do not coincide with the interests of managerial practice. Looking at this fundamental challenge through the lens of design science, it gives an opportunity that problem-solving research of practice and theory-oriented academic research can complement one another⁴⁷. Therefore, management research mission should be developing valid knowledge to support thoughtful, designing practitioners⁴⁸. As van Aken remarks:

In an explanatory science, one is interested in “what is”; in a design science one is interested in “what can be” to solve a problem or to improve performance. Questions with respect to “what is” lead to descriptive knowledge; questions with respect to “what can be” lead to prescriptive knowledge. If in management research we undertook more research on the basis of the design sciences paradigm, we would produce more prescriptive knowledge⁴⁹.

Cross writes about a desire to “scientise” design, which date back to the 20th-Century modern movement of design, and those aspirations surfaced strongly again in the “design methods movement”⁵⁰. These inquiries, which can be traced to the early 1920s, were in some way summed up by the aforementioned work of Simon entitled *The sciences of the artificial*⁵¹, where Simon outlined his plea for

45 D.R. Sobota, P. Szewczykowski, *Design thinking jako metoda twórczości*, “Filo-Sofija” 2014, no. 14(27), p. 92.

46 T. Brown, *Zmiana przez design...*; K. Dorst, *The core of ‘design thinking’ and its application*, “Design Studies” 2011, no. 32(6), pp. 521–532; U. Johansson-Sköldberg, J. Woodilla, M. Çetinkaya, *Design thinking: past, present and possible futures*, “Creativity and Innovation Management” 2013, no. 22(2), pp. 121–146; D.R. Sobota, P. Szewczykowski, *Design thinking...*

47 J. Holmström, M. Ketokivi, A.P. Hameri, *Bridging practice and theory...*

48 A. Huff, D. Tranfield, J.E. van Aken, *Management...*, p. 413.

49 *Ibidem*.

50 N. Cross, *Designerly ways of knowing: Design discipline versus design science*, “Design Issues” 2001, no. 17(3), p. 49.

51 H. Simon, *The sciences...*

the development of a science design in the universities as “a body of intellectually tough, analytic partly formalizable, partly empirical, teachable doctrine about the design process”⁵².

In this way, design understood as inextricably tied practice and science, action and research can be useful for many domains of human activity and scientific disciplines; among others for management. The quotation from Alexander perfectly shows the difference between science and design, and at the same time this gap in management sciences, which as practical sciences they are obliged to fill: “Scientists try to identify the components of existing structures, designers try to shape the components of new structures”⁵³.

As Gregory rightly says:

The scientific method is a pattern of problem-solving behavior employed in finding out the nature of what exists, whereas the design method is a pattern of behavior employed in inventing things...which do not yet exist. Science is analytic; design is constructive⁵⁴.

Design regarded in this way is rather a research perspective, orientation or paradigm of other disciplines (including management) than a separate scientific discipline. A key element of that methodological and epistemological frame is not associating design with the artificial as produced by human not by nature (as claimed by Simon).

While taking a different frame, we do not have to give up the pursuit of scientific discovery in design sciences. In design perspective, it is usually assumed that the world of artifacts is determined by other rules than the natural world. In design sciences, there are rather technological/practical rules than natural laws⁵⁵. As Gasparski says, an important point is the issue of the methodological status of these rules in management sciences, which in his opinion are not scientific laws, although sometimes they are so called. Nevertheless, they should meet empirical and theoretical tests, and their validity should be confirmed by practical effectiveness and presupposed nomological sentences in social sciences⁵⁶.

52 N. Cross, *Designerly ways of knowing...*, p. 50.

53 C. Alexander, *Notes on the Synthesis of Form* (Vol. 5), Harvard University Press, Cambridge 1964, quoted in: N. Cross, *Designerly ways of knowing...*, p. 51.

54 S. Gregory, *A Design Science*, [in:] S.A. Gregory (ed.), *The Design Method*, Butterworth, London 1966, quoted in: N. Cross, *Designerly ways of knowing...*, p. 51.

55 H. Simon, *The sciences...*; W. Gasparski, *Wiedza o organizacji...*; J.E. van Aken, *Management research...*

56 W. Gasparski, *Wiedza o organizacji...*, p. 37.

However, it does not necessarily mean that we are not able to discover such rules. We just need to recognize their different status, not only methodological but above all ontological. First, they are not laws that exist regardless of the context. However, they do exist. Secondly, as Simon⁵⁷ said, they determine not what necessary but what contingent; contingent not with how things are but with how they might be. Consequently, seemingly inventing things which do not yet exist, we discover novel technological rules; novel in this sense that they are still unknown to us.

Such an epistemological frame tells us to adopt a different methodological perspective in which research is carried out through design. An important quality for adapting this approach to management is utility as a benchmark for both practice and research in the case of design sciences. As Hevner et al. say, “the goal of behavioral science research is truth. The goal of design science research is utility”⁵⁸. They developed a promising proposal for research through design in the Information Systems field⁵⁹.

The paradigm proposed by Hevner et al. is based on three cycles: the cycle of relevance, the cycle of design and the cycle of rigor⁶⁰. The design cycle as the construction and evaluation of design artifacts and processes is central for design science research. The relevance cycle brings requirements from the contextual environment into the research process and enable to test the research artifacts within the environment. As a result of the rigor cycle, on the one hand, grounding theories and methods along with domain experience and expertise from the foundations knowledge base are used in the research, on the other hand the theories, methods and knowledge base are enriched as a result of the research⁶¹. Hevner underlines that “the recognition of these three cycles in a research project clearly positions and differentiates design science from other research paradigms”⁶². In this proposition, “truth and utility are inseparable. Truth informs design and utility informs theory”⁶³.

57 H. Simon, *The sciences...*

58 A.R. Hevner et al., *Design science in information systems research*, “MIS Quarterly” 2004, no. 28(1), p. 80.

59 *Ibidem*; A.R. Hevner, *A Three Cycle View of Design Science Research*, “Scandinavian Journal of Information Systems” 2007, no. 19(2), pp. 87–92.

60 A.R. Hevner et al., *Design science...*; A.R. Hevner, *A Three Cycle...*

61 A.R. Hevner, *A Three Cycle...*

62 *Ibidem*, p. 87.

63 A.R. Hevner et al., *Design science...*, p. 80.

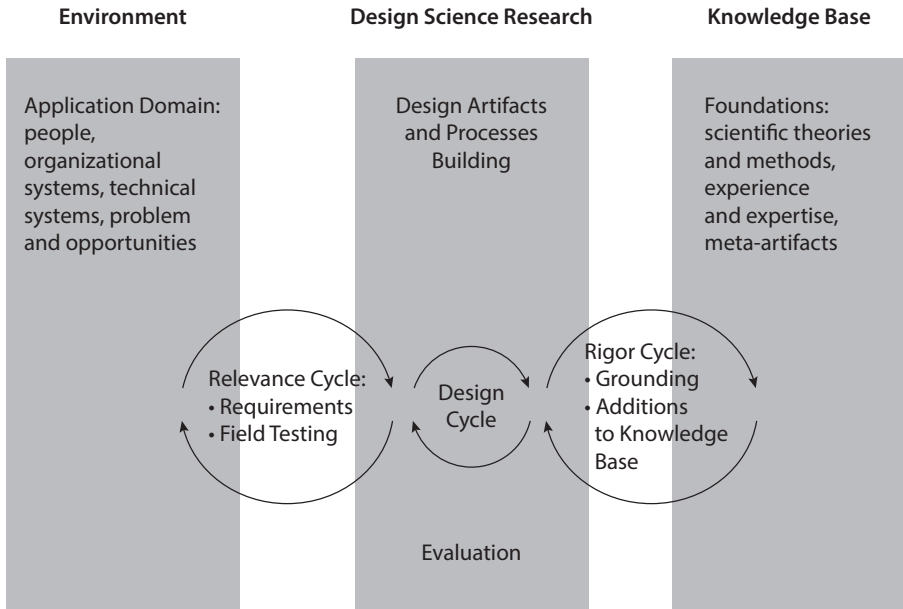


Figure 1. Design Science Research Cycles

Source: A.R. Hevner, *A Three Cycle View of Design Science Research*, “Scandinavian Journal of Information Systems” 2007, no. 19(2), p. 88.

As Hevner rightly claims, this proposal is essential not only among Information Systems professionals but also for the larger body of design science researchers in the various fields⁶⁴. According to Peffers et al., such research need a strong component capable of producing explicitly applicable research solutions, what is an important value in design science disciplines⁶⁵. Consequently, as Weber emphasizes, the challenge of design science research is to “generate scientifically sound new knowledge while producing relevant research results that can be used by practitioners at the same time”⁶⁶. The proposed research paradigm seems to respond to such a challenge. However, this paradigm “has proven to produce practically relevant research results but is still not a fully accepted research approach since it has somehow failed to develop theoretical contributions”⁶⁷.

⁶⁴ A.R. Hevner, *A Three Cycle...*, pp. 87–88.

⁶⁵ K. Peffers et al., *A design science research methodology for information systems research*, “Journal of Management Information Systems” 2007, no. 24(3), pp. 45–77.

⁶⁶ S. Weber, *Design science research: Paradigm or approach?*, [in:] *Proceedings of the Sixteenth Americas Conference on Information Systems*, no. 214, Lima 2010.

⁶⁷ *Ibidem*.

Conclusions

Management sciences have been all along found among design sciences (besides formal sciences and explanatory sciences) by some authors⁶⁸. They point to design as a methodological distinguishing feature of management sciences and a primary descriptor of management practice. The role of explanatory sciences (such as natural sciences and most social sciences) is to describe, explain and possibly predict observable phenomena within its fields. The role of design sciences is to develop knowledge for the design and accomplishment of artifacts and processes⁶⁹. Without considering this fact and striving to achieve the ideal of explanatory sciences, the problem of relevance of the organization and management research to practice deepens.

That is the fundamental reason, why a different theoretical approach to management is needed. Thus, the base of knowledge of management studies needs to be expanded to include design as one of its primary modes of engaging in research⁷⁰. Consequently, the sketch of the conceptual framework of such an approach was presented in this paper; as a starting point for further conceptual research. Two paths for incorporating the design perspective into management sciences have been revealed: 1) design-led approach to management and innovation, and 2) design science research paradigm/approach.

Design-led approach is based on the assumption that management practice is the art of getting things done, and consequently management sciences need deliver a solid design framework for the action for managers, who often do what they do acting directly on the basis of their tacit knowledge⁷¹. Design brings to an organization a different way of framing situations and possibilities, doing things, and tackling problems⁷². As an integrative and supple discipline, design proved to be effective in solving open, complex and unambiguous management problems, and it is now regarded as an approach, methodology or even philosophy of creative thinking and doing, used to solve a wide range of problems⁷³.

Design as the research framework allows to establish a principle of relevance for available knowledge from the science, determining how such knowledge may

68 H. Simon, *The sciences...*; W. Gasparski, *Wiedza o organizacji...*; A.G.L. Romme, *Making a difference...*; J.E. van Aken, *Management research...*

69 J.E. van Aken, *Management research...*

70 A.G.L. Romme, *Making a difference...*

71 A. Huff, D. Tranfield, J.E. van Aken, *Management...*

72 S. Bucolo, C. Wrigley, J. Matthews, *Gaps in organizational leadership...*

73 K. Dorst, *The core of 'design thinking'...*; U. Johansson-Sköldberg, J. Woodilla, M. Çetinkaya, *Design thinking...*

be useful not only in a specific context but also in the more general category of cases⁷⁴. For such a research a different frame is needed, which is based rather on technological/practical rules than natural laws⁷⁵. Such rules have different ontological and methodological status than this of natural laws. They do not exist regardless of the context and determine not what is necessary but what is contingent with how things might be. While inventing things which do not yet exist, we discover novel technological rules contingent with the contextual environment. Such an epistemological frame needs to adopt a different methodological perspective in which research is carried out through design.

A promising proposal for research through design has been developed by Hevner et al. in the Information Systems field⁷⁶. The substance of this proposal encompasses three closely related cycles of research activities: the cycle of relevance, the cycle of design and the cycle of rigor⁷⁷. While the design cycle is based on the construction and evaluation of design artifacts and processes, the other two cycles allow interaction with the contextual environment and the scientific knowledge base. This enables researchers both to produce explicitly applicable research solutions and develop theoretical contributions.

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74 R. Buchanan, *Wicked Problems*...

75 H. Simon, *The sciences*...; W. Gasparski, *Wiedza o organizacji*...; J.E. van Aken, *Management research*...

76 A.R. Hevner et al., *Design science*...; A.R. Hevner, *A Three Cycle*...

77 *Ibidem*.

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Abstract

The paper concerns the methodological basis of research for creating knowledge in management sciences understood as practical sciences or design sciences. The aim of this paper is to introduce research framing in management sciences, which takes into account that the conventional approaches to management regarded as an explanatory science are not sufficient to fully examine and deal with contemporary ill-structured, complex, unambiguous and often open management and organization problems. The aim has been realized using existing knowledge within a conceptual research framework for intellectual deliberation on the presented approach.

Keywords: design, methodology, design-led approach to management, design science research, research through design

The benefits of an anthropological approach in modern management sciences research

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Introduction

The first half of the XXI century is marked by a very dynamic technological revolution. As a result, the business sector in its broader sense faces new challenges in its environment – such as growing globalization, cyber sciences, artificial intelligence and FinTech development. All those changes influence significantly human attitudes, beliefs, values and relations, which has a meaningful impact on their behaviour and needs, including in the workplace. It inspires some visionaries like Jurgen Appelo to create new leadership models based on teamwork, belief in individual engagement and agile attitudes built on constant improvement. The question that arises for a scientist in such demanding times is how to best understand, describe and analyse new phenomena in management sciences in order to make them useful for the efficiency of a modern organization and applicable for its complex goals. The aim of this article is to present how anthropological approaches to the culture can contribute to current research in organization and management studies. The author intends to highlight the multiple benefits in using this methodology, both for theoretical and applied management science. This paper is divided into four parts. The first goal is to show how the current socio-economic changes challenge management sciences research. The second presents how the methodological framework is responding to these changes. The third part illustrates when and why anthropological orientation appeared in organizational studies and the final one points out the importance of anthropological approaches in management sciences research in modern times.

The influence of modern business challenges on management sciences research

As mentioned in the introduction, we observe various changes in modern business that provoke high dynamism in the global environment of organizations. Those variables lead to a shorter life cycle of products and to an increase of companies' competitiveness. In 2014, IBM conducted research on 1500 CEOs which showed that 80% of them expected an increase in complexity in the business environment and named the human factor as being the most unknown and unpredictable. Half of them acknowledged that they were not ready for those changes. Although they were aware that the key success factor of a company is based on a customer focus, they admitted not having the right degree of consumer insights¹. According to Susan Wright, major changes in organizations in all sectors have been noticeable since the 1980s and 1990s. At that time, production had been organized on an international division of labour, which influenced the introduction of new management system. Upon the implementation of these modernising changes, several new questions about different styles of organizing were engendered. Companies became increasingly concerned over how to improve opportunities for disadvantaged groups of people, allowing them to maximize their potential in the labour market. In this process of searching for new methods, 'the culture concept' – used both in organizational and anthropological studies – become significant². The science world was strongly influenced by the suggestion that organizations with 'strong cultures' were more effective³. At the time, corporate culture was offered as an added value that could be managed to improve business performance. Since the early 1980s, we have been able to observe constant growth of academic and applied exploration of organizational culture because of the changes in data management, work organization, values, lifestyle, demographics, knowledge-intensive work, outsourcing and all other social, economic and technological factors that continue to impact the relations between organizations, workers and the workplace⁴. Bruce M. Tharp claims:

- 1 M. Gładysz, *Zastosowanie metod antropologii biznesu jako innowacyjnej koncepcji badań konsumentów*, "Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania Uniwersytetu Szczecińskiego" 2018, no. 52/2, p. 384, from Ch. Madsbjerg, B. Rasmussen, *An Anthropologist Walks Into a Bar*, "Harvard Business Review" 2014, pp. 80–88 and J.M. Morais, T. de Waal Malefyt, *Business Anthropology Comes of Age*. *Anthropology News*, 2017, <https://anthrosour ce.onlinelibrary.wiley.com/doi/abs/10.1111/AN.670> (accessed: 1.04.2020).
- 2 S. Wright, *Culture in anthropology and organizational studies*, [in:] S. Wright (ed.), *Anthropology of Organizations*, Routledge, London 1994, p. 1.
- 3 T. Peters, R. Waterman, *In Search of Excellence*, HarperCollins Publishers, London 1982.
- 4 B.M. Tharp, *Defining "Culture" and "Organizational Culture": From Anthropology to the Office*, "Interpretation a Journal of Bible and Theology" 2009, p. 4.

[...] that evaluating and understanding organizational culture holds perhaps the best promise for corporate leadership being able to influence individual and group performance, facilities performance, organizational performance and ultimately the ever-important financial components of business performance⁵.

He says that no culture is truly static, with many aspects being significantly different in the wake of the internet, *the dot-com bubble* and global terrorism. This dynamism of context is comprehensively presented by Monika Kostera and Martyna Śliwa⁶ in their book *Management in the XXI Century: Quality, Creativity, Culture*. The authors present three modern contexts of management – the growing globalization of the organizational word, focus on management ‘soft tools’ such as quality and culture and the significant impact of innovation and creativity. Moreover, they highlight that we cannot fully understand the diversity of factors that impact quality in organizations without an awareness of the ethical and political aspects of management. The authors argue that organizations, besides the obvious formal and rational goals, also have many different roles to fulfil and have to be able to provide a range of human needs. Although, the so called ‘soft aspects’ of an organization were underestimated in traditional management, nowadays, organizational scientists highlight in their research aspects like; feelings, values, morality, accountability or even spirituality as moral and humanistic consequences of the taken actions. We also observe in the academic world a discussion about cultural identities and relations between ethics, culture and management. Researchers present interesting narrative aspects of management such as myths and archetypes as a spontaneous ‘product’ observed in each organization. These factors can be used by managers in order to increase creative internal potential, which is especially important in times of high competitiveness. Kostera and Śliwa show that the trend called ‘diversity management’ disposes the managers towards perceiving and appreciating the culture inside and outside of their organization – with its diversity and richness – and takes into consideration aspects of personal and group differences in organizations⁷. Marek Gładysz is also interested in seeking new ways to manage organizations in modern contexts. He highlights similar challenges for management and researchers in current times, such as dynamism in organizational environment, globalization and new approaches in identifying emotions. In his paper he points out the impact of these factors on customer’s buying decisions. Competitive advantage is now

5 *Ibidem*, p. 5.

6 M. Kostera, M. Śliwa, *Zarządzanie w XXI wieku. Jakość, twórczość, kultura*, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2010.

7 *Ibidem*, pp. 10–16.

built on innovations and efficiency which is based on an understanding of a human being. The key is to follow the individual's need for goods and services and their preferences in the work environment⁸.

An ethnographical framework as an answer to the new managerial and organizational challenges

All these challenges lead the managerial scientist to seek out the best possible method to analyse it. According to Thomas H. Davenport, the answer to these new research topics is to be found in the systematic observation used in corporate anthropology. In his opinion:

[...] a key is to know what is working and what is not, how people are using technology and other tools in the course of the workday and how workers extract meaning from their work. He highlights that corporate anthropology provides the possibility of actually knowing what is happening and why in organizations⁹.

Susan Wright claims that the reason to implement anthropological ideas into organizational studies was methodological. Similarly, Marta B. Calas and Linda Smircich¹⁰ point out that organization researchers have played a central role in 'making' organizations. That is why the institutional changes inspired the search for new methods:

[...] in place of the modernist paradigm of organizations as rational and replete with objective facts which had dominated organizational studies, anthropological studies of culture offered a more interpretative approach through which to understand organizations as sites for constructing meaning¹¹.

With this in mind, what is the anthropological approach in practice? The ethnographical method in organizational research is a coherent process that is composed of methods, principles and scientific rules taken from cultural

8 M. Gładysz, *Zastosowanie metod...*, pp. 379–381.

9 T.H. Davenport, *The rise of corporate anthropology*, "Harvard Business Review" 2007, p. 1, Digital Article.

10 M.B. Calás, L. Smircich, *Re-writing gender into organizational theorizing: Directions from feminist perspectives*, [in:] M. Reed, M. Hughes (eds), *Rethinking Organization: New Directions in Organization Theory and Analysis*, Sage, London 1992, p. 233.

11 S. Wright, 'Culture' in *anthropology...*, p. 3.

anthropology¹². The biggest advantage of this method is the observation of the social 'actors' in their own environment, which makes the description close to the experience. Ethnography helps to gather information about material outcomes, social relations, beliefs and values of the community studied in the work field. Moreover, it is personalized – the researchers are both observer and participant of the analysed social life¹³. Monika Kostera¹⁴ in her work *Anthropology of the Organization. The methodology of field research* argues that the ethnographer endeavours to expand his and his readers' understanding and perception. This kind of research is conducted to inform and understand new phenomena. Ethnography is a typically inductive methodology which is based on empirical reasoning. That is why hypothesis are not welcome in this interpretative research. What a professional ethnographer needs is the construction of a good research problem. This has to be both important and interesting. In the majority of cases a good research problem cannot be formulated at the beginning of research as it evolves during field work. The responsibility of the ethnographer is to always be sensitive to the field and be orientated towards empirical material. A good ethnographical research problem is formulated by a question such as: "why?", "how?", "in what way?". The best known example of ethnographical problem formulation is presented by Michael Burawoy¹⁵: "why do employees work as well as they do". The most important factor in this kind of research is that the researcher should not bring their own personal opinions, concepts or prejudices about the explored reality¹⁶. Having in mind all the above statements, it is important to explain why anthropological methodology was introduced into organizational and managerial sciences in the first place.

12 M. Kostera, *Antropologia organizacji. Metodologia badań terenowych*, Wydawnictwo Naukowe PWN, Warszawa 2005, p. 63.

13 M. Gładysz, *Zastosowanie metod...*, p. 381.

14 M. Kostera, *Antropologia organizacji...*, pp. 55–63.

15 M. Burawoy, *Manufacturing consent: Changes in the labor process under monopoly capitalism*, University of Chicago Press, Chicago – London 1979–1982.

16 M. Kostera, *Antropologia organizacji...*, pp. 55–63.

The beginnings and evolution of the anthropological approach in organizational studies

Susan Wright, in the introduction to the book *Anthropology of Organizations*, clearly presents the evolution of the anthropological studies of organization. She enumerates three moments that influenced the methodology and concepts of social organization and culture – the early stages of development of both disciplines in the 1920s; the 1950s–1960s; and the present day. The researcher highlights that each of those periods raised important questions about the core fieldwork – participant observation, analysis of context and meaning. The beginning of organizational studies is correlated with the concept of ‘Scientific Management’ – also called Taylorism. The biggest question for this manager-centred approach was how to optimize the production system within an organization. The initial idea to test this concept appeared between 1927 and 1932 in Western Electric’s Hawthorne plant in Western Chicago and in Cicero, Illinois. At first, the Hawthorne management with some help from a psychologist from Harvard University – Elton Mayo – tested the impact of changing physical conditions on output. The conclusion showed that psychological factors, such as management attention, were more important than physical conditions in achieving changes in output. That is how the Human Relations School was born. The thesis of this approach, based on discovering the social organization of the workplace, dominated organizational studies for the next twenty-five years¹⁷. Robert Guang Tian highlights that the Hawthorne experiment was the beginning of ‘industrial anthropology’ also called ‘work anthropology’ or ‘applied anthropology’ that became ‘business anthropology’ in the 1980s. In the next stage of his Hawthorne research Elton Mayo engaged Bronisław Malinowski’s student, the anthropologist Lloyd Warner. Thanks to this cooperation, Mayo implemented a new method to study the social organization of work groups – and that was anthropological direct observation. The idea was to treat the shop floor as a small society in which every aspect of life was interconnected in a social system. Nevertheless, the Human Relations School had a weakness – that all studies were manager-centred. In senior managers’ opinions the ‘problems’ existed only on the shop floor. The managers were not ‘problematized’ in the same way. In answer to this, there were other shop floors studies conducted in 1950s and 1960s in Manchester (Britain) that treated the top-down approach in a slightly different way. The series

17 S. Wright, ‘Culture’ in *anthropology...*, p. 5.

of studies were prepared by anthropologists from Manchester – at that time field-work methods for studying shop floors were transformed into full participant observation. The anthropology became a method for creating an ethnographic description and a way of analysing detailed social situations so that they could be used for understanding and theorizing wider aspects of social organizations. The main interest of the scientists from Manchester was focused on the conflicts and problems of the analysed relations. Starting with this approach, the anthropological analysis changed the view on ‘problems’ without a priori hypotheses. This approach proposed new view on the concept that the ‘natural’ relation between workers and management is ‘spontaneous cooperation’ that can only be disturbed by a lack of communication. Going further with this concept, Susan Wright underlines that anthropological methods in the 1960s had changed from observant participation to full ‘insider’ participation combined with ‘outside’ observation of current social conceptualization. Anthropologists were moving away from functionalism and the idea that society is organized in structures built on social roles towards the interpretative construction of meaning in social events and an interest in symbolism. The suggestion that anthropologists should ‘study up as well as down’ created another important influence on the methodological and conceptual issues. Laura Nader¹⁸ proposed studying ‘the culture of power’ – hidden hierarchies and mechanisms of manipulation. A few years later, the new subject of debate in anthropology was how to conceptualize and analyse metaphors or systems of thinking in organization. Mary Douglas was interested in how ‘institution think’. She claimed that social solidarity was created during the cognitive process of ‘thought worlds’ on which institutions were built. After the discovery of ‘corporate culture’ by Terrence E. Deal and Allan A. Kennedy in 1982¹⁹, new techniques were developed to distinguish these informal cultures from corporate culture. In the meantime, Clifford Geertz’s interpretative vision became popular in the literature on organizational studies. According to this researcher, people have different structural power and personal ability to impose their meanings on events and interpret them²⁰. Ann T. Jordan says that changing the focus towards qualitative research in 1990s was the effect of realizing that quantitative research was imperfect and consolidated stereotypes. Companies that were hiring people with diverse education levels and

18 L. Nader, *Up the Anthropologist: Perspectives Gained From Studying Up*, [in:] D.H. Hymes (ed.), *Reinventing anthropology*, Pantheon Books, New York 1972, pp. 284–311.

19 T.E. Deal, A.A. Kennedy, *Corporate Cultures: The Rites and Rituals of Corporate Life*, Addison Wesley Publishing Company, Reading 1982.

20 S. Wright, ‘Culture’ in *anthropology...*, pp. 5–17.

ethnicity noticed challenges with creating a coherent organizational culture²¹. Moreover, the development of the internet also created new opportunities for behaviour research, by transferring the researchers into the net. At that point virtual ethnography was born – a combination of online behaviour observation and participations in online discussions and games²².

The need and importance of anthropological methodology in current managerial and organizational research

In the final part of this article the author attempts to emphasize the importance of an anthropological approach in modern management sciences. Robert Guang Tian points out that the anthropology has a long history within the evolution of management principles. This researcher argues that the principles of management provide guidelines for managerial decision making and actions, and that they can be derived on the basis of observation and analysis²³. The principles of management are interested in human behaviour as an essential factor of production, but it cannot be tested under controlled conditions such as in laboratory. Every individual is distinct from other workers; in his knowledge, skill, socio-economic status, attitudes, ability and ideologies. Management is concerned with how to integrate these individual efforts and how to decentralize them towards achieving the planned results. Tian says that the implication of anthropology can be developed in all areas of management. The most discussed are: anthropology and cross-cultural management, anthropology and human resources management, anthropology and an organization's behaviour, anthropology and competitive intelligence and knowledge management²⁴. Another scientist who sees great conceptual and methodological potential in social anthropology is Stephen Andrew Linstead. In his opinion, the anthropological approach has a major impact on influencing multi-disciplinary research in management. According to Linstead, it can contribute to the study, practice and teaching of management in three categories. The first insists on a culture focus – the study reassess the significance of shared meanings

21 A.T. Jordan, *The Importance of Business Anthropology: Its Unique Contributions*, "International Journal of Business Anthropology" 2010, no. 1, pp. 15–25.

22 Ch. Hine, *Virtual Ethnography*, Sage, London 2000.

23 R.G. Tian, *Principles of Management: An Anthropological Perspective*, 2010, p. 2, <http://businessanthropology.blogspot.com/2010/11/principles-of-management.html> (accessed: 1.04.2020).

24 *Ibidem*, pp. 1–7.

and conflicting interests in specific situations. The second helps to critically elaborate the concept of symbolic and representation in management, thanks to which managers may be more open to self-consciousness. Another great benefit of this approach is the fact that, at the same time, it takes as its objectives the accurate description of the contexts, and an understanding of how they are interpreted and experiences by participants. The researcher highlights that it also helps one to defamiliarize themselves with circumstances that were taken for granted and reveal suppressed and alternative possibilities²⁵. Marek Gładysz also talks about the benefits of an anthropological approach in business. He points out that the new era of consumer's thinking, especially in light of behavioural economy, focuses consumer research on building a deeper understanding of the behaviour of current and future clients. The understanding of language, values or rituals in the day-to-day environment (called 'consumer insights') constitutes a priceless data base for the product and customer service innovation process. Thanks to this perspective the company can build a competitive advantage. Gładysz repeats after Robert Kozłowski²⁶ that an 'insight' helps to enter the customers' world and understand the patterns of their functioning, their needs and related problems. The key factor in the success of this approach is the ability to visualise the customer's problem through one's own eyes and with one's own perspective, without presumptions. Anthropologists help organizations to understand their customers, suppliers and business partners, therefore currently, many corporations, government agencies, consulting firms and marketing agencies work with anthropologists. Among which we can enumerate companies like Xerox, Motorola, Intel, Nokia, Google or IBM. Companies hire the anthropologists in order to improve the quality of their management and to increase profits. They work in such areas as new product development, communication, design, and strategic planning. By helping to gather more information about employees and customer's preferences, the efficiency of the organization is impacted significantly. As a result, products and services can be more aligned with the receiver's needs, both in functional and emotional areas. Gładysz refers to Tian's opinion that modern managerial research projects are centred around three main subjects: marketing and consumer behaviour; the theory of the organization and organizational culture; and, finally, business, especially international marketing, intercultural management and intercultural communication²⁷. Related to this suggestions is what Hirschman had called 'humanistic' marketing management research. Thanks to the informant-centred focus, the researchers are

25 S.A. Linstead, *The social Anthropology of Management*, "British Journal of Management" 2002, vol. 8, no. 1, pp. 85–98.

26 R. Kozłowski, *Wycucie klienta*, "Marketing w Praktyce" 2013, no. 6, pp. 18–20.

27 M. Gładysz, *Zastosowanie metod...*, pp. 382–383.

able to see more effectively what motivates consumers and impacts their responses²⁸. The benefit of ethnographical methods is that the anthropology of business becomes applied and, as a result, innovative solutions are constantly found²⁹.

Conclusions

Organization and management of XXI century face many difficult and dynamic changes, both in conceptual and practical areas. There are numerous technological, ecological, economical, social, and psychological factors that currently determine the functioning of organization and leadership methods. In order to adapt to these changes and to be prepared for a progressively unpredictable future, organizations turn to applied science and new research results. An anthropological approach based on ethnographical methods seems to be one of the best scientific orientations to follow up on these changes as it helps to observe, understand and analyse important and sometimes deeply hidden aspects of an organization's surroundings, life and structure. If, after Tian, we assume that: "it is culture that makes social life and economic cooperation possible and meaningful"³⁰, the results of current and future anthropological research may have a significant impact on organizational profitability, success in its wider context or even existence. This kind of approach is key for business because it invites managers to focus on the so called 'human factor' in their cooperation with both employees and customers. As individualism seems to be a critical factor in the modern world, we can assume that the anthropological approach that is interested in human beings will be ever more crucial in current and future management sciences research.

Focusing on change, anthropological ideas and concepts can shape and reflect change processes and resolve unproductive dilemmas; and managerial learning can be enhanced by prompting the ethnographic consciousness as a way of investigating and understanding, an attitude of openness³¹.

To summarize, the benefits of an anthropological approach in modern management sciences research can be considered unquestionable.

28 R.G. Tian, *Principles of Management...*, p. 3.

29 M. Gładysz, *Zastosowanie metod...*, p. 379.

30 R.G. Tian, *Principles of Management...*, p. 4.

31 S.A. Linstead, *The Social Anthropology...*, introduction.

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Abstract

How do new managerial models and socio-economic change impact the methodology of management sciences? The author aims to answer how best to describe and analyse the challenges of modern organization and their management system in light of the needs and expectations of employees. The goal of this article is to emphasize the necessity and the benefits of an anthropological approach in management sciences research. The author will present the concepts and methods of social, business and corporate anthropology as a framework for the scientific exploration of the technological revolution that influences various levels of human mentality and attitudes in a workplace.

Keywords: business anthropology, management sciences, modern organization challenges

The application of content analysis as a research method in management sciences¹

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Introduction

In the social world, the need for in-depth sociological analysis of messages is undeniable². Management literature indicates that psychological traits play a key role in shaping the strategy and performance of firms through their impact on managerial risk taking³. Studying the effects of these traits should therefore have a high priority in management studies. However, the issue of decreasing response rates of executives impairs survey-based research⁴. In order to mitigate that problem, the authors attempted to answer the question: “How to study the individual characteristics of the core decision makers in firms, bearing in mind the great difficulties with accessing them due to the decreasing response rates in executive surveys?”. The article proposes, as one of the possible solutions to this problem, the use of content analysis, which is successfully applied in sociology⁵. The words used in daily life reflect what people are focused on, what are they thinking about

1 This article has been developed with the funding from National Science Centre, Poland – project no. 2017/25/N/HS4/02037.

2 K. Szczepaniak, *Zastosowanie analizy treści w badaniach artykułów prasowych – refleksje metodologiczne*, “Acta Universitatis Lodziensis. Folia Sociologica” 2012, vol. 42, pp. 83–112.

3 R.E. Hoskisson et al., *Managerial risk taking: A multitheoretical review and future research agenda*, “Journal of Management” 2017, vol. 43, no. 1, pp. 137–169.

4 C.S. Cycyota, D.A. Harrison, *What (not) to expect when surveying executives: A meta-analysis of top manager response rates and techniques over time*, “Organizational Research Methods” 2006, vol. 9, no. 2, pp. 133–160.

5 K. Szczepaniak, *Zastosowanie analizy treści...*

or how they feel⁶. And the new technologies that create and archive digital traces offer researchers a novel, large-scale data which reflects people's actual behaviors that can be rapidly collected and analyzed by new tools⁷.

This paper aims to present the potential of content analysis as an effective and cutting-edge method to study the psychological traits of firms' hard-to-reach core decision makers. In order to do that, the authors conducted a systematic literature review of articles from multiple databases (i.e. Web of Science, Scopus, and Google Scholar), limited to the period of 2009–2019. The analysis targeted 13 management articles that employed content analysis as the method to assess psychological traits of individual managers (Table 2).

Characteristics of content analysis

Content analysis as a methodological tool firstly appeared in the literature in the early 1940s⁸. In its early stage, it focused on the identification of manifested content. The technique was later expanded to include the domain of qualitative methods, focusing on both manifested and latent content⁹. Nowadays, a wide range of theoretical frameworks, methods, and analytical techniques have been labeled content analysis. It is an entire class of methods at the intersection of the qualitative and quantitative traditions¹⁰, recognized for its value in uncovering replicable and valid inferences from a body of text – i.e., words, phrases, and language used by individuals in speeches, organizational narratives or other communication media¹¹.

- 6 Y.R. Tausczik, J.W. Pennebaker, *The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods*, "Journal of Language and Social Psychology" 2010, vol. 29, no. 1, pp. 24–54.
- 7 A. Rafaeli, S. Ashtar, D. Altman, *Digital Traces: New Data, Resources, and Tools for Psychological-Science Research*, "Current Directions in Psychological Science" 2019, vol. 28, no. 6, pp. 560–566.
- 8 K. Krippendorff, *Content analysis: An introduction to its methodology*, Sage Publications, Thousand Oaks 2004.
- 9 The content is manifested, when the analysis focuses on easily observable meanings in a body of text. The content is latent, when the analysis focuses of the underlying meanings of texts – A. Gaur, M. Kumar, *A systematic approach to conducting review studies: An assessment of content analysis in 25 years of IB research*, "Journal of World Business" 2018, vol. 53, pp. 280–289.
- 10 V.J. Duriiau, R.K. Reger, M.D. Pfarrer, *A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements*, "Organizational Research Methods" 2007, vol. 10, no. 1, pp. 5–34.
- 11 B. Szymczyk, W. Żakowicz, K. Stemplewska-Żakowicz, *Automatyczna analiza tekstu: polska adaptacja programu LIWC Jamesa Pennebaker*, "Przegląd Psychologiczny" 2012, vol. 55, no. 2, pp. 195–209.

According to the classical definition by Bernard Berelson, from 1952, content analysis is a research technique for the objective, systematic and quantitative description of explicit content of messages. The most questionable aspect of this definition is the assumption that the message's meaning is always consistent with the intentions of the sender and free from understatement and overinterpretation. It is postulated that the researcher should have a certain leeway to draw conclusions based on the examined material. Therefore, one can conclude not only from what was written in the texts, but also from what was left unsaid¹².

There are four stages of content analysis: data collection, coding, analysis, and interpretation of coded content. In the first, the data collection stage, researchers select their data sources and identify sampling criteria. To select valid samples, it is essential for researchers to understand the relationships between source databases, sample characteristics, and research questions. In the second stage, the collected textual data are coded into different categories at various levels (recording units): words, phrases, sentences, paragraphs, or themes. In order to develop valid coding schemes, researchers use the 8-step Weber Protocol: (1) Definition of the recording units; (2) Definition of the coding categories; (3) Test of coding on a sample of text; (4) Assessment of the accuracy and reliability of the sample coding; (5) Revision of the coding rules; (6) Return to Step 3 until sufficient reliability is achieved; (7) Coding of all the text; (8) Assessment of the achieved reliability or accuracy. In the third stage, which is analysis of content, researchers can use various formats to present their observations. The vast majority of research relied on simple counts. The fourth and final stage is the interpretation of results within the theoretical framework, depending on the research purpose: measurement, description, or inference¹³.

Content analysis has a number of methodological advantages over other research methods. Foremost to management research, it provides a replicable methodology to access deep individual structures. As such, content analysis is applicable to those important but difficult-to-study issues of interest to management researchers, such as managerial cognition¹⁴. This is due to its unobtrusive nature¹⁵. Being unobtrusive is particularly relevant to the study of senior executives, as access to information from this source is often a serious issue. Moreover, because of the availability of comparable corporate information over a certain timeframe (such as annual reports or trade magazines) longitudinal research designs of these managers can be implemented¹⁶.

12 K. Szczepaniak, *Zastosowanie analizy treści...*

13 V.J. Duriau, R.K. Reger, M.D. Pfarrer, *A content analysis...*

14 C.S. Cycyota, D.A. Harrison, *What (not) to expect...*

15 K. Szczepaniak, *Zastosowanie analizy treści...*

16 V.J. Duriau, R.K. Reger, M.D. Pfarrer, *A content analysis...*

Given recent advances in computer-aided techniques, content analysis can cope with large volumes of unstructured data. Computer-aided text analysis (CATA) is a form of content analysis that enables the measurement of constructs by processing text into quantitative data based on the frequency of words. CATA has been used to analyze large sets of qualitative data at high speed that have allowed scholars to answer questions surrounding behaviors and motivations of individuals. These programs are constructed in a way to enable and facilitate the work with the tested material by cataloging, organizing, as well as providing advanced search capabilities. They improve exploration, analysis and presentation of synthesized data¹⁷.

Qualitative analysis programs differ not only in terms of the type of functions available, but also in the scope of activities within the same functions and how to access certain data and aspects of analysis. Depending on the type of analytical activities, four types of programs can be distinguished that support: (1) arithmetic (quantitative) analysis, (2) collection and editing of textual data, (3) organization and management of various types of data, and (4) support of theory creation process¹⁸. When choosing the software, researcher must be aware of what the research goal is, the type of data or the method used, as well as the method of analysis¹⁹. Examples of this software are shown in Table 1.

Table 1. Types of computer programs for qualitative data analysis (CATA)

Types of programs	Names of programs
Arithmetic (quantitative) analysis	MAX, Tabletop, Spad.t
Collection and editing of textual data	askSam, Folio Views, MAX, Tabletop, HyperQual2, QSR N6 (NUD*.IST), Martin, QUALPRO, The Ethnograph, Kwalitan.
Organization and management of various types of data	askSam, HyperQual2, FolioViews, Orbis, MAX
Support of theory creation process	NUD*IST, ATLAS.ti, MECA, MetaDesign, SemNet, QCA, ETHNO, Inspiration, for hypothesis testing: HyperRESEARCH, AQUAD.

Source: J. Bieliński, K. Iwińska, A. Rosińska-Kordasiewicz, *Analiza danych jakościowych przy użyciu programów komputerowych*, “ASK” 2007, vol. 16, p. 97.

17 J. Bieliński, K. Iwińska, A. Rosińska-Kordasiewicz, *Analiza danych jakościowych przy użyciu programów komputerowych*, “ASK” 2007, vol. 16, pp. 89–114.
18 J. Bieliński, K. Iwińska, A. Rosińska-Kordasiewicz, *Analiza danych jakościowych...*
19 J. Niedbalski, *Komputerowe wspomaganie analizy danych jakościowych (CAQDAS) w projektowaniu i prowadzeniu badań*, “Nauka i Szkolnictwo Wyższe” 2013, vol. 1/41, pp. 185–202.

Content analysis in management research

The past two decades have seen an “increasing scholarly interest in qualitative methodologies to study complex business phenomena, by borrowing and adapting from more established disciplines”²⁰. Recent literature using content analysis has made particularly worthy contributions in the area of managerial and organizational cognition²¹, a topic which goes back at least to Kets de Vries and colleagues²². The most important leadership function in any firm is performed by the CEO²³, who is responsible for setting up the strategy²⁴, with CEO communication as the core managerial cognitive capability that underpins the firm-level outcomes²⁵.

The empirical literature in management has been long studying the effect of CEO communication on firm-level outcomes²⁶. However, a persistent challenge for research on top executives has been the limited ability to obtain valid and reliable measures of their personality traits. The challenges associated with surveying CEOs have limited both the number and sample sizes of studies. As an alternative to using the traditional ways, some scholars have recently used word-count software to identify keywords in texts attributed to CEOs²⁷.

According to Duriau, Reger, and Pfarrer²⁸, annual reports are the most frequently used sources of content analysis in management research. They are the primary materials to study the interaction of firms with their environment, having several

20 J.S. Harrison et al., *Measuring CEO personality: Developing, validating, and testing a linguistic tool*, “Strategic Management Journal” 2019, vol. 40, no. 8, pp. 1316–1330.

21 V.J. Duriau, R.K. Reger, M.D. Pfarrer, *A content analysis...*

22 M.F.R. Kets De Vries, D. Miller, *Neurotic style and organizational pathology*, “Strategic Management Journal” 1984, vol. 5, no. 1, pp. 35–55.

23 E.g., A. Chatterjee, D.C. Hambrick, *It’s all about me: Narcissistic chief executive officers and their effects on company strategy and performance*, “Administrative Science Quarterly” 2007, vol. 52, no. 3, pp. 351–386; R.S. Peterson et al., *The impact of chief executive officer personality on top management team dynamics: One mechanism by which leadership affects organizational performance*, “Journal of Applied Psychology” 2003, vol. 88, no. 5, pp. 795–808.

24 D.C. Hambrick, P.A. Mason, *Upper echelons: The organization as a reflection of its top managers*, “Academy of Management Review” 1984, vol. 9, no. 2, pp. 193–206.

25 CEOs’ communication style includes both verbal and nonverbal forms of expression – C.E. Helfat, M.A. Peteraf, *Managerial cognitive capabilities and the microfoundations of dynamic capabilities*, “Strategic Management Journal” 2015, vol. 36, no. 6, pp. 831–850; P. Choudhury et al., *Machine learning approaches to facial and text analysis: Discovering CEO oral communication styles*, “Strategic Management Journal” 2019, vol. 40, pp. 1705–1732.

26 E.g., R.A. D’Aveni, I.C. MacMillan, *Crisis and the content of managerial communications: A Study of the focus of attention of top managers in surviving and failing firms*, “Administrative Science Quarterly” 1990, vol. 35, no. 4, pp. 634–657.

27 J.S. Harrison et al., *Measuring CEO personality...*

28 V.J. Duriau, R.K. Reger, M.D. Pfarrer, *A content analysis...*

advantages over other sources of corporate information to study cognitive phenomena. These advantages are due to their unobtrusive and longitudinal character²⁹. As can be seen in Table 2, their predominance in management studies in the last decade has continued, particularly one outlet, i.e. shareholder letters.

CEO letters are corporate narratives with high diversity in vocabulary and lexical variety, providing considerable opportunity to direct attention, establish focus on prevalent events and affect external perception. In these letters, the CEO can comment on company actions, events, performance and outcomes. They are full of linguistic devices that hold interactional cues of both rational and affective appeal that reflect CEO's purposive editorializing³⁰.

Table 2. Management studies from 2009–2019, utilizing content analysis as the method to assess psychological traits of individual managers

No.	Authors	Year	Source of content analysis	Psychological traits assessed with content analysis (variables)	Concluding remarks regarding variables assessed with content analysis
1	Behr and Fehre	2019	Shareholder letters	CEO CSQ ^a (independent)	CSQ does not increase continuously over time but it alters after a first, short, stage of incumbency due to “newness” in the CEO position and does not increase significantly in later stages.
2	Buyl, Boone, and Wade	2019	Shareholder letters	CEO narcissism (independent)	The combination of CEO narcissism and specific CG ^b practices leads towards (excessive) risk-taking; thus, an organization's CG policies can make a real difference in reining in narcissistic CEOs. Recovery after the September 2008 collapse was slower in banks with a more narcissistic CEO, and this effect was partially mediated by banks pre-shock riskiness of policies.

29 E.H. Bowman, *Content analysis of annual reports for corporate strategy and risk*, “Interfaces” 1984, vol. 14, no. 1, pp. 61–71.

30 B. Yan, W. Aerts, J. Thewissen, *The informativeness of impression management – financial analysts and rhetorical style of CEO letters*, “Pacific Accounting Review” 2019, vol. 31, no. 3, pp. 462–496.

No.	Authors	Year	Source of content analysis	Psychological traits assessed with content analysis (variables)	Concluding remarks regarding variables assessed with content analysis
3	Chang, Lee, and Oh	2018	Shareholder letters	CEO regulatory focus (independent)	Promotional CEOs (CEOs with predominant promotion focus) are more engaged in CSR ^c even when the industry-level and firm-level dynamisms are high.
					CEOs with a promotion focus seem to be more active in stakeholder management, whereas CEOs with a prevention focus may not make as much of a difference in this regard as promotional CEOs.
					CEO regulatory focus interacts with industry-level and firm-level dynamisms to affect CSR.
4	Eggers and Kaplan	2009	Shareholder letters	CEO attention (independent)	Managerial cognition is associated with differences in the timing of entry into a new product market.
					The effect of CEOs cognition is context-specific. It differs depending on the focus of their attention, the level of organizational orientation, and whether firms possess greater industry-related capabilities.
5	Gamache, McNamara, Mannor, and Johnson	2015	Shareholder letters	CEO regulatory focus (independent)	CEO regulatory focus impacts both the quantity and scale of acquisitions undertaken by a firm.
					Relationships between CEOs with predominant promotion focus and both quantity and scale of acquisitions undertaken by a firm are moderated by stock option pay.

Table 2 (continued)

No.	Authors	Year	Source of content analysis	Psychological traits assessed with content analysis (variables)	Concluding remarks regarding variables assessed with content analysis
6	Gamache and McNamara	2019	Shareholder letters	CEO past focus (moderating); CEO future focus (moderating)	CEO temporal focus (disposition that reflects the degree to which individual attention is directed toward the past, present, and future) shapes which CEOs will be influenced by media reactions. A CEOs' propensity to be influenced by stock market reactions is not moderated by their temporal focus.
7	Kashmiri, Gala, and Nicol	2019	Shareholder letters	CEO regulatory focus (independent)	Firms whose CEOs are predominantly promotion-focused tend to have higher levels of advertising and R&D^d intensities. On the other hand, firms led by such CEOs are also more likely to get involved in marketing controversies. The impact of a CEO's regulatory focus is, on the whole, strengthened when the CEO has high power and low stock option-compensation ratio, and when the firm operates under high environmental dynamism. CEO power does not moderate the impact of CEO regulatory focus on a firms' advertising intensity.
8	Keil, Maula, and Syrigos	2017	Shareholder letters	CEO entrepreneurial orientation (independent)	CEO entrepreneurial orientation enhances firm value creation and this positive effect is reduced when CEOs are entrenched (1) due to CG provisions that protect them from the majority will of shareholders, (2) due to substantial ownership that provides them with too much decision-making power, or (3) due to substantial ownership held by the CEO's family.

No.	Authors	Year	Source of content analysis	Psychological traits assessed with content analysis (variables)	Concluding remarks regarding variables assessed with content analysis
9	Knust	2017	Shareholder letters	CEO regulatory focus (independent)	The higher the intensity of change, the organization is actually executing, the higher the promotion focus of CEOs.
10	Malhotra, Reus, Zhu, and Roelofsen	2018	Text spoken by a CEO in response to questions in Q&A segment of quarterly earnings conference calls with financial analysts	CEO Big Five – extraversion (independent)	Extraverted CEOs are more likely to engage in acquisitions, and to conduct larger ones, than other CEOs and these effects are partially explained by their greater representation on boards of other firms. The acquisitive nature of extraverted CEOs reveals itself particularly in so-called “weaker” situations, in which CEOs enjoy considerable discretion to behave in ways akin to their personality traits. Extraverted CEOs are more likely than other CEOs to succeed in M&A^e, as reflected by stronger abnormal returns following acquisition announcements.
11	McClelland, Liang, and Barker	2010	Shareholder letters	CEO CSQ (independent)	In high-discretion industries, firms whose CEOs are committed to the status quo suffer future financial and market performance declines compared with their competitors, whereas such performance deterioration does not occur in low-discretion environments.
12	Nadkarni and Chen	2014	Shareholder letters; press releases; speeches; interview transcripts	CEO temporal focus (independent)	In stable environments, new products are introduced faster in firms headed by CEOs with high past focus, high present focus, and low future focus. In dynamic environments, new products are introduced faster in firms headed by CEOs with low past focus, high present focus, and high future focus.

Table 2 (continued)

No.	Authors	Year	Source of content analysis	Psychological traits assessed with content analysis (variables)	Concluding remarks regarding variables assessed with content analysis
13	Patelli and Pedrini	2013	Shareholder letters	CEO optimism (independent)	An optimistic tone in shareholder letters is congruent with both past and future performance.

^a CSQ – commitment to the status quo; ^b CG – corporate governance; ^c CSR – corporate social responsibility; ^d R&D – research and development; ^e M&A – mergers and acquisitions.

Source: own work.

Conclusions

This paper identifies various methodological approaches of collecting data unobtrusively from executive written communication, showing the possible way for management scientists to bypass the fundamental limitations of collecting psychological data from primary sources. The findings from reviewed studies strongly support the notion that the psychological traits of CEOs, as core decision makers, impacts a firms' strategy and performance indicators, and that these traits can be effectively assessed with content analysis. They also point at shareholder letters as a relevant source of such assessment due to their longitudinal availability for a large sample of firms.

Content analysis is, however, not without its flaws. When done entirely by hand it is time-consuming³¹. On the other hand, the main objection regarding the use of CATA software in content analysis is its rigidity, which subordinates the analysis to solutions implemented by the tool developers. Thus, it is pointed out that the computer program narrows the field of researcher's activity, which is contrary to the spirit of qualitative research methodology³².

Annual reports have also been criticized in managerial-cognition research. Some researchers say that shareholder letters may be the result of Public Relations activities, and therefore may be not come from the actual managers³³. Even if this is true in some cases, CEOs spend extensive time outlining the majority of the

31 K. Krippendorff, *Content analysis...*

32 J. Niedbalski, *Komputerowe wspomaganie analizy...*

33 P.C. Fiss, E.J. Zajac, *The symbolic management of strategic change: Sensegiving via framing and decoupling*, "Academy of Management Journal" 2006, vol. 49, no. 6, pp. 1173–1193.

content, making extensive corrections and adding their slant³⁴. This is because whoever's signature is on the document is responsible for its content in a legal sense before any financial supervision authority and, in a social sense, to the many stakeholders³⁵. There are numerous studies that have adopted content analysis of shareholder letters and confirmed the validity of this research method³⁶. Any criticism of this approach must take into account the undoubted advantage in studying the characteristics of the psychology of CEOs, in that it provides a discrete and consistent annual measure for long-term analysis³⁷. Although this process is not without its flaws, achieving an approximate description of CEO is better than employing those methods with a meagre response rates.

There is also the question of whether the findings are applicable in other than a predominantly U.S. cultural context³⁸. Some scholars have suggested that cultural differences among CEOs can impact shareholder letters. For example, Huang and Rose found that the letters of Western CEO tend to use more credibility and affective appeals, while Chinese CEOs' letters are based more on rational appeals³⁹. On the other hand, Hooghiemstra found that U.S. and Japanese CEOs' letters do not vary in the communication of good news⁴⁰. Another study by Conaway and Wardrope found that the same strategic characteristics in the letters of CEOs existed across both Latin American and U.S. samples⁴¹. Therefore, the authors' preliminary analysis of the literature does not indicate any significant premises for restrictions on the use of the method in different cultural contexts.

34 E.H. Bowman, *Content analysis...*

35 J.P. Daly, R.W. Pouders, B. Kabanoff, *The effects of initial differences in firms' espoused values on their postmerger performance*, "The Journal of Applied Behavioral Science" 2004, vol. 40, no. 3, pp. 323–343.

36 E.g., S.E. Clapham, C.R. Schwenk, *Self-serving attributions, managerial cognition, and company performance*, "Strategic Management Journal" 1991, vol. 12, no. 3, pp. 219–229; R.A. D'Aveni, I.C. MacMillan, *Crisis and the content...*; C.M. Fiol, *Corporate communications: Comparing executives' private and public statements*, "Academy of Management Journal" 1995, vol. 38, no. 2, pp. 522–536.

37 O. Levy, *The influence of top management team attention patterns on global strategic posture of firms*, "Journal of Organizational Behavior" 2005, vol. 26, no. 7, pp. 797–819.

38 H. Behr, K. Fehre, *CEO succession and the CEO's commitment to the status quo*, "Business Research" 2019, vol. 12, pp. 355–381.

39 Y. Huang, K. Rose, *You, our shareholders: metadiscourse in CEO letters from Chinese and Western banks*, "Text&Talk" 2018, vol. 38, no. 2, pp. 167–190.

40 R. Hooghiemstra, *Letters to the shareholders: A content analysis comparison of letters written by CEOs in the United States and Japan*, "The International Journal of Accounting" 2010, vol. 45, no. 3, pp. 275–300.

41 R.N. Conaway, W.J. Wardrope, *Do their words really matter? Thematic analysis of U.S. and Latin American CEO letters*, "Journal of Business Communication" 2010, vol. 47, no. 2, pp. 141–168.

Due to the abovementioned limitations, future research should both adopt richer conceptual frameworks, combining content analysis with ethnographic or cultural approaches, and also incorporate a wide variety of external and internal documents, other than shareholder letters⁴². Another promising avenue for future research is broadening the content analytic approach. This can be done by triangulating the alternative methodological approaches in order to study both verbal and nonverbal CEO communication⁴³, as well as written texts⁴⁴.

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42 V.J. Duriau, R.K. Reger, M.D. Pfarer, *A content analysis...*

43 P. Choudhury et al., *Machine learning approaches...*

44 C.E. Helfat, M.A. Peteraf, *Managerial cognitive capabilities...*

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Abstract

The purpose of this paper is to present the potential of content analysis as a method to study the psychological traits of firms' core decision makers. Research shows that these traits play a fundamental role in shaping corporate strategy and performance. The paper is theoretical, explaining the essence, origin and advantages of the method, indicating the application examples in sociology with an emphasis on the increasingly frequent use in management studies. It also identifies various methodological approaches of collecting data from written communication, showing the possible ways for scientists to bypass accessibility limitations to primary sources. The analysis of results shows a high validity of linguistic techniques used for assessing the antecedent psychological traits of core decision makers.

Keywords: content analysis, methodology, psychological traits, CEO communication, shareholder letters

How to measure SCRES? – the perspective of flexibility and redundancy in relationships with suppliers

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Introduction

In recent years, the concept of risk management and the concept of business continuity management have developed into a broad approach, which is supply chain resilience (SCRES). Interest in this subject began when the Christopher and Peck published an article presenting considerations on the need to reduce supply chain vulnerabilities¹. The authors understood resilience as ‘the ability of a system to return to its original state or move to a new, more desirable state after being disturbed’, a definition which refers mainly to a situation when a disruption has already happened. Over the years, the SCRES concept has developed from covering not only the stage of response, but also the issue of proactive and concurrent strategies², and it is now generally claimed that *flexibility* and *redundancy* practices play a key role in building supply chain resilience³. This is why these two elements we chosen as the subject of the following considerations.

1 M. Christopher, H. Peck, *Building the resilient supply chain*, “The International Journal of Logistics Management” 2004, vol. 15, no. 2, pp. 1–14.

2 B.R. Tukamuhabwa et al., *Supply chain resilience: definition, review and theoretical foundations for further study*, “International Journal of Production Research” 2015, vol. 53, no. 18, pp. 5592–5623; A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience: integrating the constructs in a concept mapping framework via a systematic literature review*, “Supply Chain Management: An International Journal” 2017, vol. 22, no. 1, pp. 16–39.

3 C.R. Pereira, M. Christopher, A. Lago Da Silva, *Achieving supply chain resilience: the role of procurement*, “Supply Chain Management: An International Journal” 2014, vol. 19, no. 5/6, pp. 626–642; N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience:*

SCRES is based on a wide definition of the supply chain, which is known as the network of organizations and interconnected value adding processes⁴. While previous publications focused primarily on the general resilience aspect in the entire supply chain, the basis for the considerations below is the assumption that building resilience in the supply chain should be tailored to individual processes in the network. Namely, risk mitigation and business continuity, which are practices specific to a given area of the supply chain. For example, having alternative suppliers of components will be connected to purchasing⁵.

According to the well-known supply chain management models (e.g. SCOR, GSCF), one of the main supply chain focuses is relationships with suppliers in procurement processes⁶. History shows that suppliers can be a source of serious supply risks which can result in severe losses for manufacturing systems⁷. In light of this observation, the article focuses on building resilience in relationships with suppliers, with particular attention on the B2B market.

Structural models play a very important role in management sciences, the verification of which enables the confirmation of theoretical assumptions and statistically important relationships between individual constructs. Although over the last 15 years the topic of SCRES has been present in hundreds of articles, there is still an important research gap regarding its detailed measurement⁸. The inspection of the literature carried out in this paper allowed the identification of more than twenty works presenting a systematic literature review (SLR) on SCRES. Some are based on a review of over 200 publications⁹. Nevertheless, no SLR article addresses the issue of how to measure the resilience in individual areas of the supply chain

a systematic review and paths for further investigation, "International Journal of Physical Distribution Logistics Management" 2015, vol. 45, no. 1/2, pp. 90–117.

- 4 J.T. Mentzer et al., *Defining Supply Chain Management*, "Journal of Business Logistics" 2001, vol. 22, no. 2, pp. 1–25.
- 5 A. Norrman, U. Jansson, *Ericsson's proactive supply chain risk management approach after a serious sub-supplier accident*, "International Journal of Physical Distribution Logistics Management" 2004, vol. 34, no. 5, pp. 434–456.
- 6 D.M. Lambert, M.C. Cooper, *Issues in supply chain management*, "Industrial Marketing Management" 2000, vol. 29, no. 1, pp. 65–83; Supply Chain Council, *Supply Chain Operations Reference Model*, 2012, revision 11.0.
- 7 S. Chopra, M.S. Sodhi, *Supply-chain breakdown*, "MIT Sloan Management Review" 2004, vol. 46, no. 1, pp. 53–61; A. Norrman, U. Jansson, *Ericsson's proactive...*; D. De Waart, *Getting Smart*, "Supply Chain Management Review" 2006, vol. 10, no. 8, pp. 27–33.
- 8 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*; M.M.H. Chowdhury, M. Quaddus, *Supply chain readiness, response and recovery for resilience*, "Supply Chain Management: An International Journal" 2016, vol. 21, no. 6, pp. 709–731.
- 9 E.g. C.G. Kochan, D.R. Nowicki, *Supply chain resilience: a systematic literature review and typological framework*, "International Journal of Physical Distribution Logistics Management" 2018, vol. 48, no. 8, pp. 842–865.

with regard to the main SCRES elements, which are *flexibility* and *redundancy*. Instead, the focused on other measurement threads. Hohenstein et al. concluded that SCRES can be assessed with the use of three key performance indicators, which are: customer service, market share and financial performance¹⁰. Karl et al. researched the influence of non-financial indicators (e.g. supplier delivery efficiency) on supply chain resilience¹¹. Other authors measured the loss in performance after a disruption and the time needed to recover from disruption for SCRES¹². Kamalahmadi and Parast, based on past articles, held a discourse on measuring SCRES with regard to supply chain structure (e.g. density, complexity) and various indexes to evaluate supply chain capabilities¹³. Finally, Chowdhury and Quaddus proposed a SCRES measurement model for disruption phases¹⁴. However, the proposed constructs were built with regard to the whole supply chain idea.

Given the gap in the literature revealed, the purpose of this paper is to frame the proposal of supply chain resilience measurement for *flexibility* and *redundancy* practices in the area of relationships with suppliers. The presented approach is the first version of the framework as at the next stage this proposition requires statistical verification. The starting point for the following research is the observation that adequate flexibility and redundancy practices reduce the number of supply disruptions¹⁵.

The manuscript makes three specific contributions to the literature. First, it presents the importance of flexibility and redundancy in relationships with suppliers when building supply chain resilience. Next, it lists the flexibility and redundancy practices recommended for strengthening supply chain resilience. Finally, it attempts to propose flexibility and redundancy measurement for resilient cooperation with suppliers. For this purpose, 33 measurable items are presented in four separate constructs (Figure 6).

In order to achieve the research goal, a two-phase methodology design was used. This consists of a literature review and in-depth interviews (IDIs). Section 2 of this paper explains the methodology utilized to perform this literature review.

10 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*

11 A.A. Karl et al., *Supply chain resilience and key performance indicators: a systematic literature review*, "Production" 2018, vol. 28.

12 B.R. Tukamuhabwa et al., *Supply chain resilience...*

13 M. Kamalahmadi, M.M. Parast, *A review of the literature on the principles of enterprise and supply chain resilience: Major findings and directions for future research*, "International Journal of Production Economics" 2016, vol. 171, pp. 116–133.

14 M.M.H. Chowdhury, M. Quaddus, *Supply chain readiness...*

15 G.A. Zsdisin, S.M. Wagner, *Do perceptions become reality? The moderating role of supply chain resiliency on disruption occurrence*, "Journal of Business Logistics" 2010, vol. 31, no. 2, pp. 1–20.

Due to the high number of articles presenting the issue of resilience which have appeared in recent years, it was decided to focus attention primarily on the numerous publications presenting SLR on SCRES and then on the cited publications that combine flexibility, redundancy and resilience issues. This approach allowed a comprehensive view of past studies and avoided a duplication of previous analyzes. It also made it possible to access the most relevant articles that deal with flexibility and redundancy practices and to identify key measures with regard to supply chain resilience. The literature findings are discussed in Section 3. Section 4 explains the IDI methodology and collates the results of interviews. Finally, in the last part of this paper SCRES measurement frameworks are discussed from the perspective of flexibility and redundancy in relationships with suppliers as well as their implications and conclusions.

Methodology

The desk-based research followed the methodology applied by Tranfield, Denyer, and Smart as well as Kamalahmadi and Parast¹⁶. The analysis of the literature on the subject was carried out in April 2019. The review process (Figure 1) consisted of the following phases: questions formulation, keyword search in databases, screening phases (data collection and data refinement) and analysis of articles. Primarily, it was focused on identifying articles presenting SLR on SCRES and then attempting to find answers to the following questions:

- What is the understanding of flexibility and redundancy in the context of supply chain resilience strategies?
- What are the resilient practices for building flexibility and redundancy in supply chains?
- How has flexibility and redundancy been measured so far in the studies related to the SCRES concept?
- What are the best resilient practices for building flexibility and redundancy in relationships with suppliers?

In the second phase, the author used five research databases, i.e., EBSCOhost Online Research Databases, Emerald Insight, Scopus, Web of Science and Wiley Online Library. These were chosen as they are the leading global providers of top articles evaluated using a double blind peer review policy. This ensured the highest quality of the literature research. Three search terms and the following restrictions were used in the phase of the databases search:

16 D. Tranfield, D Denyer, P. Smart, *Towards a methodology for developing evidence-informed management knowledge by means of systematic review*, "British Journal of Management" 2003, vol. 14, no. 3, pp. 207–222; M. Kamalahmadi, M.M. Parast, *A review of the literature...*

- Search term: SYSTEMATIC LITERATURE REVIEW, restriction: occurrence in title OR abstract AND
- Search term: SUPPLY CHAIN, restriction: occurrence in abstract AND
- Search term: RESILIENCE OR RESILIENT, restriction: occurrence in abstract.

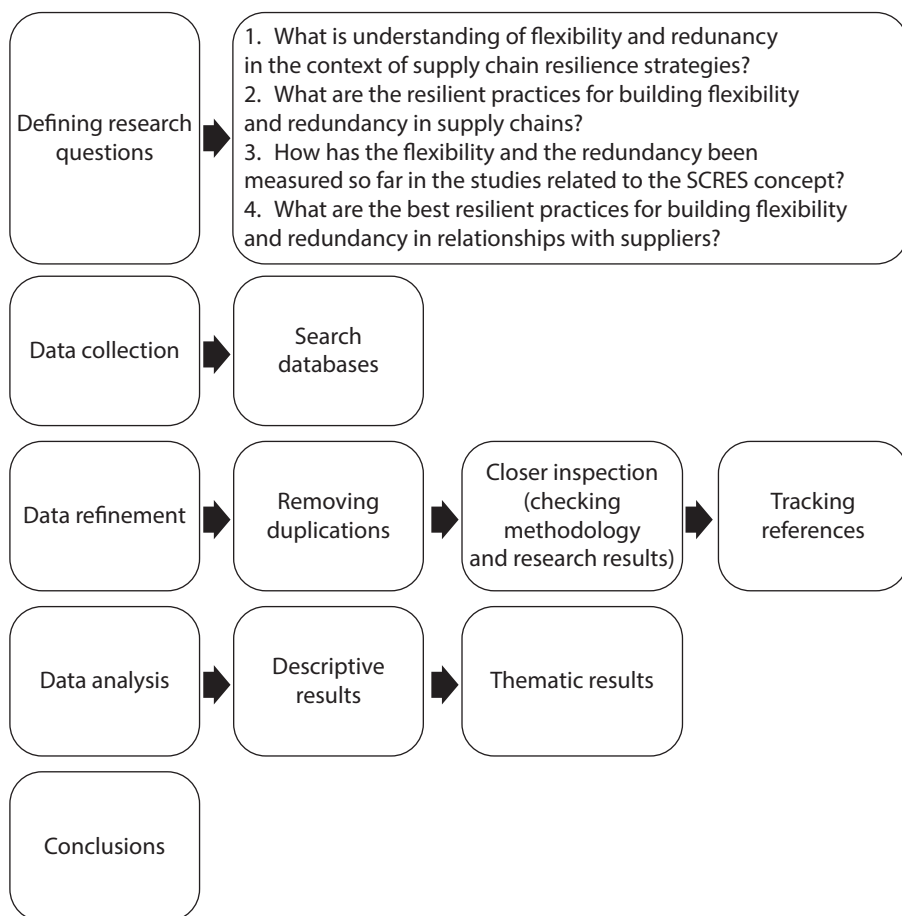


Figure 1. Research process

Source: own study.

There was no restriction on the date of publication in order to identify as many articles presenting the results of a systematic literature review on SCRES as possible.

The first database search resulted in 46 publications. After removing duplicates, 23 articles were selected (Table 1). In the second screening phase, eighteen full papers presenting a systematic literature review on SCRES with particular regard to flexibility and redundancy were identified. These were published between 2009 and March 2019 (Figure 3). The third screening stage consisted of two levels:

choosing cited articles from these publications that presented SLR on SCRES as well as tracking references in the cited articles (Figure 2). In this two-level (3a and 3b) step, an additional 21 publications were recognized and directed to the final analysis (Figure 1). These were published between 1996 and 2015 years (Figure 4).

Table 1. The screening phase results

Phase description	Database	Output (number of papers)
First database search with the use of two main search terms	EBSCOhost	9
	Emerald	9
	Scopus	13
	Web of Science	15
	Wiley Online Library	0
Screening 1: removing duplicates	EBSCOhost, Emerald, Scopus, Web of Science, Wiley Online Library	23
Screening 2: closer inspection (selecting articles that pay special attention to flexibility and redundancy issues)	EBSCOhost, Emerald, Scopus, Web of Science, Wiley Online Library	18
Screening 3a and 3b (two levels): checking cited publications that directly refer to flexibility and redundancy practices and measures	EBSCOhost, Emerald, Scopus, Web of Science, Wiley Online Library	39

Source: own study.

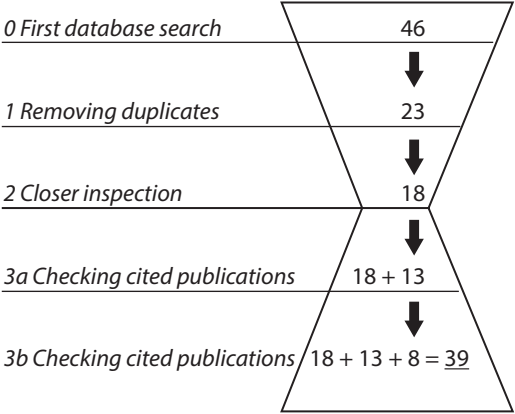


Figure 2. The hourglass publication search process in detail

Source: own study.

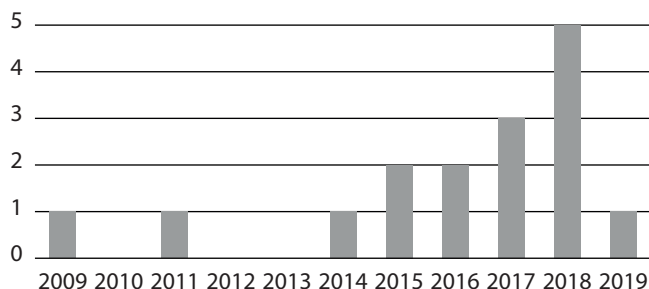


Figure 3. Year-wise distribution of publications presenting SLR on SCRES (output from screening 1 and 2)

Source: own study.

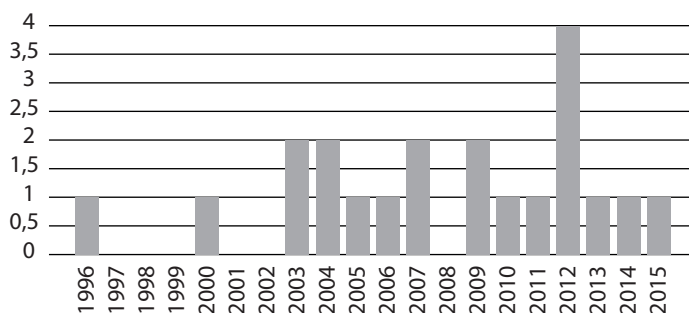


Figure 4. Year-wise distribution of cited publications (output from screening 3a and 3b)

Source: own study.

The presented review of the literature led to the selection of 39 articles that provide key knowledge on the role of flexibility and redundancy in relationships with suppliers in building supply chain resilience as well as practices and measures for this area.

Flexibility and redundancy – definitions, practices and measures in the review papers concerning the SCRES concept

Pereira, Christopher, and Lago Da Silva pointed out that flexibility is the predominant theme in past SCRES literature¹⁷. They also recognized that both flexibility and redundancy are also key SCRES enablers. Furthermore, in their paper it was noted that lack of flexibility is a serious barrier to building resilience in the area

17 C.R. Pereira, M. Christopher, A. Lago Da Silva, *Achieving supply chain resilience...*

of supplies and procurement. Based on the literature, the authors distinguished the following types of supply chain flexibility: sourcing flexibility, product flexibility, process flexibility and transportation flexibility. Finally, they recognized that redundancy should be used primarily in relation to critical components.

Hohenstein et al. recognized that flexibility and redundancy are key elements at every stage of SCRES, i.e.: readiness, response, recovery and growth¹⁸. Based on their systematic literature review, they listed the following sub-elements of redundancy: production slack, transportation capacities, multiple sourcing and production locations. Redundancy is mainly regarded as an element of a proactive strategy, while flexibility belongs to both proactive and reactive strategies and is related to backup suppliers, easy supplier switching, distribution channels, flexible production systems, volume flexibility and multi-skilled workforces.

Other authors made slightly different observations. Tukamuhabwa et al. found that flexibility is both a proactive and reactive resilience strategy, while redundancy is more of a reactive one¹⁹. They found that flexibility is related to the ability to adapt to changing requirement using flexible contracts, postponement strategies, a multi-skilled labor force or multi-purpose machines, whereas redundancy concerns duplication of resources and possessing alternative opportunities, e.g. additional capacity and inventory. In addition, the authors concluded that some flexibility practices are similar to redundancy practices. For example, multiple sourcing can be regarded as a source of flexibility as well as redundancy.

Karl et al. described flexibility and redundancy as constituent elements during the disruption phase²⁰. They focused on the identification of key performance indicators (KPIs) related to the SCRES elements. Following previous studies, they stated that the KPIs related to flexibility are: capacity utilization, on-time delivery of goods, order lead time and delivery lead time, whereas the main redundancy KPI is stock level. Interestingly, Stone and Rahimifard observed that flexibility and redundancy are core elements of a readiness strategy, both in terms of organizational and supply chain resilience²¹. Finally, Chowdhury and Quaddus developed a research model in which both flexibility and redundancy are measurement dimensions related to supply chain readiness²². The authors distinguished produc-

18 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*

19 B.R. Tukamuhabwa et al., *Supply chain resilience...*

20 A.A. Karl et al., *Supply chain resilience...*

21 J. Stone, S. Rahimifard, *Resilience in agri-food supply chains: A critical analysis of the literature and synthesis of a novel framework*, "Supply Chain Management: An International Journal" 2018, vol. 23, no. 3, pp. 207–238.

22 M.M.H. Chowdhury, M. Quaddus, *Supply chain readiness...*

tion flexibility, sourcing flexibility as well as distribution flexibility. In this way covering the processes of the entire supply chain.

The main result of the study performed by Kamalahmadi and Parast²³ was a supply chain resilience framework established on the four principles demonstrated by Christopher and Peck, with variables assigned to each of them²⁴: flexibility and redundancy (for the reengineering principle), trust and information sharing (for collaboration), visibility and velocity (for agility), leadership and innovation (for the supply chain risk management culture). Kamalahmadi and Parast found that the elements of flexibility and redundancy play a critical role in mitigating any negative effects of disruptions²⁵.

Ali, Mahfouz, and Arisha, based on a literature analysis of the subject, designed a SCRES structure in the form of a pyramid²⁶. There are three phases at the summit of this framework: pre-disruption, during disruption and post disruption. Each of them requires an appropriate strategy: a proactive, concurrent or reactive one. The framework suggests building five capabilities (the ability to anticipate, to adapt, to respond, to recover, to learn) to perform all three strategies. Underneath the capabilities there are SCRES elements which consist of specific practices. The 'flexibility' element and 'redundancy' elements are listed only for the concurrent strategy and only then for the ability to adapt. Interestingly, Ali, Mahfouz, and Arisha as well as Shin and Park demonstrated that the top SCRES element is the supply chain network design²⁷, followed by flexibility and then redundancy. Among the flexibility practices Ali, Mahfouz, and Arisha distinguished supply flexibility, multiple suppliers and flexible transportation mode²⁸. Additionally, the authors stated that building redundancy in the area of relationships with suppliers is mainly based on having multiple suppliers, safety stock and strategic inventory.

It is recognized that Datta provided the latest definition of SCRES, based on previous studies:

[...] supply chain resilience is a dynamic process of steering the actions so that the organisation always stays out of danger zone, and if the disruptive/uncertain event

23 M. Kamalahmadi, M.M. Parast, *A review of the literature...*

24 M. Christopher, H. Peck, *Building the resilient...*

25 M. Kamalahmadi, M.M. Parast, *A review of the literature...*

26 *Ibidem*.

27 A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*; N. Shin, S. Park, *Evidence-Based Resilience Management for Supply Chain Sustainability: An Interpretive Structural Modelling Approach*, "Sustainability" 2019, vol. 11, no. 2, p. 484.

28 A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*

occurs, resilience implies initiating a very rapid and efficient response to minimise the consequences and maintaining or regaining a dynamically stable state, which allows it to adapt operations to the requirements of the changed environment before the competitors and succeed in the long run²⁹.

The author also based his work on a document prepared by MIT Center for Transportation and Logistics. This document shows various resilient practices which are related to flexibility and redundancy. Flexibility is understood here as “creating capabilities in the firm’s organization to respond by using existing capacity that can be redirected or reallocated”, while redundancy is explained as:

[...] maintaining capacity in the firm to respond, largely through investments in capital and capacity prior to the point of need. An important distinction is that the additional capacity may or may not be used – it is this additional capacity that would be used to replace the capacity loss of a disruption³⁰.

Kochan and Nowicki noted that some authors regard flexibility as a dimension of agility or use both these terms interchangeably³¹. Moreover, there are studies which include redundancy as a dimension of flexibility. Considerations leading to the conclusion that flexibility and redundancy are responsiveness factors are also addressed.

In the latest articles the newest definitions can also be found. Lima et al., based on previous papers, built the following definitions of the main SCRES enablers³²:

- flexibility is “the ability of a firm and supply chain to sense threats and react and adapt to changing requirements with minimum time, effort, cost and performance drop”;
- redundancy is “the replication/addition of capacity and/or resources that can be invoked during a disturbance to replace the loss of capacity and/or resources during a disturbance”.

29 P. Datta, *Supply network resilience: a systematic literature review and future research*, “The International Journal of Logistics Management” 2017, vol. 28, no. 4, pp. 1387–1424.

30 MIT Center for Transportation and Logistics, *Supply Chain Response to Terrorism: Creating Resilient and Secure Supply Chains*, Interim Report of Progress and Learnings, August 8, 2003, http://webcache.googleusercontent.com/search?q=cache:zINMDk6KS3MJ:web.mit.edu/scresponse/repository/SC_Resp_Report_Interim_Final_8803.pdf+&cd=1&hl=pl&ct=clnk&gl=pl&client=firefox-b-d (accessed: 5.09.2020).

31 C.G. Kochan, D.R. Nowicki, *Supply chain resilience...*

32 F.R.P.D. Lima et al., *Systematic review: resilience enablers to combat counterfeit medicines*, “Supply Chain Management: An International Journal” 2018, vol. 12, no. 3, p. 126.

- Similar definitions, were developed by Stone and Rahimifard³³:
- flexibility is “the ability of an organisation to adapt with minimum time and effort. Concerns the ability to switch suppliers, substitute ingredients, out-source processes, share materials and staff between sites, the ability of staff to fulfil multiple roles and the levels of control over market position”;
- redundancy “concerns the ability to alternate production capacity and to call upon surplus raw materials and finished inventory”.

The identified papers discuss not only the definitions but also resilient practices concerning flexibility and redundancy. A number of them directly refer to the area of supplier relationship management (Table 2).

Table 2. Examples of flexibility and redundancy practices in papers presenting SLR on SCRES

Authors	Flexibility and redundancy in the SCRES concept	Supply chain flexibility practices	Supply chain redundancy practices
Hohenstein et al. (2015)	Flexibility and redundancy are key elements at every stage of SCRES: readiness, response, recovery and growth	Backup suppliers, easy supplier switching, distribution channels, flexible production systems, volume flexibility, multi-skilled workforces	Production slack, transportation capacities, multiple sourcing and production locations
Tukamuhabwa et al. (2015)	Flexibility is both a proactive and reactive resilience strategy, while redundancy is a reactive one	Flexible contracts, postponement strategy, multi-skilled labour force or multi-purpose machines	Duplication of resources and keeping alternative options, e.g. spare capacity and inventory
Chowdhury, Quaddus (2016)	Flexibility and redundancy are measurement dimensions related to supply chain readiness	Production flexibility, customization, multi-skilled workforce, contract flexibility, sourcing flexibility, distribution flexibility	Reserve capacity, stock, back-up utility
Kamalahmadi, Parast (2016)	Flexibility and redundancy play an important role during supply chain reengineering	Flexible transportation systems, flexible production, facilities, flexible supply base, flexible capacity, flexible labour arrangements	Multiple suppliers, safety stock, over capacity, back up suppliers

33 J. Stone, S. Rahimifard, *Resilience in agri-food supply chains...*, p. 220.

Table 2 (continued)

Authors	Flexibility and redundancy in the SCRES concept	Supply chain flexibility practices	Supply chain redundancy practices
Ali, Mahfouz, Arisha (2017)	Flexibility and redundancy are elements of the ability to adapt in a concurrent strategy	Flexible supply via multiple suppliers, flexible manufacturing, processes or resources, flexible product via postponement, flexible pricing via responsive pricing, flexible transportation, mode, flexible order fulfilment	Excess capacity in production or transportation or resources, multiple suppliers, safety stock, strategic inventory, emergency, backup/ storage facilities, low capacity utilisation
Zhao, Liu, Lopez (2017)	Flexibility and redundancy are complementary SCRES enablers	Multiple suppliers, multiple transportation channels, flexible supply base	
Stone, Rahimifard (2018)	Flexibility and redundancy are core elements of a readiness strategy	Switching suppliers, substitute ingredients, outsource processes, share materials and staff between sites, staff able to fulfil multiple roles and exert the levels of control over market position, having alternative options achieved through partnerships, moving staff and equipment rapidly	Alternating production capacity, calling upon surplus raw materials and finished inventory

Source: own study.

In some cases, flexibility practices are identical to redundancy practices. For example, multi-sourcing applies to both categories. When considering the newest definitions of flexibility and redundancy it can be deduced that multi-sourcing means the ability to switch orders between suppliers in terms of flexibility, whereas in the case of redundancy it is about the replication of supply base resources and keeping reserve capacity³⁴.

The examined papers cover both quantitative and qualitative research. Past studies used both survey and case study methods. Several authors introduced constructs to measure different types of supply chain flexibility and redundancy (Table 3).

34 F.R.P.D. Lima et al., *Systematic review...*; J. Stone, S. Rahimifard, *Resilience in agri-food supply chains...*

Table 3. Examples of flexibility or redundancy measurements in past studies

Authors	Methodology	Name of element	Measurement approach	Research result
Chang et al. (2003)	Quantitative study, survey among 87 firms from machinery and machine tool industries in Taiwan	Manufacturing flexibility (company as supplier)	Construct defined by 6 items Likert scale 1–7	Compatibility between business strategy and manufacturing flexibility is critical to business performance
Pujawan (2004)	Case study (manufacturer of cosmetics products), conceptual paper	Supply flexibility	Element defined by 10 items Assessment of desired and current score (1–5 scale)	Worksheet for assessing supply chain flexibility consisting of several flexibility areas
Swafford, Ghosh, Murthy (2006)	Cross-industry survey (postal questionnaire) among 115 companies	Sourcing flexibility	Construct defined by 8 items	Degree of flexibility present in the manufacturing and procurement processes positively influences supply chain agility
Skipper, Hanna (2009)	Survey among personnel involved in advanced contingency planning, 168 questionnaires	Flexibility	Construct defined by three items applied from Fawcett et al. (1996)	Several hypothesis, e.g. information technology usage in the contingency planning process is positively related to flexibility
Tachizawa, Thomsen (2009)	Cross-industry survey among members of the Spanish Association of Purchasing Managers, 100 questionnaires	Supply flexibility sources	Construct defined by fourteen practices	Flexibility sources differently determine supplier responsiveness, delivery policy and adaptability

Table 3 (continued)

Authors	Methodology	Name of element	Measurement approach	Research result
Park (2011)	Cross-industry survey among 163 companies	Measurement model for flexible practices and measurement model for redundancy practices	Flexible practices expressed with several constructs: extent of postpone (3 items), information sharing (4 items), security (4 items), extent of collaboration (4 items), contingency planning (3 items) Redundancy practices expressed with two constructs: safety stock (4 items), slack capacity (3 items) Likert scale 1–5	Several hypothesis related to various types of risk, SCRES, flexibility and redundancy practices were confirmed
Chiang, Kocabasoglu-Hillmer, Suresh (2012)	Survey among members of the Institute for Supply Management, 144 valid questionnaires	Firm's strategic flexibilities	Area expressed with three constructs: supply flexibility (3 items), product design-related flexibility (3 items), process-related flexibility (4 items). Items applied following four previous studies Likert scale 1–5	Strategic sourcing and strategic flexibility are significantly related to the firm's supply chain agility

Authors	Methodology	Name of element	Measurement approach	Research result
Chu, Chang, Huang (2012)	Survey among 162 respondents from the Supply Management Institute in Taiwan	Supplier flexibility	Area expressed with four constructs: volume flexibility (6 items), mix flexibility (6 items), new product flexibility (4 items), delivery flexibility (5 items). Items applied following seven previous studies. Likert scale 1–5	Coercive influence strategies and shared vision have a positive impact on supplier flexibility. Supplier flexibility has a significant positive impact on the performance of manufacturers
Chowdhury, Quaddus (2016)	Survey performed among 272 manufacturing companies and their suppliers	Supply chain flexibility and redundancy	Supply chain flexibility construct expressed with 6 items, supply chain redundancy expressed with 3 items. Likert scale 1–6	Constructs were confirmed. Supply chain orientation and supply chain risk management culture influence supply chain readiness

Source: own study.

The recognized constructs are an important source of information on resilient practices, measurement approaches as well as the types and number of implemented items. The authors used either a five, six or seven point Likert scale to measure observable variables. Interestingly, Pujawan, based on case studies, created a comprehensive tool for assessing supply chain flexibility³⁵.

Analysis of the collected articles shows that flexibility and redundancy are key SCRES determinants. In past studies, these were variously named as, e.g. *strategies*³⁶ or *enablers*³⁷. However, it must be noted that they were predominantly regarded as SCRES elements³⁸. This observation concerns especially the latest articles³⁹.

35 I.N. Pujawan, *Assessing supply chain flexibility: a conceptual framework and case study*, "International Journal of Integrated Supply Management" 2004, vol. 1, no. 1, pp. 79–97.

36 B.R. Tukamuhabwa et al., *Supply chain resilience...*

37 M. Christopher, H. Peck, *Building the resilient...*

38 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*; M. Kamalahmadi, M.M. Parast, *A review of the literature...*; A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*

39 A.A. Karl et al., *Supply chain resilience...*; J. Stone, S. Rahimifard, *Resilience in agri-food supply chains...*; N. Shin, S. Park, *Evidence-Based Resilience Management...*

The authors willingly built SCRES frameworks concerning the time aspect. Two main approaches can be distinguished here. The first is related to the three disruption phases: “before”, “during” and “after” the crisis situation⁴⁰. There are papers indicating flexibility and redundancy as important elements for each disruption phase⁴¹. The second approach concerns proactive and reactive strategies. Some scientists attribute flexibility and redundancy only to one strategy⁴², whereas other authors to more than one strategy⁴³. Taking into account all frameworks, both flexibility and redundancy should be present at each SCRES stage, but the context varies depending on the disruption phase (Figure 5).

Before supply chain disruption occurs, it is important to prepare and plan activities that would mitigate any negative risk consequences. During crisis situations, previously designed flexibility and redundancy capabilities are utilized to respond to adverse events and prevent the domino effect efficiently. After disruption, when the supply chain has obtained its previous or new homeostasis, a lesson should be learned and, if necessary, flexibility and redundancy should be re-designed along the idea of continuous improvement.

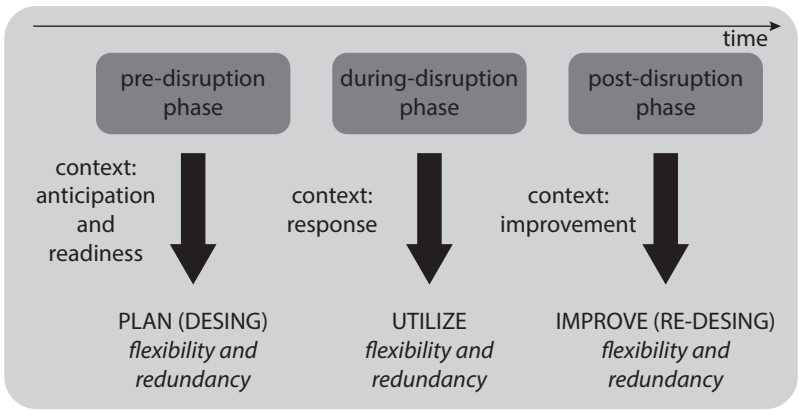


Figure 5. The context of flexibility and redundancy in the three disruption phases

Source: own study.

40 A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*

41 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*; A.A. Karl et al., *Supply chain resilience...*

42 J. Stone, S. Rahimifard, *Resilience in agri-food supply chains...*

43 B.R. Tukamuhabwa et al., *Supply chain resilience...*

In depth interviews

One of the objectives of the study was to gather information on how manufacturing companies understand ensuring flexibility and redundancy in their relationships with suppliers. Therefore, eight in-depth interviews were conducted. The respondents were primarily purchasing managers and CEOs employed in medium and large manufacturing companies operating in the B2B market in Poland (one researched company was small). The main criterion for the company's selection was whether the enterprise recognizes and performs supplier relationship management. Each company represents a different sector, which are: audio and visual devices, pharmaceutical, automotive, household goods, clothing, food, electronics or cosmetics (Table 4). This allowed for more comprehensive results to be collected. All companies offer products for both domestic and foreign market.

The interviews allowed the identification of various practices that enhance resiliency in relationships with suppliers. These practices are in line with those indicated in the theory. The flexibility practices highlighted by the companies can be divided into those related to flexible sourcing or supplier flexibility (Table 5).

The interviewed enterprises often decide to implement double or multi-sourcing. Shifting orders is facilitated by short-term contracts and the implementation of advanced IT tools. It is evident that, depending on the type of item purchased, companies decide to develop sourcing flexibility or to cooperate with flexible suppliers. The second situation usually concerns strategic and bottlenecks items. In this case, it is particularly important to build partnerships based on trust and information sharing. In the face of sole sourcing, companies try to sign both a flexible and, if possible, long-term contract.

Table 4. Characteristics of the researched companies

Interview no.	Industry	Position of the respondent(s)	No. of employees	Capital	Spatial range	Products offered on a specific market
1	Audio and visual devices	Senior Purchasing Buyer	289	foreign	international	domestic and foreign
2	Pharmaceutical	Head of Purchasing and Logistics Department and one employee	111	foreign	national	domestic and foreign
3	Automotive	Supplier Development Manager	520	foreign	international	domestic and foreign
4	Household goods	Head of Logistics	2283	national	international	domestic and foreign

Table 4 (continued)

Inter-view no.	Industry	Position of the respondent(s)	No. of employees	Capital	Spatial range	Products offered on a specific market
5	Clothing	CEO	501	national	national	domestic and foreign
6	Food	Head of Purchasing Department	125	foreign	national	domestic and foreign
7	Electronics	CEO	10	national	international	domestic and foreign
8	Cosmetics packaging	Product development engineer	2500	foreign	international	domestic and foreign

Source: own study.

The researched companies pay particular attention to the issue of supplier evaluation. During the preliminary assessment, companies check whether the supplier's production system is sufficiently flexible. Periodic evaluation, on the other hand, enables confirmation of whether the supplier's capacity is sufficient and in line with pre-established requirements. In order to assess the supplier, a second party audit is often implemented.

The results show that companies prefer to conduct activities focused on comprehensive supplier management. Interestingly, there are also organizations which decide to involve suppliers in product development to enhance supply flexibility. Customers often decide to invest a number of resources in this business relationship. For example, they conduct supplier development programs aimed at improvement of the manufacturing system. This practice usually occurs when there is a shortage of suppliers with the appropriate capacities on the market.

Among the identified activities, there are also those concerning redundancy – like safety stock, safety lead time or back-up suppliers. A strategy of indirect purchases supports flexible sourcing and, in some cases, it fulfils the role of redundancy. A back-up supplier is often a distributor located in the same country. Even though it offers a higher price than the producer, it guarantees shorter delivery time, which is especially important in emergency situations. Having an alternative supplier is also relevant to logistics services, where in crisis situations companies most often turn to air transportation.

Table 5. Flexibility and redundancy practices that are performed by interviewed manufacturers in their relationships with suppliers

Practice	Interview no.	Comment	Type of practice
Double/multi sourcing	2, 3, 4, 8	Two or more suppliers of one item. Decision is based on supplier segmentation.	Flexibility in relationships with suppliers
Indirect purchases	3, 6	Cooperation with distributors.	
Local/domestic sourcing	1, 4, 8	Looking for suppliers located nearby to ensure rapid supplies.	
Flexible contracts	3, 5	Flexibility clauses, short term contracts, agreements defining the range of possible changes to orders (e.g. +/- volume).	
Preliminary assessment ensuring supplier flexibility	1, 2, 6, 7, 8	Looking for suppliers of high manufacturing capabilities, supply flexibility (e.g. volume, delivery), short lead times.	
Periodic assessment ensuring supplier flexibility	1, 2, 6	Evaluating supply responsiveness, supply flexibility, quality.	
Audit	2, 3, 6, 7	Second-party audits.	
Long term contracts	2, 4	Especially in the case of a limited number of suppliers.	
Direct purchases	1, 2, 3, 4, 5, 6, 7	Supplier is a manufacturer.	
Joint product development	3, 6, 7	Involving supplier in product development.	
Supplier development	3	Supporting supplier with trainings and infrastructure investments.	
IT systems	3, 4, 6, 7, 8	Systems (ERP, VMI) are especially important to aid switching orders between suppliers and sharing information.	
Sharing information	1, 2	Sharing production plans and forecasts with suppliers.	
Building partnership	1, 4, 8	Developing win-win relationships even in the case of unequal power, cooperation based on trust and active communication.	Redundancy in relationships with suppliers
Logistics flexibility	1, 3	The use of air transportation during crisis situations, cooperation with logistics providers.	
Back-up suppliers	2, 3, 8	It is not always possible to have alternative supplier. A back up supplier is often a distributor located nearby.	
Safety stocks, safety lead time	2, 3, 8	Keeping additional stock and time buffers.	
Inventories	1, 2, 3, 7	Stock sourcing (stock is kept by supplier or buyer).	

Source: own study.

The measurement framework – flexibility and redundancy in relationships with suppliers

Based on the results from the literature review and the in-depth interviews, the first proposal of SCRES measurement for the area of supplier relationship management has been developed. It covers four measurable areas: supplier flexibility, procurement flexibility, logistics flexibility and redundancy in supplier-buyer cooperation (Figure 6). Each construct is described with several observable variables which are resilient practices that were recognized in the two-phase qualitative research.

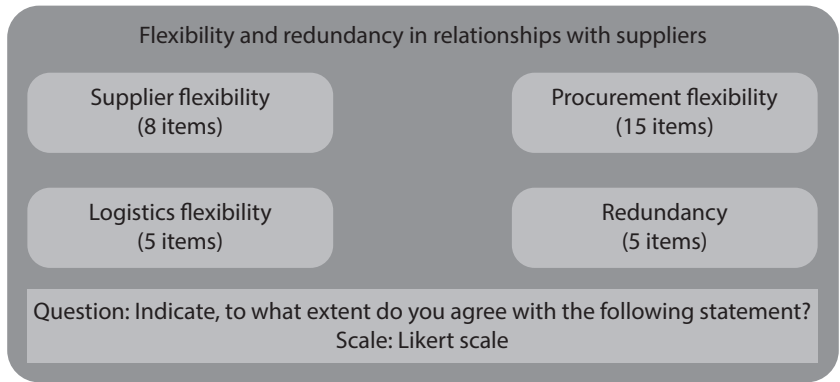


Figure 6. SCRES measurement – the perspective of flexibility and redundancy in relationships with suppliers

Source: own study.

The supply chain flexibility concept is derived from the literature on production flexibility⁴⁴. Product, mix, volume and delivery flexibilities are regarded as key outputs from the flexible manufacturing or distributing systems⁴⁵. Therefore, the first latent variable in the framework is expressed with several items that describe a supplier’s abilities to respond to various order changes as well as a sudden increase in demand (Table 6).

44 S.N. Vickery, R. Calantone, C. Dröge, *Supply chain flexibility: an empirical study*, “Journal of Supply Chain Management” 1999, vol. 35, no. 2, pp. 16–24; R.J. Vokurka, S.W. O’Leary-Kelly, *A review of empirical research on manufacturing flexibility*, “Journal of Operations Management” 2000, vol. 18, no. 4, pp. 485–501; S.C. Chang et al., *Manufacturing flexibility and business strategy: an empirical study of small and medium sized firms*, “International Journal of Production Economics” 2003, vol. 83, no. 1, pp. 13–26; N. Slack, *The flexibility of manufacturing systems*, “International Journal of Operations Production Management” 2005, vol. 25, no. 12, pp. 1190–1200.

45 D.F. Ross, *Supply Chain Performance Measurement*, APICS Profession Development, 2010, <https://pdf4pro.com/view/supply-chain-performance-measurement-apics-2401b4.html> (accessed: 5.09.2020); Supply Chain Council, *Supply Chain Operations...*, p. 12.

Table 6. Supplier flexibility – construct proposition

No.	Item	References	Interview no.
1	Suppliers are able to respond to volume changes	Chang et al. (2003), Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009), Chu, Chang, Huang (2012)	Companies performing supplier assessment to ensure supplier flexibility: 1, 2, 6, 7, 8 Companies performing second party audits: 2, 3, 6, 7
2	Suppliers are able to offer small minimum order quantity	Pujawan (2004)	
3	Suppliers are able to respond to delivery time changes	Chang et al. (2003), Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009), Chu, Chang, Huang (2012)	
4	Suppliers are able to produce a large volume in a short time	Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009), Chowdhury, Quaddus (2016), Stone, Rahimifard (2018)	
5	Suppliers are able to respond to changes in the type of ordered items	Chang et al. (2003), Pujawan (2004), Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009), Chiang, Kocabasoglu-Hillmer, Suresh (2012), Chu, Chang, Huang (2012)	
6	Suppliers are able to develop new products	Chang et al. (2003), Chiang, Kocabasoglu-Hillmer, Suresh (2012), Chu, Chang, Huang (2012)	
7	Suppliers are able to implement engineering changes to orders	Chang et al. (2003), Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009), Chiang, Kocabasoglu-Hillmer, Suresh (2012), Chu, Chang, Huang (2012)	
8	Suppliers are able to offer various pre- and after services	Chang et al. (2003)	

Source: own study.

Many authors underline the importance of a flexible supply base to ensure SCRES⁴⁶, usually, stating that enterprises have two alternatives⁴⁷. Companies may cooperate with flexible suppliers (in this case it is suggested to develop partnerships

46 N.O. Hohenstein et al., *Research on the phenomenon of supply chain resilience...*; M. Kamalahmadi, M.M. Parast, *A review of the literature...*; A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*; G. Zhao, S. Liu, C. Lopez, *A literature review on risk sources and resilience factors in agri-food supply chains*, [in:] L.M. Camarinha-Mathos, H. Afsarmanesh, R. Fornasiero (eds), *Working Conference on Virtual Enterprises*, Springer, Cham 2017, pp. 739–752.

47 I.N. Pujawan, *Assessing supply chain flexibility...*; A. Martínez Sánchez, M. Pérez Pérez, *Supply chain flexibility and firm performance: a conceptual model and empirical study in the automotive industry*, "International Journal of Operations Production Management" 2005, vol. 25, no. 7, pp. 681–700; E.M. Tachizawa, C.G. Thomsen, *Drivers and sources of supply flexibility: an exploratory study*, "International Journal of Operations Production Management" 2007, vol. 27, no. 10, pp. 1115–1136; A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*

and sign long-term contracts⁴⁸). However, it is not always possible to find suppliers with appropriate capabilities. Therefore, an important alternative is to develop procurement flexibility. Gosling, Purvis, and Naim built a matrix showing that close cooperation is related with high vendor flexibility, whereas loose relationship occurs when vendor flexibility is low but sourcing flexibility is high⁴⁹. The proposed approach takes into account both scenarios, since the second construct covers procurement flexibility (Table 7).

Table 7. Procurement flexibility – construct proposition

No.	Item	References	Interview no.
1	Buyer performs multi (or double) sourcing	Pujawan (2004), Tachizawa, Thomsen (2009), Zsidisin, Wagner (2010), Yi, Ngai, Moon (2011), Pettit, Croxton, Fiksel (2013), Tukamuhabwa et al. (2015), Ali, Mahfouz, Arisha (2017), Zhao, Liu, Lopez (2017), Stone, Rahimifard (2018)	2, 3, 4, 8
2	Buyer cooperates with local (domestic) suppliers	Tachizawa, Thomsen (2009)	1, 4, 8
3	The costs incurred in switching the purchase of item from one supplier to another is low	Pujawan (2004), Hohenstein et al. (2015)	–
4	Time required to find/obtain additional sources is short	Supply Chain Council (2012, p. 66), Hohenstein et al. (2015)	–
5	Buyer intensely plans and shares information with the suppliers (e.g. about forecasts, production plans, inventory levels)	Stevenson, Spring (2007), Tachizawa, Thomsen (2009), Park (2011)	1, 2
6	Buyer develops long-term relationship with suppliers	Tachizawa, Thomsen (2009)	1, 2, 4, 8
7	Buyer uses IT planning tools and/or Electronic Data Interchange (EDI) in their relationship with suppliers	Skipper and Hanna (2009), Tachizawa, Thomsen (2009)	3, 4, 6, 7, 8
8	Time required in negotiating new source/volume contracts/terms is short	Tachizawa, Thomsen (2009), Supply Chain Council (2012, p. 66)	–

48 L.K. Duclos, R.J. Vokurka, R.R. Lummus, *A conceptual model of supply chain flexibility*, "Industrial Management Data Systems" 2003, vol. 103, no. 6, pp. 446–456.

49 J. Gosling, L. Purvis, M.M. Naim, *Supply chain flexibility as a determinant of supplier selection*, "International Journal of Production Economics" 2010, vol. 128, no. 1, pp. 11–21.

No.	Item	References	Interview no.
9	Buyer uses flexible contracts	MIT Center for Transportation and Logistics (2003), Stevenson, Spring (2007), Tachizawa, Thomsen (2009), Pettit, Croxton, Fiksel (2013), Tukamuhabwa et al. (2015), Chowdhury, Quaddus (2016)	3, 5
10	Buyer integrates various areas within the firm	Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009)	6
11	The costs of placing orders are low	Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009)	–
12	The time of placing orders is short	Swafford, Ghosh, Murthy (2006), Tachizawa, Thomsen (2009)	–
13	Buyer involves suppliers in joint product development activities	Tachizawa, Thomsen (2009)	3, 6, 7
14	Buyer selects suppliers based on their flexibility	Tachizawa, Thomsen (2009), Gosling, Purvis, Naim (2010), Zsidisin, Wagner (2010)	1, 2, 6, 7, 8
15	Buyer develops suppliers' flexibility	Gosling, Purvis, Naim (2010), Zsidisin, Wagner (2010)	3

Source: own study.

Even if a business partner is flexible or the order has been efficiently switched to another supplier, the issue of rapid transportation remains uncertain. Therefore, the proposed approach highlights the role of a logistics service provider too (Table 8). Some authors indicate logistics (delivery) flexibility as one of the flexibility dimensions of the supply chain⁵⁰. Other scientists underline that having flexible transportation is particularly important for SCRES⁵¹. Thus, the cooperation with the logistics company should be based on flexible possibilities.

The second key SCRES determinant is redundancy. It is usually related to multiple sourcing, back up suppliers⁵², safety stock and strategic inventory⁵³. Flexibility and redundancy practices are often studied together⁵⁴. Conducted research

50 L.K. Duclos, R.J. Vokurka, R.R. Lummus, *A conceptual model...*; I.N. Pujawan, *Assessing supply chain flexibility...*; A. Martínez Sánchez, M. Pérez Pérez, *Supply chain flexibility and firm performance...*; V. Kumar et al., *Implementation and management framework for supply chain flexibility*, "Journal of Enterprise Information Management" 2006, vol. 19, no. 3, pp. 303–319; K.A. Fantazy, V. Kumar, U. Kumar, *An empirical study of the relationships among strategy, flexibility, and performance in the supply chain context*, "Supply Chain Management: An International Journal" 2009, vol. 14, no. 3, pp. 177–188.

51 B.R. Tukamuhabwa et al., *Supply chain resilience...*; M. Kamalahmadi, M.M. Parast, *A review of the literature...*

52 M. Kamalahmadi, M.M. Parast, *A review of the literature...*

53 G.A. Zsidisin, S.M. Wagner, *Do perceptions become reality?...?*; A. Ali, A. Mahfouz, A. Arisha, *Analysing supply chain resilience...*

54 B.R. Tukamuhabwa et al., *Supply chain resilience...*; M. Kamalahmadi, M.M. Parast, *A review of the literature...*

demonstrates that there is no clear boundary between them. For example, Tachizawa and Thomsen, who highly contributed to assessing the flexibility in relationship with suppliers, presented more than twenty supply flexibility sources⁵⁵. Among the mentioned variables, the authors also listed redundancy practices, i.e. inventory buffers or alternative suppliers. Similarly, the interviewed companies used the terms flexibility and redundancy practices interchangeably.

Table 8. Logistics flexibility – construct proposition

No.	Item	References	Interview no.
1	Buyer uses multiple transportation modes	Pujawan (2004), Tachizawa, Thomsen (2009), Ishfaq (2012), Kamalahmadi, Parast (2016), Zhao, Liu, Lopez (2017)	1, 3
2.	It is possible to choose a faster mode of transportation in case of emergency needs	Pujawan (2004)	1, 3
3	It is possible to transport small deliveries, with a volume smaller than the load capacity of the delivery vehicle/ container	Pujawan (2004)	–
4	It is possible to mix different products into a delivery load	Pujawan (2004)	–
5	Buyer collaborates with logistics providers	Tachizawa, Thomsen 2009	1, 3

Source: own study.

For the purpose of this paper, it was decided to follow the well-known definition proposed by MIT Center for Transportation and Logistics⁵⁶. Redundancy concerns maintaining capacity by keeping duplicated resources that are not utilized in a normal situation. In turn, during a crisis situation these are implemented to ensure the continuity of business processes. Hence, redundancy is considered to increase costs⁵⁷. Following this understanding, the created construct consists of five items (Table 9).

55 E.M. Tachizawa, C.G. Thomsen, *Assessing the effectiveness of supply flexibility sources: an empirical research*, “International Journal of Production Research” 2009, vol. 47, no. 20, pp. 5791–5809.

56 MIT Center for Transportation and Logistics, *Supply Chain Response to Terrorism...*, pp. 31–32.

57 Y. Sheffi, J.B. Rice Jr., *A supply chain view of the resilient enterprise*, “MIT Sloan Management Review” 2005, vol. 47, no. 1, p. 41; M. Kamalahmadi, M.M. Parast, *A review of the literature...*

Table 9. Redundancy in supplier-buyer cooperation – construct proposition

No.	Item	References	Interview no.
1	Buyers have backup suppliers	Pagell et al. (2000), Yi, Ngai, Moon (2011), Ivanov, Sokolov, Dolgui (2014), Hohenstein et al. (2015), Chowdhury, Quaddus (2016), Kamalahmadi, Parast (2016), Ali, Mahfouz, Arisha (2017)	2, 3, 8
2	Buyers reserve slack capacity with suppliers	MIT Center for Transportation and Logistics (2003), Park (2011), Chowdhury, Quaddus (2016)	3
3	Buyers (or suppliers) keep inventories	MIT Center for Transportation and Logistics (2003), Christopher, Peck (2004), Tachizawa, Thomsen (2009), Zsidisin, Wagner (2010), Tukamuhabwa et al. (2015), Ali, Mahfouz, Arisha (2017)	1, 2, 3, 7
4	Buyers (or suppliers) keep safety stocks	Pagell et al. (2000), Sheffi, Rice (2005), Park (2011), Ivanov, Sokolov, Dolgui (2014), Chowdhury, Quaddus (2016), Ali, Mahfouz, Arisha (2017), Datta (2017)	2, 3, 8
5	Buyers uses safety lead times	Pagell et al. (2000)	2, 3, 8

Source: own study.

The final, necessary aspect to use this framework concerns forming the research questions and the measurement scale. In order to ensure the questionnaire's simplicity and the its ease of completion for respondents, the same question for all constructs was applied: "Indicate to what extent you agree with the following statement?". In addition, following previous studies (Table 5), the use of five or six point Likert scale was proposed.

Conclusions

The conducted research enabled the construction of the first SCRES measurement framework presenting the perspectives of flexibility and redundancy in the area of relationships with suppliers. This approach can be used in future research to identify statistical dependencies between chosen issues and a resilient relationship with suppliers (Figure 7). For example, in the light of current global business trends, it would be interesting how such aspects as green product development, digitalization, triple bottom line risk management or circular economy practices influence supply chain resilience in terms of flexibility and redundancy in relationships with suppliers. It would also be worth understanding how the recognized resilient practices moderate supply chain performance (Figure 7).

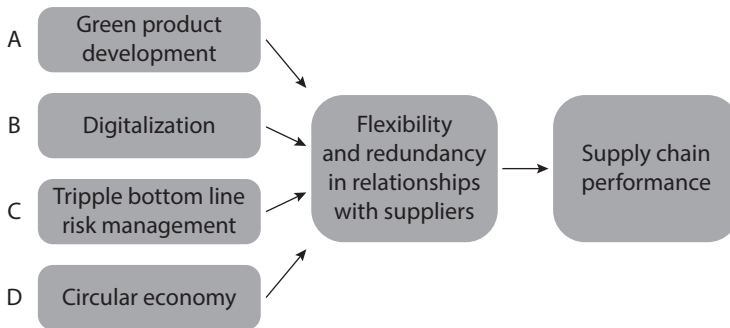


Figure 7. The examples of future research strings

Source: own study.

The paper has not only theoretical but also practical implications. All identified items can be a guide for managers on key determinants of building business resilience. All listed practices (Tables 6, 7, 8, 9) could also be recommended for relationships with other supply chain partners.

This work has its limitations. Primarily, it does not validate the presented measurement but only develops it. However, it can be assumed that the proposed framework is highly appropriate due to the fact that it is based not only on past SCRES studies, flexibility and redundancy constructs and items so far confirmed but also the in-depth interviews IDIs, the results of which concur with the theory. Secondly, the literature review is based on just 39 papers. Nevertheless, methodical rigor and careful selection of SLR studies provided a wide input to the detailed measurement framework. Namely, the analyzed publications supported the identification of 33 measurable variables. In the future, it is worth supplementing the framework with other SCRES fundamental elements, which are: transparency and visibility, agility, collaboration and information sharing⁵⁸.

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58 G. Wieteska, *Design of resilient supply chains*, “Economic and Social Development” 2018, pp. 571–578.

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Abstract

The purpose of this paper is to present the proposal of a supply chain resilience (SCRES) measurement for the area of supplier relationship management. It is focused on two main SCRES elements, which are flexibility and redundancy. First, the article provides a multi-faceted analysis of publications that present systematic literature reviews on SCRES. Next, the results of several in-depth interviews on practices that increase resilience in relationships with suppliers are discussed. Finally, on the base of the conducted research, a measurement of flexibility and redundancy in relationships with suppliers is proposed. It covers four constructs which are: supplier flexibility, procurement flexibility, logistics flexibility and redundancy in supplier-buyer cooperation.

Keywords: SCRES, resilience, flexibility, redundancy, measurement, supplier

PART 3
Sustainability and CSR
as important trends
in modern management

Sustainable Entrepreneurship Utopian Idea or a New Business Model for the 21st Century?

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Introduction

Human activities causing global warming, water pollution, and the exploitation of natural resources have been rapidly increasing. That is why, in the 21st-century, expectations for enterprises have changed, meaning they are now seeking a balance between economic, social and environmental benefits. Enterprises are required to skillfully reconcile conflicting interests arising at the interface between business and society and business and environment. There is a pressing need for enterprises to be involved in solving climate-related and social problems, with the new term, “economic patriotism” being a manifestation of a responsible approach to business activity. Issues related to environmental degradation pose new challenges for enterprises and management concepts in line with the idea of green and sustainability are part of the answer to worldwide disruptions. Sustainable entrepreneurship is a new area of research that combines the notion of entrepreneurship and sustainable development. This idea has attracted the interest of a wide range of stakeholders such as economists, society, and politicians. This interest is due to the rapid increase in environmental problems that affect the whole world¹. The new concept of sustainable entrepreneurship requires a balance between profit orientation, and social and environmental responsibility. This idea uses unexplored possibilities to solve a broad spectrum of problems. By sustainable entrepreneurship one understands that it is our duty to maintain the environment for future generations and for the good of society and the environment itself. Therefore, a modern company’s

1 D.A. Shepherd, H. Patzelt, *The new field of sustainable entrepreneurship: Studying entrepreneurial action linking ‘what is to be sustained’ with ‘what is to be developed’*, “Entrepreneurship: Theory & Practice” 2011, vol. 35, no. 1, pp. 137–163.

goal is not only development in the economic sphere but also social and environmental. The article starts with a review of the concept of sustainable entrepreneurship and its use in the context of entrepreneurial management. The core section presents research directions and the disadvantages of sustainable entrepreneurship. Finally, the article presents conclusions, implications for practice, and recommendations for further research.

The method of research for this paper takes the form of a systematic, evidence-informed literature review. The papers presented in this review were selected from those published in leading academic journals specializing in entrepreneurship and management. Using the Scopus, Web of Science, Emerald, and Wiley databases, articles in the area of strategic entrepreneurship were identified. According to the Scopus database, 352 documents were published in the years 2002 to 2020 which have the phrase “strategic entrepreneurship” in the title. By classifying publications in terms of the research area, the following main result areas were obtained: Business, Management (31.8%), Social Sciences (14.9%), Economics, Economy (14.3%), Environmental Science (13.9%), Energy (9.9%). The three most prestigious publications in the area of sustainable entrepreneurship are presented in Table 1.

Table 1. Most frequently cited publications in the field of sustainable entrepreneurship

Rank		Scopus Database	Web of Science Database
	Authors	B. Cohen M.I. Winn	S. Schaltegger M. Wagner
	Article	<i>Market imperfections, opportunity, and sustainable entrepreneurship</i>	<i>Sustainable Entrepreneurship and Sustainability Innovation: Categories and Interactions</i>
	Citations	437	408
	Authors	S. Schaltegger M. Wagner	T.J. Dean J.S. McMullen
	Article	<i>Sustainable entrepreneurship and sustainability innovation: Categories and interactions</i>	<i>Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action</i>
	Citations	430	400
	Authors	T.J. Dean J.S. McMullen	B. Cohen M.I. Winn
	Article	<i>Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action</i>	<i>Market imperfections, opportunity, and sustainable entrepreneurship</i>
	Citations	408	382

Source: own work.

As can be seen, three authors' papers play a primary role in the development of research on sustainable development. In the presented works, sustainable entrepreneurship plays a crucial role in market imperfection, sustainability innovation, and environmental degradation.

Theoretical framework – Identifying the meaning of sustainable entrepreneurship

Traditionally, entrepreneurship focused on creating economic value. In the new approach, however, economic value is a means to achieve other objectives. Value creation is not just about financial and profit measures. The combination of economic benefit and soft social, environmental, and economic values is characteristic of this approach².

Since the presentation of the first concepts of sustainable entrepreneurship, doubts have developed around its definition³. Sustainable entrepreneurship is about discovering, creating, and using entrepreneurial opportunities that contribute to sustainable development by generating social and environmental benefits⁴. Sustainable entrepreneurship can be defined as a process that recognises and uses entrepreneurial opportunities in the context of social and environmental problems⁵. Sustainable entrepreneurship is defined as a process of solving social and environmental problems that are oriented towards sustainable development⁶. Entrepreneurship is sustainable when the value created benefits the environment, society, and the company

2 B. Cohen, M.I. Winn, *Market imperfections, opportunity and sustainable entrepreneurship*, "Journal of Business Venturing" 2007, vol. 22, pp. 29–49; T.J. Dean, J.S. McMullen, *Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action*, "Journal of Business Venturing" 2007, vol. 22, no. 1, pp. 50–76; A.M. Vuorio, K. Puumalainen, K. Fellnhofer, *Drivers of entrepreneurial intentions in sustainable entrepreneurship*, "International Journal of Entrepreneurial Behavior & Research" 2018, vol. 24 no. 2, pp. 359–381; Ch. Vallaster et al., *Responsible entrepreneurship: outlining the contingencies*, "International Journal of Entrepreneurial Behaviour & Research" 2019, vol. 25, no. 3, pp. 538–553.

3 C. Vallaster et al., *Responsible entrepreneurship...*

4 F. Tilley, W. Young, *Sustainability Entrepreneurs – Could they be the True Wealth Generators of the Future?*, "Greener Management International" 2009, vol. 55; D.F. Pacheco, T.J. Dean, D.S. Payne, *Escaping the green prison: entrepreneurship and the creation of opportunities for sustainable development*, "Journal of Business Venturing" 2010, vol. 25 no. 5, pp. 464–480.

5 F.M. Belz, J.K. Binder, *Sustainable entrepreneurship: A convergent process model*, "Business Strategy and the Environment" 2017, vol. 26, no. 1, pp. 1–17.

6 S. Schaltegger, E.G. Hansen, F. Lüdeke-Freund, *Business models for sustainability: Origins, present research, and future avenues*, "Business Strategy and the Environment" 2016, vol. 29, no. 1, pp. 3–10.

economically⁷. As for competitiveness, sustainable entrepreneurship is the creation of competitive, environmentally friendly products, services, and production methods⁸. A characteristic feature of the definition is the use of entrepreneurship to create products, services, and production methods that ensure the reconciliation of two priority objectives: achieving profits and caring for the environment⁹.

It is worth noting that in the literature we several terms occur which refer to the idea of sustainable entrepreneurship. These are: “ecopreneurship”, “environmental entrepreneurship”, “sustainable development entrepreneurship”, “sustainable entrepreneurs”, “green entrepreneurship”¹⁰.

This innovative view of entrepreneurship has initiated the emergence of new types of entrepreneurship. Researchers refer to concepts such as social entrepreneurship, environmental entrepreneurship, and sustainable entrepreneurship¹¹. In environmental entrepreneurship, the necessity to solve environmental problems has initiated action, whereas in social entrepreneurship the primary motivator is achieving social goals¹². Sustainable entrepreneurship covers the need for action concerning both the environment and society. Therefore, sustainable entrepreneurship includes social and environmental entrepreneurship¹³. This concept involves creating value in three areas: economics, society, and the environment¹⁴. In sustainable entrepreneurship, the

7 F. Boons, F. Lüdeke-Freund, *Business models for sustainable innovation: state-of-the-art and steps towards a research agenda*, “Journal of Cleaner Production” 2013, vol. 45, pp. 9–19; T. Rantala et al., *Identifying Strategies for Sustainable Entrepreneurship*, Innovation for Sustainability, Palgrave Macmillan, Cham 2019, pp. 213–229.

8 T.J. Dean, J.S. McMullen, *Toward a theory of sustainable entrepreneurship...*; J.K. Hall, G.A. Daneke, M.J. Lenox, *Sustainable development and entrepreneurship: Past contributions and future directions*, “Journal of Business Venturing” 2010, vol. 25, no. 5, pp. 439–448.

9 J.G. Garmann, L. Olaison, B.M. Sørensen, *Put your style at stake: A new use of sustainable entrepreneurship*, “Organization Studies” 2018, vol. 39, no. 2–3, pp. 397–415.

10 L. Linnanen, *An insider’s experiences with environmental entrepreneurship*, “Greener Management International” 2002, vol. 38 no. 2, pp. 71–80; S.E.A. Dixon, A. Clifford, *Ecopreneurship – a new approach to managing the triple bottom line*, “Journal of Organizational Change Management” 2007, vol. 20 no. 3, pp. 326–345; S. Schaltegger, M. Wagner, *Sustainable entrepreneurship and sustainability innovation: categories and interactions*, “Business Strategy and the Environment” 2011, vol. 20, no. 4, pp. 222–237; D. Fischer, R. Mauer, M. Brettel, *Regulatory focus theory and sustainable entrepreneurship*, “International Journal of Entrepreneurial Behavior & Research” 2018, vol. 24, no. 2, pp. 408–428.

11 J. Mair, I. Marti, *Social entrepreneurship research: A source of explanation, prediction, and delight*, “Journal of World Business” 2006, vol. 41, no. 1, pp. 36–44.

12 T. Rantala et al., *Identifying Strategies...*, pp. 213–229.

13 K. Hockerts, R. Wüstenhagen, *Greening Goliaths versus emerging Davids – Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship*, “Journal of Business Venturing” 2010, vol. 25, no. 5, pp. 481–492.

14 H.I. Stål, K. Bonnedahl, *Conceptualizing strong sustainable entrepreneurship*, “Small Enterprise Research” 2016, vol. 23, no. 1, pp. 73–84.

attention is on solving social problems. Close cooperation with the social environment and the implementation of a social mission is practiced. This approach builds a sense of social belonging and supports the development of social capital¹⁵.

Sustainable entrepreneurship is a dynamic and interdisciplinary concept. The attention of entrepreneurs is shifted towards a comprehensive approach to the environment, taking into account the concern for future generations. Understanding the meaning behind this idea requires reference to other areas. These include economics, business management, sociology, psychology, anthropology, and tourism¹⁶.

The concept of sustainable entrepreneurship appeared as a response to new expectations regarding entrepreneurship¹⁷. Initially, entrepreneurship was understood as contributing to economic growth, innovation, and employment creation¹⁸. However, the assessment of business activity limited to the economic perspective was insufficient. The problems of the modern world have forced a change in the perception of entrepreneurship¹⁹. It is now recognized that entrepreneurship can contribute to solving both environmental problems and challenging social issues²⁰.

Entrepreneurship and sustainable development have been integrated into the idea of a sustainable enterprise being focused on the 3P: People, Profit, Planet²¹. In 1994, Elkington introduced the term “triple bottom line” to refer to enterprises when their development of higher business value are assessed in a broad 3P perspective. The decisions made in each of these areas relate to the triad: people, profit, planet²²:

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- 15 F. Luís et al., *Conditions supporting entrepreneurship and sustainable growth*, “International Journal of Social Ecology and Sustainable Development (IJSESD)” 2017, vol. 8, no. 3, pp. 67–86.
 - 16 V. Ratten et al., *Sustainable Entrepreneurship: The Role of Collaboration in the Global Economy*, [in:] V. Ratten et al., *Sustainable Entrepreneurship, The Role of Collaboration in the Global Economy*, Springer, Cham 2019, pp. 1–7.
 - 17 P. Woodfield, C. Woods, D. Shepherd, *Sustainable entrepreneurship: another avenue for family business scholarship?*, “Journal of Family Business Management” 2017, vol. 7, no. 1, pp. 122–132.
 - 18 S. Shane, S. Venkataraman, *The promise of entrepreneurship as a field of research*, “Academy of Management Review” 2000, vol. 25, no. 1, pp. 217–226.
 - 19 L. Ploum et al., *Toward a validated competence framework for sustainable entrepreneurship*, “Organization & Environment” 2018, vol. 31, no. 2, pp. 113–132; C.G. Johnsen, L. Olaison, B.M. Sørensen, *Put your style at stake: A new use of sustainable entrepreneurship*, “Organization Studies” 2018, vol. 39, no. 2–3, pp. 397–415.
 - 20 P.D. Keogh, M.J. Polonsky, *Environmental commitment: a basis for environmental entrepreneurship?*, “Journal of Organizational Change Management” 1998, vol. 11, no. 1, pp. 38–49.
 - 21 H. Bonnet et al., *Teaching sustainable entrepreneurship to engineering students: the case of Delft University of Technology*, “European Journal of Engineering Education” 2006, vol. 31, no. 2, pp. 155–167.
 - 22 J. Elkington, *Enter the triple bottom line*, [in:] A. Henriques, J. Richardson, *The triple bottom line*, Routledge, London 2004, pp. 1–16; P. Muñoz, B. Cohen, *Entrepreneurial narratives in sustainable Venturing: Beyond people, profit, and planet*, “Journal of Small Business Management” 2018, vol. 56, pp. 154–176.

- Profit – Economic Sustainability – It measures the profit and loss of a company in an organization.
- People – Social Sustainability – Determines how socially responsible the organization was during its operations.
- Planet – Environmental Sustainability – Indicates the company's degree of responsibility for the environment.

Sustainable entrepreneurship combines profit with the creation of social and environmental values to care for the well-being of future generations. Therefore, it is crucial to reconcile divergences regarding the achievement of economic goals with social and environmental problems. Integrating economic, social, and ecological goals over a long time horizon is the goal²³. Significant in this concept is the issue of the durability of solutions, their renewal, and protection. Thus, they are the power to create new sustainable solutions²⁴.

Instead of the most important company goals being profits, in sustainable entrepreneurship, strategic goals related to nature protection, life support sources protection, and community protection. Benefits are defined as both business and non-economic profits. These include benefits for society, security and respect for the environment, and economic viability from a strategic perspective. The critical assumption is to assess goals and profits from the view of the situation of future generations²⁵.

The vision of challenges for business and the environment vary. In normal business operations, environmental degradation is considered mainly from the risk perspective. Risk includes lawsuits and the negative image of the organization. In sustainable entrepreneurship, however, the deterioration of the natural environment is treated differently²⁶. The climate crisis (the effect of human activity and the most critical development challenge) generates new business opportunities.

Entrepreneurs should strive to limit the destruction of the natural environment, while being aware that the implementation of new technologies and solutions for the reuse of waste represents new trends in business. Optimal use of resources, restoration of resources, or recycling of waste are ideas for business operations²⁷. New business opportunities are orienting at introducing social and environmental changes²⁸.

23 D. Fischer, R. Mauer, M. Brettel, *Regulatory focus theory...*

24 D.F. Pacheco, T.J. Dean, D.S. Payne, *Escaping the green prison...*

25 D.A. Shepherd, H. Patzelt, *The new field...*

26 J.G. York, S. Venkataraman, *The entrepreneur-environment nexus: Uncertainty, innovation, and allocation*, "Journal of Business Venturing" 2010, vol. 25, no. 5, pp. 449–463.

27 J.C. Garmann, L. Olaison, B.M. Sørensen, *Put your style at stake...*

28 D.Y. Choi, E.R. Gray, *The venture development processes of "sustainable" entrepreneurs*, "Management Research News" 2008, vol. 31, no. 8, pp. 558–569.

Despite this interpretation of entrepreneurship under the banner of sustainable entrepreneurship, it is not a threat in the sense of limiting the activities of companies. Indeed, entrepreneurial initiatives can help preserve the natural environment and social balance²⁹. This concept has the potential to have a mobilizing effect on social and environmental activities. However, an overly optimistic impression of sustainable entrepreneurship as a panacea for the problems of the modern world is misleading.

When examining sustainable entrepreneurship, one should pay attention to the unique role of the entrepreneur. According to the assumption of sustainable entrepreneurship, the “new” entrepreneur can change the negative impact of economic activities on the climate. Sustainable entrepreneurs are those whose ambition is to support changes in the field of sustainable development. They believe that their actions have a significant impact on achieving the result of an overall balanced effect and see the opportunity to derive a positive effect on sustainable development. They are the initiator and catalyst of actions³⁰. They act in liaison with other entities, such as people, resources, networks, spaces, money, ideas, artifacts, and nature. The distinguishing feature of sustainable entrepreneurs is their passion and willingness to reconcile business issues with environmental challenges³¹.

Researchers point to the importance of a sustainable entrepreneur in initiating the transformation and implementation of sustainable practices and processes, as sustainable entrepreneurs can influence other industry players to make a change. The effectiveness of such entrepreneurial activities is determined by the overlapping of corporate goals with the needs and values of the client group. Therefore, consumers should change their purchasing decisions, since it is necessary for customers to care whether the producer of the goods and services acts with respect for the natural environment, allowing sustainable entrepreneurs to compete based on products, services, organisational solutions, and environmentally friendly technologies. Explaining the success of sustainable entrepreneurs, scientists point to the impact of four factors: innovation orientation, achievement motivation, resource use, and environmental sustainability³². Sustainable entrepreneurship, therefore, can be indicated as a process in the preparedness to build a competitive advantage as a response to global warming³³.

29 A. Pastakia, *Grassroots ecopreneurs: change agents for a sustainable society*, “Journal of Organizational Change Management” 1998, vol. 11, no. 2, pp. 157–173.

30 R. Hanohov, L. Baldacchino, *Opportunity recognition in sustainable entrepreneurship: an exploratory study*, “International Journal of Entrepreneurial Behavior & Research” 2018, vol. 24, no. 2, pp. 333–358.

31 K. Poldner, P. Shrivastava, O. Branzei, *Embodied multi-discursivity: An aesthetic process approach to sustainable entrepreneurship*, “Business & Society” 2017, vol. 56, no. 2, pp. 214–252.

32 C. Vallaster et al., *Responsible entrepreneurship...*

33 K. Poldner, P. Shrivastava, O. Branzei, *Embodied multi-discursivity...*

Trends in and contributions to sustainable entrepreneurship research

Most research in the field of sustainable entrepreneurship is theoretical and conceptual. Although attitude, knowledge, skills, and competences in entrepreneurship have been studied for many years, they represent a new area of research for sustainable development management, as the value and motives of a sustainable entrepreneur are different from ordinary entrepreneurs³⁴. Sustainable entrepreneurship concerns people who are not motivated only by personal economic gain. Other factors play an essential role: knowledge, entrepreneurship orientation, sustainability, and sustainable development³⁵. Among the motives researchers indicate pro-ecological values, compassion, and moral commitment, and a strong sense of responsibility. In sustainable enterprises, the essential goals relate to five primary motivators: green values, passion, being one's own boss, recognizing the market gap, and earning a living³⁶. Being guided by company growth and promoting sustainable development goals is characteristic of the creative phase of creating ideas. In the implementation process, entrepreneurs focus on growth and risk³⁷.

Researching competencies relevant for sustainable entrepreneurship highlighted: systems thinking competencies, normative competencies, foresighted thinking competencies, interpersonal competencies, whereas strategic action competencies plays a lesser role³⁸.

Sustainable entrepreneurship is a field of research combining innovation, entrepreneurship, and sustainable development. Until now, little attention has been paid to understand the innovative processes involved in solving environmental and social problems. Such innovation processes are referred to as being "socially oriented", as they require responsible innovation³⁹.

34 H.C. Hooi et al., *The functional role of entrepreneurial orientation and entrepreneurial bricolage in ensuring sustainable entrepreneurship*, "Management Research Review" 2016, vol. 39, no. 12, pp. 1616–1638.

35 P. Muñoz, D. Dimov, *The call of the whole in understanding the development of sustainable ventures*, "Journal of Business Venturing" 2015, vol. 30, no. 4, pp. 632–654.

36 J. Kirkwood, S. Walton, *What motivates ecopreneurs to start businesses?*, "International Journal of Entrepreneurial Behavior & Research" 2010, vol. 16, no. 3, pp. 204–228; A. Fayolle, F. Liñán, *The future of research on entrepreneurial intentions*, "Journal of Business Research" 2014, vol. 67, no. 5, pp. 663–666; A.M. Vuorio, K. Puumalainen, K. Fellnhofer, *Drivers of entrepreneurial intentions...*

37 D. Fischer, R. Mauer, M. Brettel, *Regulatory focus theory...*

38 K. Poldner, P. Shrivastava, O. Branzei, *Embodied multi-discursivity...*

39 C. Vallaster et al., *Responsible entrepreneurship...*

The focus of our research is sustainable development in the context of SMEs and new enterprises. Smaller entities recognize the need for sustainable development and display increasing interest in standards, certificates, and codes of conduct that are expected to bring many benefits. The issue of eco-orientation is extensively studied within the context of the benefits and effects for SMEs. Advantages such as cost saving, improved reputation, and customer satisfaction are beyond doubt. The satisfaction of a wide range of stakeholders, the introduction of sustainable solutions, and building social value are essential, if these elements are to build the basis for long-term cooperation. Research has failed to fully identify the factors that stimulate SMEs to achieve sustainable development goals⁴⁰.

The entrepreneurial process sets a new direction for a sustainable venture. Sustainable entrepreneurs determine a social or ecological problem. They then create an idea for a business opportunity which results from the motivation to solve a specific problem. They develop solutions, finance and establish a sustainable enterprise.

Scientists indicate that the process of sustainable entrepreneurship remains mostly unexplored⁴¹, and despite the growing attention on sustainable entrepreneurship, knowledge about combining business, economic, social, and environmental issues is limited. According to the available research results, a sustainable decision-making process should be motivating, goal-oriented, value-based, and specific solution-oriented⁴², and it should result in a balanced decision-making process.

Criticism of sustainable entrepreneurship and directions for further research

In response to criticism of sustainable development in connection with entrepreneurship, terms such as “corporate greening”, “corporate environmentalism” have arisen⁴³. Research in the field of sustainable entrepreneurship highlights two

40 C. Pomare, *A Multiple Framework Approach to Sustainable Development Goals (SDGs) and Entrepreneurship*, “Entrepreneurship and Sustainable Development Goals (Contemporary Issues in Entrepreneurship Research)” 2018, vol. 8, pp. 11–31.

41 G.T. Lumpkin et al., *Entrepreneurial processes in social contexts: how are they different, if at all?*, “Small Business Economics” 2013, vol. 40, no. 3, pp. 761–783; F.M. Belz, J.K. Binder, *Sustainable entrepreneurship...*

42 P. Muñoz, *A cognitive map of sustainable decision-making in entrepreneurship: A configurational approach*, “International Journal of Entrepreneurial Behavior & Research” 2018, vol. 24, no. 3, pp. 787–813.

43 A. Crane, *Corporate greening as moralization*, “Organization Studies” 2000, vol. 21, no. 4, pp. 673–696; C. Wright, D. Nyberg, D. Grant, *Hippies on the third floor: Climate change, narrative identity, and the micro-politics of corporate environmentalism*, “Organization Studies” 2012, vol. 33, no. 11, pp. 1451–1475.

opposing assumptions. These are connected to business operations and sustainable development, a dual approach which gives rise to conflicts. Each decision is linked to the triad: profit, people, the planet, which hinders the implementation of the idea in practice.

Challenges related to environmental degradation are a global phenomenon. Climate risk management is vital at the world, regional, and national economy level since economic systems in the modern world are interrelated and interdependent. The attitude of entrepreneurs resulting from a change in thinking about the environment can change the world for the better. However, it is difficult to imagine that an individual approach can stop and reverse the destruction of the world's environments⁴⁴. Therefore, treating entrepreneurship in sustainable entrepreneurship as knight in shining armour who will save the world from destruction seems naive.

The decision on ecological sustainability is not evident to the entrepreneur. Having to choose between economic growth and respect for the environment often results in deciding in favor of the predatory growth of enterprises. This conflict between capitalism, which aims to maximize profit, and concern for the environment and meeting the needs of future generations, seems difficult to resolve.

A critical review of the literature on sustainable entrepreneurship has inspired further research. Limited progress has been made in understanding the process of sustainable entrepreneurship and the factors shaping this entrepreneurship, and several problems have been identified that set the direction for future research. Research is therefore needed into how fostering and acting on sustainable entrepreneurship may be best supported across eight key areas:

- Measuring and assessing the value of sustainable entrepreneurship has not yet been studied. It is difficult to indicate precise measures to evaluate the activities of sustainable entrepreneurs. Estimation of benefits and cost assessment, degree of sustainability of entrepreneurial initiatives has not been assessed.
- The sustainable entrepreneurship process, stages, and effects require further research. The differences between traditional entrepreneurial and sustainable processes deserve a closer look.
- Strategies at the company level and a functional approach to implementing this idea have not yet been the subject of much research.
- The capital and investment needs related to activities pursuing social and environmental goals are not recognized. The development of sustainable entrepreneurship depends on the investment offer and research and development activity.

44 C. Wright et al., *Future imaginings: organizing in response to climate change*, "Organization" 2013, vol. 20, no. 5, pp. 647–658.

- Methods for creating sustainable entrepreneurship, barriers for entrepreneurs on the road to sustainable development, incentives to support sustainable business practices require further research.
- Social and ecological partnership, cooperation within networks, measurement of social and environmental benefits (effects) of cooperation determine the directions of further research.
- Classification of sustainable enterprise is lacking. The criterion may be the level of commitment and focus on the use of sustainable entrepreneurship in business ventures. It can be assumed that different categories of entrepreneurs are not equally involved in sustainable entrepreneurship.
- Problems like pro-social and pro-environmental motivation, willingness to solve socio-ecological problems, belief in their effectiveness in solving global problems remain unsolved.

The implementation of the concept of sustainable entrepreneurship meets with the growing interest of theoreticians and business practitioners. Further research in this area is necessary to move from the concept of “ideal” enterprise to the practice of sustainable entrepreneurship.

Conclusion

Entrepreneurs predominantly focus on making money. However, companies will have to adapt to the reduced availability of natural resources. In addition, changes in society are needed to adopt pro-social and pro-environmental measures. The implementation of sustainable entrepreneurship has a chance to help protect social and environmental resources and preserve their value for present and future generations. Especially when we assume that environmental problems result from the wrong concept of entrepreneurship. Sustainable entrepreneurship is a step towards the idea of a green economy. In this concept, it is essential to distinguish a profit-oriented entrepreneur from a responsible entrepreneur creating value for society and the environment (Figure 1). Sustainable entrepreneurship applies to entrepreneurs operating with passion as ethical entrepreneurs earning money while respecting green values.

It can be assumed that besides building value, sustainable entrepreneurship can generate other benefits. The need for stability and security is of increasing importance in the modern world. Value and protection for stakeholders can be critical factors for implementing sustainable entrepreneurship.

In addition to the initiatives aimed at improving the social situation and environmental changes, it is vital to develop informed individuals and groups of people through education. Entrepreneurship belongs to the canon of subjects implemented

at various levels of education around the world. This new direction of research sets in motion the promotion of knowledge about sustainable entrepreneurship. It is an initiative already implemented in the EU. In the 2019/2020 training year, the Minister of Education in the Italian government, Fioramonti, introduced the subject of changes in the environment and sustainable development⁴⁵. Sustainable development and climate issues are, therefore, becoming an essential point in the modern educational model.

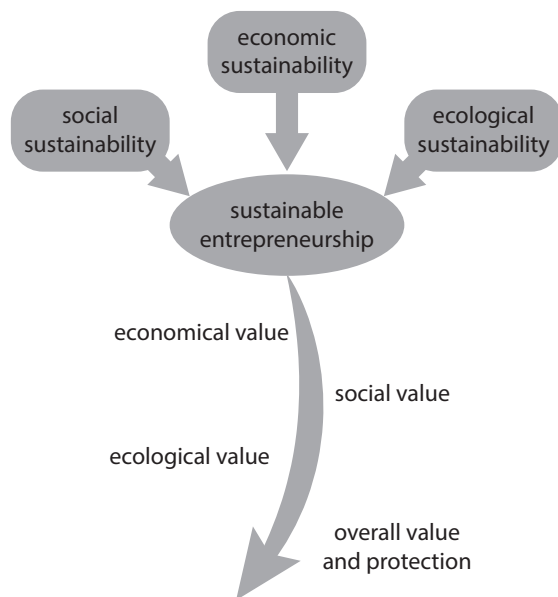


Figure 1. The unique concept value-creating and protection in sustainable entrepreneurship

Source: own work.

Conclusions suggest that the concept of sustainable entrepreneurship is not widely used. And it is in need of further research and development in practice. To implement this idea with due care, it is necessary to understand the broad context in the long term. Is sustainable entrepreneurship a choice or a necessity? This will bring into confrontation a normal approach to business with an unconventional strategy that comes from the “heart”.

⁴⁵ Włochy: Szkoły będą uczyć o zmianach klimatu. Obowiązkowo, <https://www.rp.pl/Ekologia/191109744-Wlochy-Szkoly-beda-uczyc-o-zmianach-klimatu-Obowiazkowo.html> (accessed: 23.12.2019).

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Abstract

Entrepreneurial activities are seen as important to business, society, environment. The purpose of this paper is to give an up-to-date assessment of the key topics discussed in the literature on sustainable entrepreneurship. It has become a more accessible, and essential, topic in academic literature and practice. Nowadays, enterprises are required to reconcile contradictions arising at the interface between: business – society and business – environment. Sustainable entrepreneurship is a new area of research that combines the concept of sustainable development and entrepreneurship. This is due to the rapid increase in the environmental problems that affect the whole world. Sustainable entrepreneurship is about discovering, creating, and using entrepreneurial opportunities that contribute to sustainable development by generating social and environmental benefits for society.

The article presents the background, achievements, and current trends in sustainable entrepreneurship. The vast majority of research results in the field of sustainable entrepreneurship are of a conceptual nature. One should also be aware of the overly optimistic approach to the idea of sustainable entrepreneurship as a panacea for social and environmental problems of the modern world. Nevertheless, this concept has the potential to mobilize social and environmental activities. The practice of sustainable entrepreneurship is poorly understood. Further research in this area is necessary to move from the mere concept of an ideal enterprise to the practical implementation of sustainable entrepreneurship.

As this paper is a literature review, a systematic literature review is conducted to assess new contributions to the field, based on which the role of sustainable entrepreneurship in the XXI century, research directions and the criticism of sustainable entrepreneurship are identified and discussed. This literature review of research on sustainable entrepreneurship may develop an agenda for future research paths and practice.

Keywords: sustainable entrepreneurship, sustainability entrepreneurship, entrepreneur

Sustainable development of suppliers – a systematic review of the literature

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Introduction

Today, sustainable development of suppliers is vital to increase the ability of suppliers to better meet the long-term needs of buyers. The article analyzes the occurrence of issues concerning sustainable development of suppliers in peer-reviewed scientific publications. The following research questions were asked:

- “Is there a gap in research in this thematic area?”;
- “Is there a trend when it comes to publication time on a given topic?”;
- “Which scientific journals publish articles on the sustainability of suppliers?”;
- “From which countries do authors most often deal with the issues of sustainable development of suppliers?”;
- “In what areas of research are the issues of sustainable development of suppliers addressed?”.

The basic research method was a systematic literature review. The selected texts were selected based on the databases of EBSCO, ProQuest, JSTOR, Web of Science and Google Scholar.

Supplier development issues

The term ‘development of suppliers’ was first introduced by Leenders in 1966 to emphasize the efforts undertaken by producers to increase the number and improve the efficiency of their suppliers¹. Over time, in addition to supplier efficiency, other elements have appeared: improving supplier capacity², knowledge transfer (including shared vision), as well as direct involvement and evaluation of suppliers³.

In the literature, development of suppliers occurs as an activity that takes place after the selection process⁴, because the evaluation and the subsequent selection of the supplier allow the buyer to effectively manage a sustainable portfolio of suppliers⁵. In specific sectors, such as the automotive sector, the development of suppliers may be preceded by the selection stage, among others, due to the earlier designing of delivered components in the *just-in-time* concept⁶.

The goal of development of suppliers is primarily to increase their ability to better meet the long-term needs of buyers⁷, and to monitor their behavior as well as their management – to reduce risk in mutual relations⁸. The implementation of these goals is supported by special supplier development programs that allow one the effective solving of problems of productivity and quality⁹, improve operational

1 M.R. Leenders, *Suppliers development*, “Journal of Purchasing” 1966, vol. 24, pp. 47–62.

2 D.R. Krause, R.B. Handfield, B.B. Tyler, *The relationships between supplier development, commitment, social capital accumulation and performance improvement*, “Journal of Operations Management” 2007, vol. 25, no. 2, pp. 528–545.

3 *Ibidem*.

4 D.R. Krause, L.M. Ellram, *Critical elements of supplier development: The buying-firm perspective*, “European Journal of Purchasing and Supply Management” 1997, vol. 3, no. 1, pp. 21–31; S. Talluri, R. Narasimhan, *A methodology for strategic sourcing*, “European Journal of Operational Research” 2004, vol. 154, no. 1, pp. 236–250; C. Araz, I. Ozkarahan, *Supplier evaluation and management system for strategic sourcing based on a new multicriteria sorting procedure*, “International Journal of Production Economics” 2007, vol. 106, no. 2, pp. 585–606.

5 K. Foerstl et al., *Managing supplier sustainability risks in a dynamically changing environment – Sustainable supplier management in the chemical industry*, “Journal of Purchasing and Supply Management” 2010, vol. 16, no. 2, pp. 118–130.

6 D. Luzzini et al., *The path of innovation: Purchasing and supplier involvement into new product development*, “Industrial Marketing Management” 2015, vol. 47, pp. 109–120.

7 C.K. Hahn, C.A. Watts, K.Y. Kim, *The Supplier Development Program: A Conceptual Model*, “Journal of Purchasing and Materials Management” 1990, vol. 26, no. 2, pp. 2–7.

8 R. Cole, J. Aitken, *Selecting suppliers for socially sustainable supply chain management: post-exchange supplier development activities as pre-selection requirements*, “Production Planning and Control” 2019, vol. 30, no. 14, pp. 1184–1202.

9 D.R. Krause, L.M. Ellram, *Critical elements...*

efficiency¹⁰, build long-term competitive advantage and trust¹¹. Supplier development programs may include, for example, education and training of the suppliers' staff, assessment of suppliers' performance, incentives for suppliers or direct financial investments¹². Despite the fact that buyers are initiators of such activities, the benefits are mutual¹³. Among the benefits for suppliers from the existence of their development program is the increase in satisfaction and commitment¹⁴.

Traditionally, the focus of supplier development in producer – supplier relations has been on cost reduction, ongoing performance, quality management, implementation of new technologies and product design¹⁵, while, currently, the sustainable development of suppliers is being increasingly postulated¹⁶. Although ensuring compliance with CSR standards for the supplier may entail increased costs, expenditure of time and the need for specialized knowledge¹⁷, it is emphasized that the extension of supplier development programs by these standards is associated with assistance from the buyer, including the provision of support and necessary resources¹⁸.

- 10 P.K. Humphreys, W.L. Li, L.Y. Chan, *The impact of supplier development on buyer-supplier performance*, "Omega" 2004, vol. 32, no. 2, pp. 131–143; D.R. Krause, T.V. Scannell, R.J. Calantone, *A Structural Analysis of the Effectiveness of Buying Firms' Strategies to Improve Supplier Performance*, "Decision Sciences" 2000, vol. 31, no. 1, pp. 33–55; S.B. Modi, V.A. Mabert, *Supplier development: Improving supplier performance through knowledge transfer*, "Journal of Operations Management" 2007, vol. 25, no. 1, pp. 42–64; S. Li, M. Kang, M.H. Haney, *The effect of supplier development on outsourcing performance: the mediating roles of opportunism and flexibility*, "Production Planning and Control" 2017, vol. 28, no. 6–8, pp. 599–609; M. Zhang, K.S. Pawar, S. Bhardwaj, *Improving supply chain social responsibility through supplier development*, "Production Planning and Control" 2017, vol. 28, no. 6–8, pp. 500–511.
- 11 H. Nagati, C. Rebolledo, *Supplier development efforts: The suppliers' point of view*, "Industrial Marketing Management" 2013, vol. 42, no. 2, pp. 180–188.
- 12 S. Li, M. Kang, M.H. Haney, *The effect of supplier development...*
- 13 C. Sancha et al., *Does implementing social supplier development practices pay off?*, "Supply Chain Management" 2015, vol. 20, no. 4, pp. 389–403.
- 14 P.W.T. Ghijsen, J. Semeijn, S. Ernstson, *Supplier satisfaction and commitment: The role of influence strategies and supplier development*, "Journal of Purchasing and Supply Management" 2010, vol. 16, no. 1, pp. 17–26.
- 15 S. Talluri, R. Narasimhan, W. Chung, *Manufacturer cooperation in supplier development under risk*, "European Journal of Operational Research" 2010, vol. 207, no. 1, pp. 165–173.
- 16 C. Sancha, A. Longoni, C. Giménez, *Sustainable supplier development practices: Drivers and enablers in a global context*, "Journal of Purchasing and Supply Management" 2015, vol. 21, no. 2, pp. 95–102; S. Li, M. Kang, M.H. Haney, *The effect of supplier development...*; M. Zhang, K.S. Pawar, S. Bhardwaj, *Improving supply chain social responsibility...*
- 17 S. Ayuso, M. Roca, R. Colomé, *SMEs as "transmitters" of CSR requirements in the supply chain*, "Supply Chain Management" 2013, vol. 18, no. 5, pp. 497–508.
- 18 C. Giménez, E.M. Tachizawa, *Extending sustainability to suppliers: A systematic literature review*, "Supply Chain Management" 2012, vol. 17, no. 5, pp. 531–543.

Research methodology

A systematic review of the literature allows the identification of the current state of knowledge in a given area, understand a given issue, diagnose gaps, and, as a consequence, leads to further research aimed at bridging them¹⁹. It provides the basis for the development of new knowledge and fosters the development of theory in areas that have not yet been explored²⁰. This method facilitates the identification, assessment, and interpretation of existing research in a given field while introduction of the possibility of multiple repetition of tests²¹.

The systematic review of articles related to the topic of sustainable development of suppliers carried out in the article was to answer the following research questions:

- “Is there a research gap in the thematic area?”;
- “Is there a trend when it comes to publication time on a given topic?”;
- “Which scientific journals publish articles on the sustainable development of suppliers?”;
- “From which countries do authors most often deal with the issues of sustainable development of suppliers?”.

Within the research, an approach has been adopted based on the review of scientific databases, which, as indicated by Czakon, are electronic, scientific databases containing scientific publications on a global scale²². As part of the study, the following electronic databases were selected for review: EBSCO, ProQuest, JSTOR, Web of Science and Google Scholar.

The search strategy started by defining the criteria for the automated search of publications in electronic databases, due to the fact that the systematic approach requires that process-related elements should be selected for inclusion on the basis of their usefulness and rigor for the research conducted²³. As part of it, a decision

19 A. Orłowska, Z. Mazur, M. Łaguna, *Systematyczny przegląd literatury: Na czym polega i czym różni się od innych przeglądów*, “Ogrody Nauk i Sztuk” 2017, no. 7, pp. 350–363.

20 J. Webster, R.T. Watson, *Analyzing the past to prepare for the future: Writing a literature review*, “MIS Quarterly” 2002, vol. 26, no. 2, pp. 13–23.

21 S. Seuring, M. Müller, *From a literature review to a conceptual framework for sustainable supply chain management*, “Journal of Cleaner Production” 2008, no. 16, pp. 1699–1710.

22 W. Czakon, *Metodyka systematycznego przeglądu literatury*, “Przegląd Organizacji” 2011, no. 3, pp. 57–61.

23 A. Booth, A. Sutton, D. Papaioannou, *Systematic approaches to a successful literature review*, Sage Publications, London 2012, p. 19, https://www.researchgate.net/publication/235930866_Systematic_Approaches_to_a_Successful_Literature_Review (accessed: 19.10.2019).

was made to apply the following inclusion criteria, i.e. including publications in the database²⁴:

- the search criteria will only cover articles published in English without the specification of the time period of their publication;
- all publications will be qualified within the fields of economics, economy, management;
- search criteria (keywords) will be included only in the title, which reflects the essential, rather than the accessory research category for the searched keywords;
- to ensure an appropriate level of publication quality, the search will be based only on peer-reviewed articles;
- the search rigor will only cover works available in full version (*full text*).

The next step in the research process was to select keywords based on which the electronic databases were searched. As a result of the discussion of the research team, a combination of the following words was selected: *sustainable*, *development* and *supplier*, which were combined by one of Boole's logical operators in the process of searching databases, i.e. the phrase 'and'.

Using the classification scheme presented above, a literature database was initially created consisting of 29 publications, which, after removing duplicate papers, allowed the creation of a reference repository which covered a total of 23 articles (see Table 1).

Table 1. The process of creating the literature database in quantitative terms

Search criteria	EBSCO (26.09.19)	ProQuest (27.09.19)	JSTOR (27.09.19)	Web of Science (30.09.2019)	Google Scholar (30.09.2019)
"sustainable" in title	1689141	188970	2685	6906	391000
"development" in title	514261	38626	1178	3355	127000
"supplier" in title	278	26	0	1	44
Full text	163	19		1	19
Peer reviewed	75	3		1	6
After verification the titles	19	3		1	6
Total without duplicates	23				

Source: own study.

The articles selected during the database search became the subject for further analysis. Their small number indicates the existence of a research gap in the area of sustainable development of suppliers.

24 R.E. Slavin, *Best evidence synthesis: an intelligent alternative to meta-analysis*, "Journal of Clinical Epidemiology" 1995, vol. 48(1), pp. 9–18.

Bibliometric analysis of articles by journals, year of publication and affiliation of the authors

The next stage of the research was to identify the titles of magazines in which the topic of sustainable development of suppliers was taken up (see Figure 1).

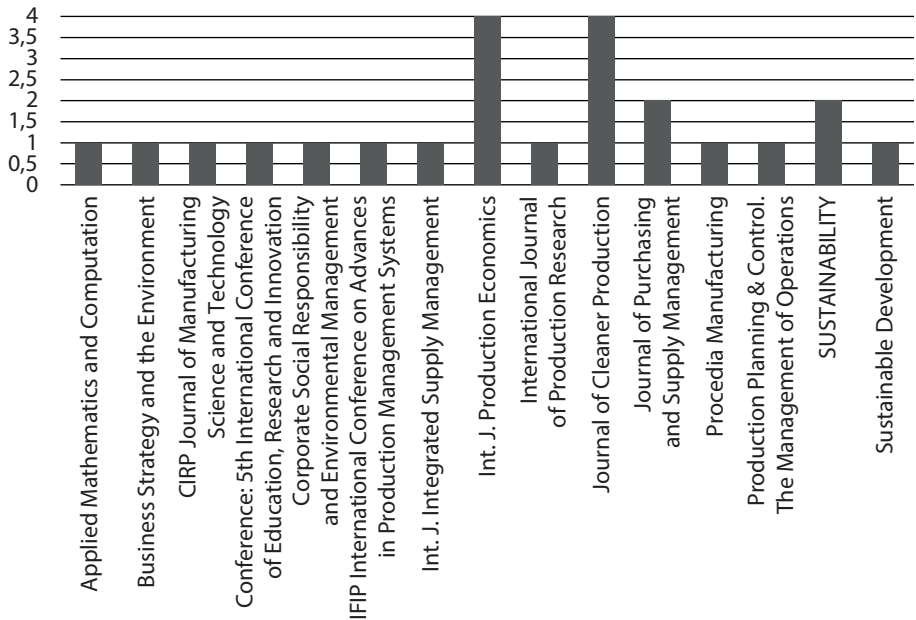


Figure 1. Issues of sustainable development of suppliers in scientific publications

Source: own study.

The largest number of articles was published in the “International Journal of Production Economics” and the “Journal of Cleaner Production”, which is not surprising due to the connection with materials flow cycle and finished products in production processes. As can be seen, the topic is also discussed in the context of supply management (“Journal of Purchasing and Supply Management”) or the currently widely discussed topic of sustainable development (“SUSTAINABILITY”, “Sustainable Development”, “Corporate Social Responsibility”, and “Environmental Management”, “Business Strategy and the Environment”).

A systematic review of the literature on the sustainable development of suppliers enabled the selection of 23 articles that were published in the years 2010–2019. The next stage of the research was, therefore, the analysis of the number of publications in individual years (see Figure 2).

Due to the limited time range of publication found when searching for the terms – the first publication is from 2010 – it can be concluded that this topic has been undertaken relatively recently. It should be pointed out that since 2013 there has been a gradual upward trend in the number of articles on the sustainable development of suppliers.

Next, the authors of the publications' country of origin were subjected to bibliometric analysis according to their declared affiliation. In total, 70 affiliations were obtained (see Figure 3).

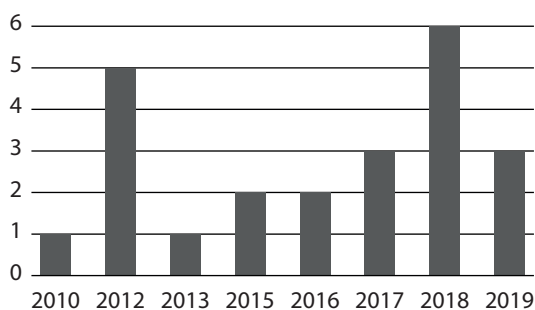


Figure 2. Issues of sustainable development of suppliers in individual years

Source: own study.

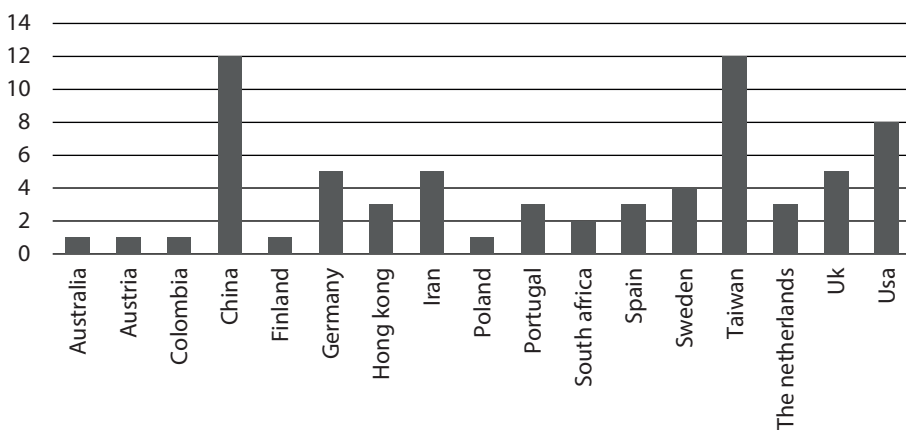


Figure 3. Issues of sustainable development of suppliers according to authors' affiliations

Source: own study.

As indicated in the chart, the largest declared number of authors' affiliations (12 each) comes from China and Taiwan, 8 from the USA, 5 from each Great Britain, Germany and Iran, 4 from Sweden.

Keyword Analysis

Although bibliometric studies are auxiliary to content analysis, they allow the assessment of individual features of the set, providing important information about the importance of the studied topics for science in general²⁵. The methodology of a systematic literature review based on content analysis techniques is based on a quantitative assessment, allowing verification of frequency, i.e. an indication of the frequency of occurrence of the studied features²⁶. The overriding goal of this exploratory stage of research is to highlight common areas and streams of research²⁷.

One aspect that may be the subject of research in terms of frequency of occurrence is keywords²⁸. The analysis of their occurrence enables the determination of the research field as well as to indicate connections with other fields of science²⁹.

The authors analyzed all keywords from 23 scientific articles selected at the stage of a systematic review of the literature (see Table 1). Among the 23 texts mentioned, two had no information on the allocation of keywords by the authors (items [01] and [17] in Table 2).

Table 2. List of analyzed scientific publications

Reference number	Author(s)	Titles	Year
[01]	Usama Awan, Robert Sroufe, Andrzej Kraslawski	<i>Creativity enables sustainable development: Supplier engagement as a boundary condition for the positive effect on green innovation</i>	2019
[02]	Rosanna Cole, James Aitken	<i>Selecting suppliers for socially sustainable supply chain management: post-exchange supplier development activities as pre-selection requirements</i>	2019
[03]	Marise Vermeulen, Gerd Adriaan Oosthuizen	<i>Strategic Local Manufacturing Supplier Development Roadmap as a Decision Support Tool</i>	2019
[04]	Zachary S. Rogers, Craig R. Carter, Virginia Kwan	<i>Making tough choices: A policy capturing approach to evaluating the tradeoffs in sustainable supplier development initiatives</i>	2019

- 25 M.O. Columb, A.G. Lalkhen, *Systematic reviews and meta-analysis*, “Current Anaesthesia and Critical Care” 2005, vol. 16(6), pp. 391–393.
- 26 W. Czakon, *Metodyka...*
- 27 C. Giménez, E. Tachizawa, *Extending sustainability to suppliers...*
- 28 H.N. Su, P.C. Lee, *Mapping knowledge structure by keyword co-occurrence: A first look at journal papers in technology foresight*, “Scientometrics” 2010, no. 85(1), pp. 65–79.
- 29 W. Czakon, P. Klimas, *Sieci oraz firmy kotwice – ich znaczenie w gospodarce opartej na wiedzy, Management and IT – dilemmas and directions of development*, 4th Science Forum University of Economics, Katowice 2010.

Reference number	Author(s)	Titles	Year
[05]	Yuangao Chen, Shuo Wang, Jianrong Yao, Yixiao Li, Shuiqing Yang	<i>Socially responsible supplier selection and sustainable supply chain development: A combined approach of total interpretive structural modeling and fuzzy analytic network process</i>	2018
[06]	Fu Jia, Laura Zuluaga-Cardona, Adrian Bailey, Ximena Rueda	<i>Sustainable supply chain management in developing countries: An analysis of the literature</i>	2018
[07]	Kamran Rashidi, Reza Farzipoor Sean	<i>Incorporating dynamic concept into gradual efficiency: Improving suppliers in sustainable supplier development</i>	2018
[08]	Peng Jiang, Yi-Chung Hu, Ghi-Feng-Yen, Shu-Ju Tsao	<i>Green supplier selection for sustainable development of the automotive industry using grey decision-making</i>	2018
[09]	Chin-Tsai Lin, Kuang-Peng Hung, Shu-Hsien Hu	<i>A Decision-Making Model for Evaluating and Selecting Suppliers for the Sustainable Operation and Development of Enterprises in the Aerospace Industry</i>	2018
[10]	Hadi Shabanpour, Reza Farzipoor Sean, Saeed Yousefi	<i>Forecasting efficiency of green suppliers by dynamic data envelopment analysis and artificial neural networks</i>	2017
[11]	Guo-Ciang Wu	<i>Effects of Socially Responsible Supplier Development and Sustainability-Oriented Innovation on Sustainable Development: Empirical Evidence from SMEs</i>	2017
[12]	Ashkan Hafezalkotob	<i>Competition of domestic manufacturer and foreign supplier under sustainable development objectives of government</i>	2017
[13]	Chia-Nan Wang, Ying-Fang Huang, Thi-Nham Le, Thanh-Tuan Ta	<i>An Innovative Approach to Enhancing the Sustainable Development of Japanese Automobile Suppliers</i>	2016
[14]	Konrad Zimmer, Magnus Fröhlig, Frank Schultmann	<i>Sustainable supplier management – a review of models supporting sustainable supplier selection, monitoring and development</i>	2016
[15]	Cristina Sancha, Annachiara Longoni, Cristina Giménez	<i>Sustainable supplier development practices: Drivers and enablers in a global context</i>	2015
[16]	Muratcan Erkul, Hale Kaynak, Ivan Montiel	<i>Supplier relations and sustainable operations: the roles of codes of conduct and human resource development</i>	2015
[17]	Alex A. Alblas, Kristin Peters, Hans Wortmann	<i>Process Alignment for Sustainable Product Development: The Essential Role of Supplier and Customer Involvement Processes</i>	2013

Table 2 (continued)

Reference number	Author(s)	Titles	Year
[18]	Xiaoyong Fu, Qinghua Zhu, Joseph Sarkis	<i>Evaluating green supplier development programs at a telecommunications systems provider</i>	2012
[19]	Christina W.Y. Wong, Kee-hung Lai, Kuo-Chung Shang, Chin-Shan Lu, T.K.P. Leung	<i>Green operations and the moderating role of environmental management capability of suppliers on manufacturing firm performance</i>	2012
[20]	Rainy X.A. Lu, Peter K.C. Lee, T. C.E. Cheng	<i>Socially responsible supplier development: Construct development and measurement validation</i>	2011
[21]	Philipp Goebel, Carsten Reuter, Richard Pibernik, Christina Sichtmann	<i>The influence of ethical culture on supplier selection in the context of sustainable sourcing</i>	2012
[22]	Teresa Dieguez, Filomena Amador, Jose Porfirio	<i>The Balance between the supply of Portuguese higher education institutions and the emerging challenges of sustainable development: the case of automotive suppliers industry</i>	2012
[23]	Erik Sundin, Anna Ohrwall Ronnback, Tomohiko Sakao	<i>From component to system solution supplier: Strategic warranty management as a key to efficient integrated product/service engineering</i>	2010

Source: own study.

The final analysis included 106 keywords, out of which 85 were selected (within 23 scientific articles). These were then grouped into 9 thematic (research) areas:

- Sustainable development;
- Methodology;
- Supplier management;
- Tools;
- Value chain;
- Markets;
- Concept;
- Sector and
- Strategy.

The conducted keyword analysis allowed the identification of research areas in connection with the keywords used to identify them and reference numbers assigned to individual texts, as shown in Table 3.

Table 3. Key research areas

Key research areas	Keywords	Number of Publications
Sustainable development	• sustainable supply chain management • socially responsible purchasing • sustainable supplier development • socially responsible supplier • sustainable supply chain • sustainability • green supplier • sustainable development • sustainable enterprise operation • CSR • socially responsible supplier development • sustainability-oriented innovation • sustainable development objectives • sustainable human resource development • sustainability performance • environmental supply chain management • green operations • ethical behavior • ethical culture • education for sustainable development	[02] [02] [04], [15] [05], [11] [05] [06], [07], [14], [21] [08] [08] [09] [06] [11] [11] [12] [16] [16] [18] [19] [21] [21] [22]
Methodology	• behavioral agency theory • FANP • fuzzy decision • TISM • systematic literature review • content analysis • most productive scale size • data envelopment analysis (DEA) • analytical network process • grey relational analysis • modified Delphi method • analytic network process • dynamic data envelopment analysis • game theory • TRIZ • function and attribute analysis model • contradiction matrix • literature review • hierarchical linear modelling • resource-based view • relational view • institutional theory • grey numbers	[02] [05] [05] [05] [06] [06] [07] [07] [08] [08] [09] [09] [10] [12] [13] [13] [13] [14] [15] [16] [16] [16] [18]

Table 3 (continued)

Key research areas	Keywords	Number of Publications
	• DEMATEL • PSS • IPSE • IPS2	[08], [18] [23] [23] [23]
Supplier management	• supplier selection • supplier development • supplier improvement • green supplier selection • supplier evaluation • purchasing • sustainable operations • evaluation criteria • supplier integration • supplier relations • codes of conduct • knowledge transfer • environmental management • scale development and validation • product/service system	[02], [09], [14], [21] [03], [18], [20] [07] [10] [09] [14] [16] [14] [15] [16] [16] [16] [16] [19] [20] [23]
Tool	• decision support systems • survey • forecasting of future efficiency	[14] [20] [10]
Value chain	• value creation • cooperation and competition • transaction cost economies • scale efficient • policy capturing	[03] [12] [16] [07] [04]
Markets	• developing countries • Taiwan	[06] [11]
Concept	• outsourcing • lean manufacturing • strategic warranty management	[12] [13] [23]
Sector	• government financial intervention • local manufacturing • automobile industry • institutional pressures • education • manufacturing • SMEs • aerospace industry	[12] [03] [13] [15] [22] [23] [11] [09]
Strategy	• product stewardship • process stewardship	[19] [19]

Source: own study.

The results of the keyword review showed that the studied subject is most often associated with the following areas: Sustainable development (16 publications), Methodology (14 publications), Supply management (13 publications), Sector (8 publications), Value chain (5 publications), Tools and Concept (3 publications each), Markets (2 publications) and Strategy (1 publication).

The analysis of the relationships between the fields selected above allows one to conclude that the studied topic of sustainable development of suppliers clearly falls under the category of sustainable development. Being the most numerous in the collection discussed (16 publications out of 21 items), it sets the framework for trends of research correlated with other selected fields³⁰. The concept of sustainable development understood as a socio-economic concept based on respect for the laws of nature and the human environment assumes new ways of organizing and managing the economy³¹. This, in turn, directs one to the category of supply management (13 publications out of 21 items), defined within the framework of the scope of research on suppliers, described in point 2 of this publication³². The most common keywords, i.e. supplier selection and supplier development, are part of the important currents of research in the selected category³³.

Other concepts: Sector, Value chain, Tools, Concept, Markets, and Strategy oscillate around the category of strategic management, referring to strategic tools for analyzing individual entities (in relation to their markets), in recognizing their strengths and weaknesses affecting the competitive advantage (or lack thereof)³⁴.

30 T. Waas, A. Verbruggen, T. Wright, *University research for sustainable development: definition and characteristics explored*, "Journal of Cleaner Production", May 2010, vol. 18, issue 7, pp. 629–636.

31 Attempts to normatively define the concept of "sustainable development" were initiated by the United Nations, from the Stockholm conference on "The human environment" organized in 1972 to the second "Earth Summit" held in 1992 in Rio de Janeiro. The result of these debates was the development of two documents presenting the philosophy of sustainable development and basic principles: the Rio Declaration and Agenda 21 – United Nations Conference on Environment & Development Rio de Janeiro, Brazil, 3 to 14 June 1992 AGENDA 21, <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (accessed: 21.10.2019). A. Fearne, M. Garcia, B. Dent, *Dimensions of sustainable value chains: Implications for value chain analysis*, "Supply Chain Management" 2012, vol. 17(6), pp. 575–581.

32 K. Choon Tan, *A framework of supply chain management literature*, "European Journal of Purchasing and Supply Management", March 2001, vol. 7, issue 1, pp. 39–48.

33 L. de Boer, E. Labro, P. Morlacchi, *A review of methods supporting supplier selection*, "European Journal of Purchasing and Supply Management", June 2001, vol. 7, issue 2, pp. 75–89.

34 J. Tan, S. Zailani, *Green Value Chain in the Context of Sustainability Development and Sustainable Competitive Advantage*, "Global Journal of Environmental Research" 2009, vol. 3(3), pp. 234–245.

Being uniquely correlated with the value chain concept developed by Michael E. Porter, they close the whole keyword categorization analysis and demonstrate its consistency³⁵.

The second of the most frequently occurring categories – Methodology (14 publications out of 21 items) allows one to assess which research tools were used by the authors within the topics discussed³⁶. A uniform quantitative distribution of each keyword indicates that researchers followed a variety of research methodologies, from a literature review to game theory.

Conclusions

The analysis of publications indicates that the topic of sustainable development of suppliers refers to diverse research areas and is the subject of multi-faceted analysis. Bibliometric and contextual analyses allowed the formulation of answers to the research questions.

The relatively small number of peer-reviewed scientific publications on the sustainable development of suppliers present in the selected databases (23) and the time of their publication (2010–219) indicates that it is of moderate and relatively recent interest to researchers. In order to determine whether there is a research gap, one should examine the occurrence of the subject in the so-called “gray literature”, which shows a much greater relevance of the discussed subjects compared to scientific sources³⁷. The small number of publications also negates the determination of whether there is a trend in terms of publication time.

Scientific journals in which articles on sustainable development of suppliers are published have a diverse profile, which proves that the issue of sustainable development of suppliers is embedded in various and diverse research areas. This implicitly confirms its high research potential. The authors who undertook the analyzed issues come from different countries, which means that the scientific discussion is conducted internationally.

Sustainable development of suppliers is the subject of study in numerous research areas. This issue is most closely in relation to the issue of sustainable development,

35 M.E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press, New York 1985.

36 W. Czakon (red.), *Podstawy metodologii badań w naukach o zarządzaniu*, Wolters Kluwer Polska, Warszawa 2015; K. Choon Tan, *A framework...*

37 R.J. Adams, P. Smart, A.S. Huff, *Shades of Grey: Guidelines for Working with the Grey Literature in Systematic Reviews for Management and Organizational Studies*, “International Journal of Management Reviews” 2017, vol. 19, no. 4, pp. 432–454; L. McAuley et al., *Does the inclusion of grey literature influence estimates of intervention effectiveness reported in meta-analyses?*, “The Lancet” 2000, vol. 356, no. 9237, pp. 1228–1231.

which allows us to conclude that the role of suppliers in the sustainable development of enterprises is significant. Due to the fact that the subject of the analysis is suppliers, a reference to the concept of supply management and value chain has also been identified.

The analyzed issues are discussed in the context of diverse sectors, mainly related to physical flows (manufacturing, automobile industry, aerospace industry), but also appear in relation to sectors related to services (financial or educational), which may indicate the important role of suppliers in shaping the sustainable development of organizations belonging to various sectors.

The research conducted shows that it seems sensible to undertake further research aimed at identifying any potential research gaps. The belief in its existence is based on the small number of peer-reviewed publications that were identified in relation to the studied topic. The postulate for further research also includes an indication of the promising directions for future research.

Among the interesting directions of this research on the issue of sustainable development of suppliers, these are, among others:

- examination of the role played by suppliers in the sustainable development of the organization;
- analysis of the inclusion of the issues in other management concepts, such as CSR or supply chain management;
- analysis of the need to provide guidelines concerning to what extent organizations should include suppliers in sustainable development.

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Abstract

The purpose of the article was to conduct a systematic analysis of reviewed scientific publications covering the subject of sustainable development of suppliers.

Bibliometric and contextual analysis allowed the formulation of the following conclusions: 1) the issue of sustainable development of suppliers is present in peer-reviewed scientific publications to a very moderate level, 2) the small number of publications does not make it possible to determine whether there is a trend in terms of publication time, 3) scientific journals in which articles on sustainable development of suppliers were published have a different profile, 4) authors who undertake the issues analyzed come from different countries, 5) sustainable development of suppliers is the subject of research in a range of research areas. Following a systematic review of the literature, proposals for future research directions were also formulated.

Keywords: suppliers, sustainable development, systematic literature review

The Influence of Corporate Social Responsibility on the Attractiveness of Employers in the Perception of Generation Z

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Introduction

Research indicates that although corporate social responsibility (CSR) is gaining significance as a communication and employer-branding tool¹, little attention has been paid to the effect of corporate social performance and ethical issues on recruitment². Klimkiewicz and Oltra have analysed whether a company's CSR image can influence the perception of the attractiveness of employers for Generation Y³. They came to the conclusion that the respondent's personal perception of the concept of CSR plays a key role in understanding CSR signals and, therefore, influences the perception of the attractiveness of an employer. As their study focused on Generation Y, which has already been present on the labour market for several years, we decided to verify the results in relation to Generation Z, which is currently entering the labour market. The differences between particular generations require various approaches

- 1 M.X. Amaladoss, H.L. Manohar, *Communicating Corporate Social Responsibility – A Case of CSR Communication in Emerging Economies*, "Corporate Social Responsibility and Environmental Management" 2013, no. 20, issue 2, pp. 65–80.
- 2 See: K.B. Backhaus, *An Exploration of Corporate Recruitment Description on Monster.com*, "Journal of Business Communication" 2004, no. 41, issue 2, pp. 115–136; K.B. Backhaus, B.A. Stone, K. Heiner, *Exploring the Relationship Between Corporate Social Performance and Employer Attractiveness*, "Business & Society" 2002, no. 41, issue 3, p. 292.
- 3 K. Klimkiewicz, V. Oltra, *Does CSR Enhance Employer Attractiveness? The Role of Millennial Job Seekers' Attitudes*, "Corporate Social Responsibility and Environmental Management" 2017, no. 24, issue 5, pp. 449–463.

to be used, as well as sensibility in regards to understanding their needs and values⁴. Although Generations Y and Z share a number of characteristics, there are also crucial differences; such as the higher mobility of Generation Z or a greater flexibility when switching from the real to the virtual world⁵, all of which justifies the necessity of a separate analysis. Due to these differences in the value system and the hierarchy of needs between particular generations, a novel approach may be required from organisations in terms of their branding and to attract new employees. With this in mind, the main goal of the paper is to analyse the influence of Generation Z's perception of CSR in terms of the perceived CSR-based attractiveness of employers. For this purpose, we conducted a survey.

The paper is organised in the following way. First the results of a literature review in regard to CSR as a factor influencing the attractiveness of employers are presented. Then the characteristics of Generation Z are outlined, followed by the description of the research design, methodology as well as the research sample. Finally, the research results are presented, followed by a conclusion and an implications section.

Corporate Social Responsibility and Employer Attractiveness

The systemic literature review revealed an existing, positive link between CSR and the reputation of an organisation⁶. Studies support the idea that responsible organisations are more attractive to job seekers than non-ethical firms or organisations with a bad reputation. However, social integration factors (like prior awareness of CSR or cooperation with NGOs) have a greater influence on the assessment of CSR than personal traits and factors⁷. These attitudes towards CSR influence job

4 M. Bednarska, A. Grobelna, *Zmiana pokoleniowa na rynku pracy w turystyce*, "Studia Oeconomica Posnaniensia" 2017, no. 5, issue 4, pp. 104–125.

5 A. Dolot, *Proces poszukiwania pracy przez młode pokolenie – wybrane zagadnienia – wyniki badań empirycznych*, "Studia Ekonomiczne" 2018, no. 359, pp. 284–299.

6 See: T.S. Behrend, B.A. Baker, L.F. Thompson, *Effects of Pro-Environmental Recruiting Messages: The Role of Organizational Reputation*, "Journal of Business and Psychology" 2009, no. 24, issue 3, pp. 341–350; C. Maden et al., *Linking corporate social responsibility to corporate reputation: a study on understanding behavioral consequences*, [in:] *Proceedings of the 8th International Strategic Management Conference*, 2012, no. 58, pp. 655–664; T. Melo, A. Garrido-Morgado, *Corporate Reputation: A Combination of Social Responsibility and Industry*, "Corporate Social Responsibility and Environmental Management" 2012, no. 19, issue 1, pp. 11–31.

7 J. Barrena-Martinez et al., *Corporate Social Responsibility in the Process of Attracting College Graduates*, "Corporate Social Responsibility and Environmental Management" 2015,

seekers' perception of an organisation's CSR actions and associated communication, and thus CSR-based employer attractiveness⁸, which is why an individual's attitudes towards CSR were chosen as an independent variable for the study.

These attitudes consist of three elements: cognitive, affective and behavioural⁹. The cognitive dimension of the attitude towards CSR includes perception of an organisation's CSR commitment¹⁰. Basu and Palazzo distinguished two types of commitment: instrumental and normative. Instrumental commitment is externally driven and results from the "business case" for CSR, e.g., the potential profits CSR may bring. The roots of normative commitment are ethical and result from an attempt to meet social values and satisfy social standards and norms¹¹. The affective dimension refers to the individual's assessment of an organisation's CSR characteristics, and the behavioural dimension represents the individual's interest in CSR or business ethics¹², as well as the willingness to deepen one's knowledge about CSR issues or undertake volunteering activities¹³.

As Klimkiewicz and Otrá discovered, attitudes towards CSR influence the perceived CSR-based attractiveness of an employer by Generation Y. CSR-based employer attractiveness was higher for respondents perceiving CSR in normative terms (rather than instrumental), for respondents positively assessing CSR, as well as for those showing CSR engagement¹⁴. However, as their research focused on Generation Y, we believe that, due to differences between generations, it is necessary to verify those results in relation to Generation Z. Thus, the following hypotheses were formulated:

- H1: Representatives of Generation Z who perceive CSR in a normative way will show higher CSR-based employer attractiveness than those who perceive CSR in an instrumental way.
- H2: Representatives of Generation Z who assess CSR positively will show higher CSR-based employer attractiveness than those who assess CSR negatively.

no. 22, issue 6, pp. 408–423.

8 K. Klimkiewicz, V. Oltra, *Does CSR Enhance Employer Attractiveness?*...

9 E. Aronson, T.D. Wilson, R.M. Akert, *Social psychology*, Prentice Hall/Pearson Education, New Jersey 2002.

10 K. Klimkiewicz, V. Oltra, *Does CSR Enhance Employer Attractiveness?*...

11 K. Basu, G. Palazzo, *Corporate social responsibility: A process model of sensemaking*, "Academy of Management Review" 2008, no. 33, issue 1, p. 125.

12 W.R. Evans, W.D. Davis, *An Examination of Perceived Corporate Citizenship, Job Applicant Attraction, and CSR Work Role Definition*, "Business & Society" 2011, no. 50, issue 3, pp. 456–480.

13 A. Perez, I.R. del Bosque, *Corporate social responsibility and customer loyalty: exploring the role of identification, satisfaction and type of company*, "Journal of Services Marketing" 2015, no. 29, issue 1, pp. 15–25.

14 K. Klimkiewicz, V. Oltra, *Does CSR Enhance Employer Attractiveness?*...

H3: Representatives of Generation Z who show a higher CSR engagement will show higher CSR-based employer attractiveness than those with low CSR engagement.

Generation Z

The literature identifies at least five different generations in the modern world: the traditionalists (born between 1928 and 1944), baby boomers (born between 1945 and 1965), Generation X (born between 1965 and 1979), the previously mentioned Generation Y (born between 1980 and 1995) and Generation Z (born after 1995)¹⁵. However, as noted inter alia by Dolot¹⁶ not only does the literature presents differences in defining the age range characteristic for Generation Z, but there is also no consensus as to the naming of this generation. They are also called the “C – Generation”¹⁷, “iGeneration”¹⁸, “Facebook generation”, “D – Digital – Generation”¹⁹ or “R – Responsibility – Generation”²⁰.

The literature notes different strengths and weaknesses of this generation. Among factors important for Generation Z, Dolot highlights giving and expecting feedback, the perception of the communication process as bidirectional²¹. This generation can be described through its natural ability to use and ease of using new technologies, high mobility, self-perception as well-organised, and social conscientiousness both when job-seeking and while in employment. Mazurek-Łopacińska indicates their strong desire to express themselves and share opinions²². What

15 E.J. Cilliers, *The challenge of teaching generation Z*, “PEOPLE: International Journal of Social Sciences” 2017, no. 3, issue 1, pp. 188–198.

16 A. Dolot, *Co motywuje do pracy pokolenie Z – wybrane zagadnienia – wyniki badań empirycznych*, “Przedsiębiorczość i Zarządzanie” 2018, no. 19, issue 8, pp. 227–242; A. Dolot, *The characteristics of Generation Z*, “E-mentor” 2018, no. 74, issue 2, pp. 44–50.

17 J. Wiktorowicz, I. Warwas, *Pokolenia na rynku pracy*, [in:] J. Wiktorowicz et al. (eds), *Pokolenia – co się zmienia? Kompendium zarządzania multigeneracyjnego*, Wolters Kluwer, Warszawa 2016, pp. 19–37.

18 T.L. Austin, L.C. Clark, L.S. Sigmar, *Practical Persuasive Communication: The Evolving Attitudes of the iGeneration Student*, “e-Journal of Business Education and Scholarship of Teaching” 2018, no. 12, issue 3, pp. 14–33.

19 L. Mladkova, *Generation Z in the Literature*, [in:] *Proceedings of the 14th International Conference Efficiency and Responsibility in Education*, Czech University of Life Sciences, Prague 2017, pp. 255–261.

20 Z.E. Csobanka, *The Z generation*, “Acta Technologica Dubnicae” 2016, no. 6, issue 2, pp. 63–76.

21 A. Dolot, *The characteristics...*

22 K. Mazurek-Łopacińska, *Generacja Z – cele, wartości życiowe i wyzwania dla współczesnych przedsiębiorstw*, “Konsumpcja i Rozwój” 2018, no. 160, issue 4, pp. 62–75.

is more, their workplace behaviour differs from older employees, as, for example, trust and respect of superiors is not automatic and needs to be earned through professional excellence²³. They have a stronger preference towards individual work than Generation Y and also face difficulties adapting to imposed working conditions and time organisation, and they expect to be delegated ambitious tasks²⁴.

Among their strengths, Ratajczak points to openness, tolerance, independence, high self-esteem and the desire to develop²⁵. Wiktorowicz and Warwas also mention their high level of creativity and innovativeness, as well as tolerance for risk. They perceive diversity as natural²⁶. Among their weaknesses, Ratajczak mentions impatience, difficulties with face-to-face communication, immaturity, overestimation of own skills and the lack of ability to tolerate criticism²⁷. Wiktorowicz and Warwas add the lack of willingness to become independent, putting too much trust in information found online, the desire and need to have everything “just in time”. From their employers they demand respect, a good organisational climate, development opportunities, fair pay and other non-financial motivators²⁸. It should also be noted that Generation Z is perceived as highly divided due to cultural and economic factors²⁹.

Research design and methodology

The research was conducted based on the research design proposed by Klimkiewicz and Oltra. In order to compare our obtained results with theirs, we employed the research tool provided by the authors³⁰. The original questionnaire was translated into Polish and verified in a pilot study. Similarly, we used three independent variables assessing the cognitive dimension: CSR perception (normative and instrumental), affective dimension: CSR assessment and behavioural dimension: CSR engagement. The dependent variable: CSR-based employer attractiveness was

23 K. Lazányi, Y. Bilan, *Generation Z on the Labour Market – Do They Trust Others Within Their Workplace?*, “Polish Journal of Management Studies” 2017, no. 16, issue 1, pp. 78–93.

24 J. Gajda, *Analiza wybranych aspektów oczekiwań zawodowych przedstawicieli pokoleń Y i Z*, “Zarządzanie Zasobami Ludzkimi” 2019, no. 5, issue 130, pp. 93–112.

25 J. Ratajczak, *Pozyskiwanie i utrzymanie w organizacji pracowników z pokolenia Z w kontekście ich oczekiwań względem pracy*, “Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu” 2018, no. 512, pp. 206–215.

26 J. Wiktorowicz, I. Warwas, *Pokolenia na rynku...*

27 J. Ratajczak, *Pozyskiwanie i utrzymanie w organizacji pracowników...*

28 J. Wiktorowicz, I. Warwas, *Pokolenia na rynku...*

29 A. Żarczyńska-Dobiesz, B. Chomętowska, *Pokolenie “Z” na rynku pracy – wyzwania dla zarządzania zasobami ludzkimi*, “Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu” 2014, no. 350, pp. 405–415.

30 K. Klimkiewicz, V. Oltra, *Does CSR Enhance Employer Attractiveness?...*, pp. 454–455.

measured using the importance of CSR in looking for a job and the tendency to reject a job offer from an employer which is not perceived as socially responsible.

The sample included 250 respondents representing Generation Z. The structure of the sample is presented in Table 1.

Table 1. Structure of the sample

Gender	Female	54.4%
	Male	45.6%
Professional experience	None	51.6%
	Up to 12 months	27.6%
	From 1 to 2 years	8.0%
	More than 3 years	12.8%
Cycle of studies	First-cycle studies	87.6%
	Second-cycle studies	12.4%
Study major	Economics	31.2%
	Management	24.4%
	Mechanical engineering	10.8%
	Informatics	10.4%
	Automation and Robotics	6.8%
	Mechatronics	5.2%
	Architecture	4.4%
	Other	6.8%

Source: own elaboration.

The research was conducted using a PAPI (paper and pencil interview) as well as a CAWI (computer assisted, web-based interview) questionnaire. In total, 332 surveys were distributed of which 82 were not completed. The total sample included 250 surveys.

Research results

The hypotheses were tested using scales adopted from Klimkiewicz and Oltra³¹, which measured respondents' attitudes toward CSR, and included three independent variables *CSRNormative*, *CSRPositiv* and *CSREnga*. *CSRNormative* relates to the respondents CSR perception (normative or instrumental), *CSRPositiv* relates to the affective dimension: and *CSREnga* to CSR engagement. The dependent variable – perceived CSR-based employer attractiveness includes two dimensions (*CSRImportance* and *NoCSRReject*). In order to test the hypotheses, we conducted a linear regression analysis (Table 2 and Table 3). The analysis was conducted using R software.

31 *Ibidem*.

Table 2. Multiple regression for the attitudes of individuals from Generation Z's towards CSR and CSR-based employer attractiveness (*CSRImportance*)

	Estimate	Std. Error	t value	Pr(> t)
Intercept	1.87431	0.39040	4.801	2.74e-06***
CSRNormative	-0.24811	0.06022	-4.120	5.18e-05***
CSRPositive	0.21346	0.08367	2.551	0.0113*
CSREnga	0.40706	0.05577	7.299	4.00e-12***

Signif. Codes (p-value): 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' ' 1.

Residual standard error: 0.6044 on 246 degrees of freedom.

Multiple R-squared: 0.3251, Adjusted R-squared: 0.3169.

F-statistic: 39.5 on 3 and 246 DF, p-value: < 2.2e-16.

Source: own elaboration.

Table 3. Multiple regression for the attitudes of individuals from Generation Z's towards CSR and CSR-based employer attractiveness (*NoCSRReject*)

	Estimate	Std. Error	t value	Pr(> t)
Intercept	2.53392	0.56374	4.495	1.07e-05***
CSRNormative	-0.21820	0.08696	-2.509	0.0127
CSRPositive	0.18645	0.12082	1.543	0.1241
CSREnga	0.15331	0.08054	1.904	0.0581

Signif. Codes (p-value): 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' ' 1.

Residual standard error: 0.8728 on 246 degrees of freedom.

Multiple R-squared: 0.07929, Adjusted R-squared: 0.06806.

F-statistic: 7.062 on 3 and 246 DF, p-value: 0.0001427.

Source: own elaboration.

The conducted analysis demonstrates that the hypotheses were verified to a certain degree. A statistically significant relation between Generation Z's CSR perception (normative and instrumental) and the perceived CSR-based employer attractiveness was detected (H1), however, it seems that in relation to Generation Z the instrumental perception of CSR is more influential. In regards to the second and third hypotheses, in both cases the independent variables (*CSRPositive* and *CSREnga*) influence only the CSR-based employer attractiveness dimensions related to the importance of CSR in looking for a job, while there is no statistically significant relation with the tendency to reject a job offer from an employer who is not perceived as socially responsible. Thus, the conclusion may be drawn that representatives of Generation Z perceive CSR as an important factor for their employer choice, though not so important as to convince them to reject a job offer if the employer is not perceived as ethical and responsible.

Discussion and conclusion

The main goal of the paper was to verify whether the results obtained by Klimkiewicz and Oltra in relation to job seekers from Generation Y also apply to Generation Z³². The conducted research shows that there are differences between those generations. Klimkiewicz and Oltra found that job seekers from Generation Y are more likely to reject a job offer from an unethical employer³³, while in our study this relation was stronger for the normative-oriented respondents. Furthermore, we found statistically significant relations for the two other independent variables in relation to both dimensions of CSR-based employer attractiveness, and not only in regard to the importance of CSR in looking for a job. Comparing these two generations demonstrates that although CSR is important for both, Generation Y seems more concerned with the issues investigated. This generation not only perceives CSR-based employer attractiveness from a different, normative perspective, but also seems to be willing to “go further” when it comes to accepting posts in order to comply with CSR.

The conducted research has several theoretical and practical implications. Firstly, it provides further understanding of the role of attitudes towards CSR in CSR-based employer attractiveness by adding the perspective of Generation Z. Secondly, it shows that there are differences between Generations Y and Z (as well as older generations), which justifies a separate analysis. Apart from the differences between the Generations Y and Z, the results reveal that CSR plays an important role in the decision-making process of job seekers from both generations. It seems that this factor should not be downplayed by employers (especially in times of the “war for talent”), as it may play a crucial role when these generations are seeking employment or deciding whether to join a particular organisation. Therefore, implications for managers may be drawn as well. Following the presented results and arguments, we would recommend the development of a clear CSR communication strategy, especially in the recruitment process. Thus, integration between CSR and human resources management may be beneficial. By using CSR, an organisation could attract fresh talent, and hence gain additional advantages in terms of increased innovativeness³⁴.

32 *Ibidem*.

33 *Ibidem*.

34 See: A. Jasińska-Biliczak, *Endogeniczne uwarunkowania innowacyjności sektora małych i średnich przedsiębiorstw w regionie – ujęcie teoretyczne i praktyczne*, Polska Akademia Nauk, Komitet Przestrzennego Zagospodarowania Kraju, Warszawa 2017; J. Kowal, J. Mäkiö, A. Jasińska-Biliczak, *Business competencies as an innovation capability of IT users in Poland and Germany. Experimental study*, [in:] 2017 IEEE 15th International Conference on Industrial Informatics (INDIN), Emden 2017, pp. 905–910; P. Bębenek, *Effective innovation management*

The presented research has some limitations, however, which may indicate future research opportunities. The research was designed to enable a comparison between the psychological aspects of attitudes towards CSR-based employer attractiveness of Generations Y and Z. Thus, the research area was rather narrow. A broader analysis of the influence of Generation Z's attitudes towards CSR in terms of employment choices should be conducted. This could include the way they function in an organisation, such as their satisfaction and engagement level in (un)ethical organisations and their willingness to leave an unethical organisation. Secondly, a comparison not only to Generation Y but also other generations could shed more light on the influence of attitudes towards CSR concerning the functioning of organisations and help better understand the nature of attitudes towards CSR. Thirdly, the research was conducted only on Polish representatives of Generation Z. As inward migration is now beginning to play an important role in the Polish context³⁵, further research should also cover a comparison between respondents representing various cultural backgrounds, as their values and attitudes may influence the results.

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- 35 See: S. Kubiciel-Lodzińska, *Zatrudnienie cudzoziemców w przedsiębiorstwach: determinanty i perspektywy (przykład województwa opolskiego)*, Wydawnictwo Uniwersytetu Ekonomicznego, Katowice 2016; S. Kubiciel-Lodzińska, *Imigracja zarobkowa do województwa opolskiego. Skala, warunki i perspektywy*, Politechnika Opolska, Opole 2012.

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Abstract

Corporate Social Responsibility has become an important instrument in the development of an employer's branding strategy. Research shows that Generation Y is highly sensitive in regards to CSR issues, and that CSR influences their perception of an employer's attractiveness. However, the question this paper aims to find an answer to is whether this would also apply to the next generation, Generation Z. For this purpose, we conducted a survey ($n = 250$) with a sample of representatives of Generation Z. The findings suggest that Generation Z perceives CSR as an important factor in their choice of employer, however not important enough to convince them to reject a job offer if the employer is not perceived as ethical and responsible.

Keywords: corporate social responsibility, employer attractiveness, employer branding, Generation Z, Millennials

CSR and RRI – overlapping or complementary management concepts?

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Introduction

Nowadays, there is widespread concern about responsibility in business. This has led to increasingly strong legislation, international environmental management standards, the appearance of new metrics and reporting standards, etc., which force firms to adopt new approaches to remain competitive. In these times of ongoing climate changes, customers are shifting their preferences toward more sustainable offerings. The growing awareness of the social and environmental problems has resulted in the necessity for enterprises to build their capabilities which recognise and respond to the emerging opportunities and threats through linking the issues of responsibility and sustainability with innovation processes¹. Therefore, companies today focus on integrating the principles of responsibility into their competitiveness, economic growth and technological progress. Given such a perspective, the Corporate Social Responsibility (CSR) concept as well as the Responsible Research and Innovation (RRI) concept provide firms with a framework and tools enabling them to integrate responsibility into their business strategies and operations. Both concepts (though firms are much less familiar with the RRI approach than with the CSR concept) aim to increase businesses' awareness of specific ethical issues and aspects of responsibility connected to their operations, including their innovation processes. Thus, the aim of this paper is to explain the ideas of CSR and RRI, focusing on the concepts' similarities and differences as well as the possibility

1 R. Heinberg, *Peak Everything: Waking up to the Century of Decline in Earth's Resource*, Clairview, London 2007, p. 42.

to integrate them in business practice. In our paper we focus on understanding both concepts in terms of linking being responsible in business contexts with creating innovations that are ethically acceptable and socially desirable.

The research is based on a literature review and aims to provide a critical assessment of the reasoning behind the integration of CSR and RRI in a business context. The research process is oriented to the following research questions:

1. "How are the CSR and RRI concepts defined?";
2. "What are the overlaps and differences of the CSR and RRI concepts?";
3. "How can the CSR and RRI concepts be integrated in a business context?"

We applied the method of a literature review in order to search for the responses to the aforementioned research questions, thereby achieving the aim of the paper.

Innovation and responsibility

Nowadays, researchers emphasize the need for interconnection between two areas whose importance is recognized by managers, policy makers as well as scholars: innovation studies and business studies on responsibility². Essentially, firms being responsible is their willingness to incorporate broader social and environmental aspects into their strategies, while being accountable for the impacts of their decisions and activities on society and the environment. The way people think today from the perspective of responsibility in innovations is changing to reflect the modern context in which innovations occur³. In general innovation is perceived as innately good. Nevertheless, there is always a probability that a particular innovation will cause unexpected effects. Today, we realise that even the most favorable innovation may fail owing to a particular ethical or societal anxiety which was not taken into consideration when considering the implications of an innovation⁴. In turn, the scope of responsibility in regard to innovations goes beyond legal requirements and business standards and encompasses the expectations of stakeholders and values related to the society and the natural environment that are required in the particular markets where innovations are planned to be implemented⁵. With the above in mind,

2 C. Groves, *Future ethics: risk, care and non-reciprocal responsibility*, "Journal of Global Ethics" 2009, vol. 1, no. 5, p. 19; R. Von Schomberg, *A vision of responsible research and innovation*, [in:] R. Owen, J. Bessant, M. Heintz (eds), *Responsible Innovation, Managing the Responsible Emergence of Science and Innovation in Society*, Wiley, New York 2013, p. 56.

3 B. Adam, C. Groves, *Futures tended: care and future-oriented responsibility*, "Bulletin of Science, Technology & Society" 2011, vol. 1, no. 31, p. 18.

4 M.I. Leone, P. Belingheri, *The relevance of Innovation for Ethics, Responsibility and Sustainability*, "Industry and Innovation" 2017, vol. 5, no. 24, p. 438.

5 A. McWilliams, D. Siegel, P.M. Wright, *Corporate social responsibility: strategic implications*, "Journal of Management Studies" 2006, vol. 1, no. 43, p. 9; R. Von Schomberg, *A vision*

both CSR and RRI concepts are extremely useful, as CSR can be a means of reducing risk: firms implement CSR to reduce risks associated with legislation or stakeholders. Although it is sometimes criticized as a short-term, limited, view of CSR, the important thing is to get firms to begin to take the idea of responsibility into consideration while planning their strategies, including in regard to innovations⁶. In this context the RRI concept explicitly links innovation and responsibility⁷. This means that existing responsibilities need to be addressed as a whole, framing responsible innovation as impacting society at large, with closer attention to the societal context as well as the broader spectrum of actors capable of reflecting their own values on research and innovation-related responsibilities⁸.

The idea of the Corporate Social Responsibility (CSR) concept

Despite the CSR concept interesting researchers from several disciplines⁹, the concept is not clearly defined either in the literature or in practice. It is an ambiguous term, perceived differently by different people, as this idea covers a wide range of aspects. Even the governing bodies and regulators differ in their perception of CSR. The European Commission defines CSR as “the responsibility of enterprises for their impacts on society”¹⁰. The World Business Council for Sustainable Development explains CSR as “the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and

of responsible research..., p. 59.

6 R. Owen et al., *A Framework for Responsible Innovation*, [in:] R. Owen, J. Bessant, M. Heintz (eds), *Responsible Innovation. Managing the Responsible Emergence of Science and Innovation in Society*, Wiley, New York 2013, p. 32.

7 A. McWilliams, D. Siegel, P.M. Wright, *Corporate social responsibility...*, pp. 1–18.; A. Gurzawska, M. Makinen, Ph. Brey, *Implementation of Responsible Research and Innovation (RRI) Practices in Industry: Providing the Right Incentives*, “Sustainability” 2017, vol. 9, 1759.

8 *Ibidem*.

9 M.E. Porter, M.R. Kramer, *Strategy and society: The link between competitive advantage and Corporate Social Responsibility*, “Harvard Business Review” 2006, vol. 12, no. 84, p. 88; D.M. Boehe, L. Barin-Cruz, *Corporate Social Responsibility, product differentiation strategy and export performance*, “Journal of Business Ethics” 2010, no. 91, p. 325; K. Iatridis, D. Schroeder, *Responsible Research and Innovation in Industry. The Case for Corporate Responsibility Tools*, Springer, London 2016, p. 32.

10 European Commission, *Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. A renewed EU strategy 2011–14 for Corporate Social Responsibility*, Brussels 2011, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0681&from=EN> (accessed: 5.12.2019).

society at large to improve their quality of life”¹¹. Moreover, the approaches to explain CSR in the academia lack a consensus. According to McWilliams and Siegel, CSR should be understood as “actions that appear to further some social good, beyond the interests of the firm and that which is required by law”¹². It is also proposed to define CSR as a group of actions undertaken by companies in order to accept the responsibilities resulting from the impact of its activities on society and the environment or take ownership of the negative externalities they generate¹³. Another stream explains CSR as a stakeholder driven concept. In line with the stakeholder theory, the company may benefit from engaging in certain CSR activities that stakeholders perceive as important. Taking such a perspective, CSR is understood as a firm’s response to stakeholders’ needs, involving activities that are voluntary by definition, demonstrating the inclusion of social and environmental concerns in business operations and interactions with a firm’s stakeholders¹⁴. CSR may be also defined as a comprehensive business model designed to meet the requirements and expectations of the various stakeholders of a firm, as well as to care for and preserve the environment¹⁵. As highlighted by Chakarabarty et al., CSR is a means of achieving a firm’s commercial success in ways that honor ethical values, respect people, communities and the natural environment, and encompass all those actions of the organizations which affect society and its well-being¹⁶.

The CSR concept is based on three pillars: social, economic and environmental¹⁷, on which all activities conducted by an organization can be divided into two: internal and external. The first mentioned category includes the issues of employees’ welfare and safety, work environment and intellectual property, whereas the latter category covers environment protection, the quality and safety of a firm’s

11 World Business Council for Sustainable Development, *World Business Council for Sustainable Development, Corporate social responsibility: Meeting changing expectations*, New York 1999, p. 11.

12 A. McWilliams, D. Siegel, *Corporate social responsibility: A theory of the firm perspective*, “Academy of Management Review” 2001, no. 26, p. 117.

13 A.B. Carroll, *Corporate social responsibility: Evolution of a definitional construct*, “Business & Society” 1999, vol. 3, no. 38, p. 290; S.S. Taneja, P.K. Taneja, R. Gupta, *Research in corporate social responsibility: A review of shifting focus, paradigms and methodologies*, “Journal of Business Ethics” 2011, no. 101, p. 347.

14 K. Basu, G. Palazzo, *Corporate Social Responsibility: A Process Model of Sensemaking*, “Academy of Management Review” 2008, vol. 1, no. 33, p. 122.

15 M. Van Marrewijk, *Concepts and definitions of CSR and corporate sustainability: Between agency and communion*, “Journal of Business Ethics” 2003, no. 44, p. 103.

16 S.K. Chakarabarty et al., *Management paradigms beyond profit maximization*, “The Journal of Decision Makers” 2004, vol. 29, no. 3, p. 107.

17 S. Benn, D. Bolton, *Key Concepts in Corporate Social Responsibility*, Sage Publications, London 2011, p. 11.

products, and relations with suppliers and communities¹⁸. Being a multifaceted concept, CSR encompasses various activities that companies may undertake. Examples of CSR include supporting the local community, participation in charitable events, promotion of non-discrimination activities, expansion of employment benefits, operating efficiency, minimizing pollution, transparency, product safety, and generating profits¹⁹. However, regardless of the type of activities undertaken by firms engaged in CSR, the main challenge refers not to the definition of the concept but to incorporating CSR into a company's strategies, business operations and their interactions with stakeholders.

The idea behind the Responsible Research and Innovation (RRI) Concept

The relevant literature proves that there are many approaches to explain the RRI concept. Some authors define it as “responsible research and innovation”²⁰ while others as “responsible innovation”²¹. The most common definition is the one provided by Von Schomberg, who explains RRI as:

[...] a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow embedding of scientific and technological advances in our society)²².

18 *Ibidem*.

19 J. Elkington, *Cannibals with Forks: The Triple Bottom Line of Sustainable Development*, Chapstone Publishing, Oxford 1997, p. 327.

20 R. Von Schomberg, *Introduction: Towards responsible and innovation in the information and communication technologies and security technologies field*, [in:] R. von Schomberg (ed.), *Towards Responsible Research and Innovation in the Information and Communication Technologies and Security Technologies Field*, Publications Office of the European Union, Luxembourg 2011, p. 9; J. Van den Hoven et al., *Options for Strengthening Responsible Research and Innovation*, European Commission, Brussels 2013, p. 5.

21 M. Burget, M. Bardone, M. Pedaste, *Definitions and Conceptual Dimensions of Responsible Research and Innovation: A Literature Review*, “Science and Engineering Ethics” 2017, vol. 1, no. 23, p. 15; J. Stilgoe, R. Owen, P. Macnaghten, *Developing a framework for responsible innovation*, “Research Policy” 2013, vol. 9, no. 42, p. 1570; M. Noorman, T. Swierstra, D. Zandbergen, *Questioning the normative core of RI: The challenges posed to stakeholder engagement in a corporate setting*, [in:] L. Asveld et al. (eds), *Responsible Innovation 3: A European Agenda?*, Springer, Cham 2017, p. 231.

22 R. Von Schomberg, *Introduction: Towards responsible...*, p. 9.

The RRI concept focuses on a firm's stakeholder inclusion along the whole innovation process. Van den Hoven et al. argue that RRI is a comprehensive approach approaching research and innovation in ways that involve all stakeholders in the processes at an early stage to obtain knowledge on the consequences of the outcomes of the innovation, the range of options open to them and to effectively evaluate both outcomes and options in terms of societal needs and moral values as well as to use these considerations as functional requirements for the design and development of new research, products and services²³. Burget Bardone and Pedaste perceive RRI as an attempt to govern research and innovation in order to include all the stakeholders and the public in the early stages of research and development. The inclusion of different actors and the public is intended to increase awareness of how research and innovation may benefit society as well as avoid any negative consequences²⁴. The RRI concept is also a point of interest for the European Union. EU documents define RRI as an on-going process of aligning research and innovation to the values, needs and expectations of society²⁵. In general, RRI anticipates and assesses any potential implications or societal expectations with regard to research and innovation. The literature describes the RRI concept in terms of four dimensions. Owen et al. claim that innovating responsibly requires being anticipatory, reflective, inclusively deliberate and responsive²⁶. Being anticipatory and reflective requires asking questions of how the current dynamics of research and innovation practices will impact the future. This means focusing on and anticipating the attended and unattended outcomes of innovations in their economic, social and environmental dimensions. Being inclusively deliberative implies the involvement of a wide range of stakeholders in the early development of science and technology. Focus on inclusion and deliberation means upstream engagement of stakeholders and members of the public in discussions which are directed at analyzing the social, political, environmental as well as ethical implications that the development of the innovation could bring²⁷. Finally, being responsive means responding to the views of both the public and stakeholders. Responsiveness requires having the capacity to change the shape of an innovation

23 J. Van den Hoven et al., *Options for Strengthening...*, p. 3.

24 M. Burget, M. Bardone, M. Pedaste, *Definitions and Conceptual Dimensions...*, p. 15.

25 European Union, *Rome Declaration on Responsible Research and Innovation in Europe*, Brussels 2014, https://ec.europa.eu/research/swafs/pdf/rome_declaration_RRI_final_21_November.pdf (accessed: 5.12.2019).

26 R. Owen et al., *A Framework...*, p. 38.

27 M. Burget, M. Bardone, M. Pedaste, *Definitions and Conceptual Dimensions...*, p. 14; R. Owen et al., *A Framework...*, pp. 35–38; R. Von Schomberg, *A vision of responsible research...*, pp. 67–68.

or its direction in response to the values of stakeholders and the wider public²⁸. To sum up, the main concept behind RRI points to the necessity of working in unison with respect for future generations.

Corporate Social Responsibility compared to Responsible Research and Innovation – overlaps and differences

While considering the similarities of CSR and RRI, one can easily notice that both concepts focus on a firm's responsibilities towards social and environmental good and stakeholder engagement. In terms of innovation process management, both may be applied to create wide, multi-stage consultation processes to limit the risks related to unforeseen consequences from innovations. However, regardless of their similarities, both concepts differ greatly. First of all, RRI is rather a top-down approach created in the world of policies, in which policy-makers strive to induce a system intensifying ethical and responsible research and innovation, through the questioning of the ethical and social aspects of the responsible production and use of knowledge. RRI proposes a new contract between science, technology, innovation and society in order to generate innovations that are ethically acceptable and socially desirable²⁹. CSR, on the other hand, is more of a bottom-up approach. It acts as a management model for firms that, beyond a business profit, enables the detection of opportunities in addition to generating a community and environmental impact. CSR functions are perceived as a self-regulating mechanism for firms, proving their compliance not only with the law, but also with international norms and ethical standards. The CSR and RRI concepts differ also in regard to business impacts. The main focus of RRI is its ethical assessment and potential, as well as actual, social impact. CSR focuses mainly on a business's impact on communities and the environment. Furthermore, the CSR concept is generally applicable to all activities of a firm, including research and innovation process management. Nevertheless, it is not specifically designed for the area of research and innovation as is the case with RRI³⁰.

28 J. Stilgoe, R. Owen, P. Macnaghten, *Developing a framework...*, p. 1572; R. Lubberink et al., *Lessons for responsible innovation in the business context: A systematic literature review of responsible, social and sustainable innovation practices*, "Sustainability" 2017, vol. 9, no. 5, 721, p. 4.

29 R. Von Schomberg, *A vision of responsible research...*, p. 63.

30 A. Gurzawska, M. Makinen, Ph. Brey, *Implementation of Responsible Research...*, p. 4.

While comparing CSR and RRI, the latter is potentially both broader and narrower in scope. RRI is broader in scope than CSR because it demands a link to the needs of citizen and societal desirability. On the other hand, it is narrower in scope than CSR as it deals only with research and innovation rather than the entire business cycle³¹.

Despite these differences, both concepts cover management issues in a business context. CSR rules and methods might be applied to build certain practical standards to guide the innovation process. Following CSR rules, and implementing particular practices in this field allows managers to understand that everything a firm does, has some flow-on effect both inside and outside the company. Improvements in CSR practices may lead to a number of responsibility-oriented innovations. Nowadays, firms should do more to tackle issues such as: social injustices, poverty, climate change, etc. Successful products of the future will be those that see these challenges as opportunities for innovation, rather than risks to be alleviated. In this context, CSR rules and practices help incorporate social concerns and democratic accountability into the research and innovation process. Despite the fact that CSR deals with the whole cycle of business life and not just the research and innovation stage, for a business to address its corporate responsibilities effectively it needs to focus on: 1) its business impacts (identifying the social and environmental impacts of its operations and assessing their significance), 2) policies to mitigate those impacts (adopting management standards to re-organize its activities and minimize those impacts) and 3) the stakeholders' concerns (identifying the most important stakeholders, understanding and prioritizing their concerns, and developing a strategy to satisfactorily address them). Thus, from a business perspective, CSR and RRI concepts should be integrated by applying CSR tools such as responsibility standards (e.g. ISO9001, ISO 14001, ISO 26000 EMAS, SA8000), principles (e.g. Caux Round Table Principles, CERES Roadmap for Sustainability), codes of conduct etc., to assist firms in implementing RRI principles³². CSR tools are self-regulatory and have been established to promote a common understanding and a common means of business performance evaluation in terms of responsibility. They are formal documents, establishing criteria and practices focused on continuous improvement related to the respect for health and safety in the workplace, environmental protection and stakeholder engagement. Applying such tools can provide a governance framework that ensures the advancement of the RRI approach in its business context. These tools all address widely accepted principles that are in line with RRI elements, such as transparency, ethical behavior, respect for stakeholders' interests, accountability, respect for law regulations as well as respect for human rights.

31 K. Iatridis, D. Schroeder, *Responsible Research...*, p. 26.

32 *Ibidem*.

Conclusions

Nowadays, to achieve both progress and profit firms focus on innovations. They are increasingly being called upon to address the negative impacts of their operations and come up with responsible, innovative solutions embedded in business strategy³³. As this paper's conceptual contribution is demonstrating the relationships between the CSR and RRI concepts, we assess that its objective has been achieved. Our paper contributes to the literature and business practice through exploring the ideas of the CSR and RRI concepts and the possibilities to integrate them in order to create ethically acceptable and socially desirable innovations. While the RRI concept remains largely unfamiliar to companies, the CSR concept is well known and many firms are well advanced in this area. Therefore, the idea of integrating both concepts and applying particular CSR tools to ensure the implementation and advancement of the RRI approach in its business context provides useful managerial implications concerned with delivering profitable but also ethically acceptable and socially desirable innovations.

Certainly, we are aware of the limitations of the study. First, the paper comprises only a theoretical review and needs to be followed by empirical research, which is planned by the authors. Secondly, using a single research method results in a lack of triangulation, which may have a negative impact on the quality and objectivity of the study. Finally, due to the rapid dynamic development of the research field, we find a static, one-time analysis to be insufficient. Therefore, the replication of the study in the future is recommended to observe changing trends and shifts in the research field over time.

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33 *Ibidem*.

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Abstract

The growing attention on responsibility in business is forcing firms to build their competitiveness through integrating the principles of responsibility in their strategies. Given the necessity to apply new approaches in business, we focus on discussing two management concepts concerning responsibility: Corporate Social Responsibility and Responsible Research and Innovation. The aim of the paper is to explain these concepts, focusing on their similarities and differences as well as the possibility to integrate them into business practice. The research process is based on a literature review and focuses on providing a critical assessment of the reasons for integration CSR and RRI in a business context.

Keywords: responsibility, corporate social responsibility, responsible research and innovation

PART 4
Trends in modern Human
Resources Management

The future of work in automated warehouse from the perspective of the employees

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Introduction

Technological progress and automation have a tremendous impact on the way warehouse processes are carried out and managed. Elimination of errors, increased efficiency, significant reduction of operating costs, assurance of continuous availability of range of goods, improvement of process control, increased precision and speed of information flow are some of the benefits of introducing automation in the warehouse. Work conditions are changing, and work now requires the ability to use more advanced technical devices as well as cooperation with machines. Because the problem of human-machine interaction in warehouse work is not widely described in contemporary literature on the subject, the purpose of article is the attempt to assess the impact of automation on warehouse work.

Literature Review and Theoretical Framework

The concept of warehousing in today's economy in the literature

Timely product or service delivery is one of the most important measures of a firm's quality. Therefore, the role and importance of the logistics system is of fundamental significance in the current climate. A well-organized logistic system that is adapted to today's challenges and requirements is not only an opportunity, but, in fact, essential. As the processes related to product or service delivery are increasing in complexity, and there is a need to adjust to the, more demanding, requirements of buyers, cost reduction is required to face competition in the markets. Warehousing takes a central place in the logistic system. The warehouse is a place in the logistics system used for storing and distributing material goods¹, as well as a functional and organizational unit intended for storing material goods (stocks) in separate storage buildings, which is equipped with appropriate devices and technical means of management and servicing by the human team². The importance of warehouses in the modern economy is evidenced by numerical summaries developed by the Institute of Logistics and Warehousing³. Figure 1 presents the upward trend in commercial warehouse space in Poland over a seven-year period.

What is more, the first half of 2018 also showed good growth in the modern warehouse space market. The highest volume of lease transactions was recorded compared to the same period in previous years (2.1 million m²), the lowest vacancy rate in history was registered (4%), and the highest warehouse space under construction was achieved (2.25 million m²)⁴. In 2018, Poland was the third most-chosen place in Europe to set up or move a warehouse, behind the Netherlands and Germany. In the first quarter of 2019, storage resources increased by another 623,000 m², twice as much as in the corresponding period of 2018⁵. In addition to the dynamic development

1 D. Kisperska-Moroń, S. Krzyżaniak, *Logistyka*, Biblioteka Logistyka, Poznań 2009, p. 23.

2 M. Ferstsich, *Słownik terminologii logistycznej*, Instytut Logistyki i Magazynowania, Poznań 2016, p. 97.

3 The Institute of Logistics and Warehousing is a research institute within the meaning of the Act of 30 April 2010 on Research Institutes, registered in the District Court Poznań – Nowe Miasto and Wilda in Poznań, 8th Commercial Division of the National Court Register under KRS no. 0000052866.

4 J. Dobosiewicz, *Padły trzy ważne rekordy na polskim rynku magazynowym*, <https://businessinsider.com.pl/finanse/rynek-magazynowy-w-polsce-i-polrocze-2018-r/j94f2hx> (accessed: 23.10.2019).

5 JLL, *Rynek magazynowy w Polsce lipiec 2020*, <https://www.jll.pl/pl/trendy-i-analizy/badanie/rynek-magazynowy-w-polsce> (accessed: 27.10.2019).

of the logistics sector as well as warehouse real estate market, labor market faces real problems in finding employees for warehouse work. Figure 2 illustrates the forecast for demand that employers have for warehousemen. In 2016, one can observe the balance between supply and demand prevailed, whereas in 2019 a deficit, in places large deficit, of jobseekers in this profession were clearly prevalent in Poland.

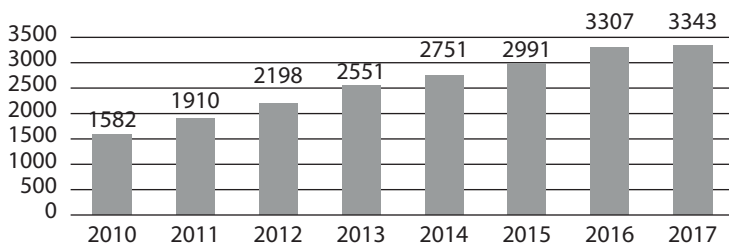


Figure 1. Commercial warehouse space in 2010–2017 in Poland

Source: own elaboration based on I. Fechner, G. Szyszka, *Logistyka w Polsce. Raport 2017*, Biblioteka Logistyka, Poznań 2018, p. 106.

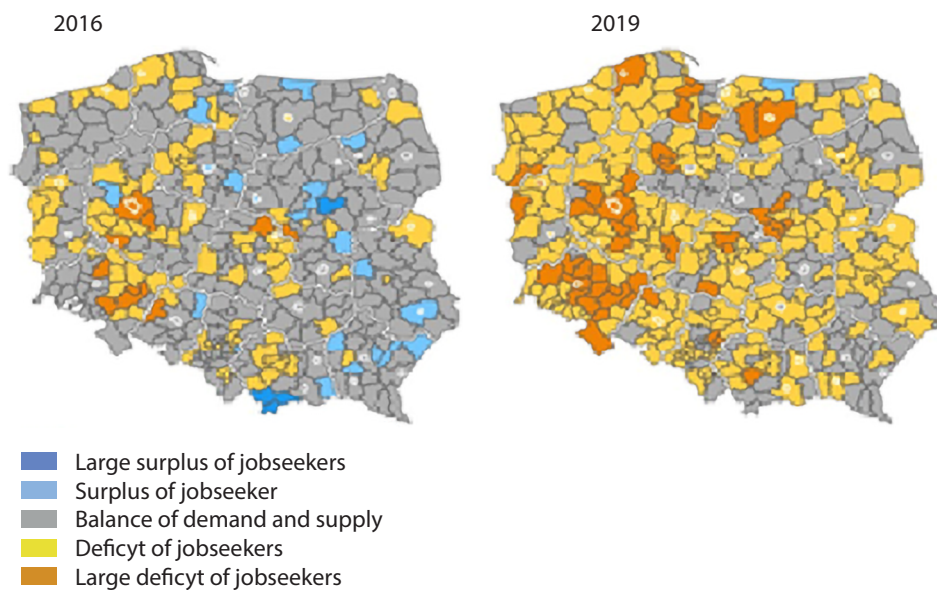


Figure 2. Relation between available employees and the needs of employers – warehousemen

Source: Barometr zawodów, <https://barometrzawodow.pl> (accessed: 24.01.2019)⁶.

6 The occupational barometer is a qualitative study. It is created separately for each district in Poland. It is based on the opinion of experts who at the turn of the third and fourth quarter meet and analyze together the situation in individual professions. Participants of the survey (employees of district labour offices, private employment agencies and other institutions oriented on the situation on the local labour market) in the course of the discussion provide answers

Warehouses have ceased to be seen as cost centers only focusing on the flow of goods, and now take a central place in building a lasting competitive advantage. They also now play a pivotal role in the national economy, as an increasing number of people find employment in the constantly growing number of newly built warehouses. These modern warehouses have modern requirements, which include, among others: quick identification of the location of the stored goods, efficient means of internal transport, the possibility of fast product picking.

Automation of warehouse processes

Rapid technological development, radically changes the work of each generation, becoming an inseparable part of every aspect of life. Today it is difficult to imagine work without the support of advanced devices or computer systems. One of the industries in which new technology fits perfectly is logistics, especially modern warehouses, where technological progress is having a major impact on the storage processes and management of these facilities.

Warehouse processes are activities that are performed during the flow of freight through the warehouse, starting from the unloading of external transport, through receiving, storing, completing for delivery, to issuing and loading of means of external transport. Certain technical and organizational conditions must be provided in order to carry out the warehouse processes⁷: the storage space in which the tasks will be performed; the machines and devices with which operations will be done; assigning staff with specific tasks; and inventory and stock inventory systems. Increasing competition forces enterprises to continuously improve their warehouse processes⁸. The approach to processes is now considered one of the most important orientations of the organization and management of modern enterprises, which enforces continuous improvement, and the constant search for opportunities to improve everyday operations⁹. Elimination of errors, increased efficiency, significant reduction of operating costs, continuous availability of the range of goods,

to questions about changing the demand for employees in a given profession (list of assessed occupations is prepared on the basis of "Classification of professions and specialties"), and the relationship between the available labour force and the demand on the labour market.

- 7 Z. Dudziński, M. Kizyn, *Poradnik magazyniera*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2000.
- 8 J.P. Van den Berg, *Integral Warehouse Management: The Next Generation in Transparency, Collaboration and Warehouse Management Systems*, Management Outlook Publishing, Utrecht 2007, p. 599.
- 9 R. Brajer-Marczak, *Konsekwencje ciągłego doskonalenia procesów w organizacjach*, [in:] S. Nowosielski, *Podejście procesowe w organizacjach*, "Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu" 2009, no. 52, pp. 153–161.

improvement of control over processes and increased precision and speed of information flow are some of the benefits of automation in the warehouse.

Interest in warehouse automation among Polish companies is rising, and it is often treated as a way to develop the company through the introduction of modern technological solutions to optimize the entire process of the flow of goods. The most often considered type of warehouse automation projects according to the report of the Panel of Polish Logistics Managers from 2013¹⁰ are: storage zones with AS/RS class devices (automatic storage and unloading of goods: stacks, overhead cranes, forklifts, miniloads), automatic internal transport systems (conveyors, suspended or rail transport systems, shuttle trucks), automatic picking systems (e.g. layer pickers, picking robots), sorters, automatic palletizers, AGV/LGV self-propelled trolleys. Although well-developed western companies have been investing in automation for some time, Polish companies are only now beginning to show interest, and it is currently regarded as a leading trend on the warehouse market.

Automation in its wider sense is also consistent with Poland's development policy priorities. The Ministry of Investment and Development specified National Intelligent Specializations (KIS), according to which funding is allocated within The Intelligent Development Operational Program for 2014–2020. In this document, automation of warehouse processes has been specified in KIS 13. "Electronics Printing, Organic and Flexible", where (in part V) one can read that the way to meet the requirements of modern consumers are "intelligent warehouses with highly automated logistics processes, such as automatic product recognition or autonomous quality control"¹¹. Part I of KIS 12 "Automation and Robotics of The Technological Processes" concerns the design and optimization of the processes, part II process automation and robotics technology, and part V machines and devices automating and robotizing the processes¹².

What is extremely important in the modern world automation of warehouse processes is it being consistent with the sustainable development concept. Cost reduction is not the only desired effect of the modernization and optimization of warehouse processes, the reduction of any negative impact on the natural environment is another, also pivotal, one. To sum up, the advantages of automation are primarily space and labor cost savings, availability 24 hours a day, and savings on other operating costs, such as heating and lighting. In addition, automation

10 Report Warehouse automation – practical experience of Polish companies, 4th edition of this study carried out in 2013, developed based on the response of 267 respondents (people responsible for logistics in Polish enterprises).

11 *Krajowa Inteligentna Specjalizacja (KIS)*, Ministerstwo Rozwoju, p. 59, https://smart.gov.pl/images/pdf/Krajowa-inteligentna-specjalizacja_0.pdf (accessed: 4.09.2020).

12 *Ididem*, p. 61.

provides the possibility of scalability and flexibility of capacity, which is extremely important in e-commerce environments, where one can find a large variation in demand.

Automation and the future of work in a warehouse

For hundreds of years there has been the perceived threat that machines will take people's jobs. Even though, historically, developments in technology did not cause long-term unemployment, it only changed the situation on the labour market, making human work easier. In the nineteenth century, Karl Marx argued that the use of machines would deprive people of work¹³. In 1930, John Maynard Keynes postulated a thesis about widespread unemployment resulting from technology¹⁴. George Friedman in 1950s posed the problem of man and his work in the world of machinery, heralding many threats resulting from this combination¹⁵. In the mid-1970s Marxist Harry Braverman warned against the degradation of work, which, in his opinion, would be transformed from the use of skills and experience into a mindless, powerless activity, based around machines¹⁶. Nowadays, among the sceptics of the future of work, Jeremy Rifkin should be mentioned, this controversial American economist, believes that technological progress will mean a reduction in the number of jobs, and the only effective way to provide the unemployed with the benefits resulting from the increased productivity of automation, is to guarantee them a certain income¹⁷.

According to the World Bank Report *The Changing Nature of Work* from January 2019, such a distressing scenario that automation is going to exclude the human factor is unjustified. It is undeniable that in developed economies and middle-income countries, jobs most susceptible to replacement are those that perform routine tasks. On the other hand, modern technology creates opportunities for developing new professions¹⁸. Other research on the impact of artificial intelligence and robots on human work from 2014, proved that the development of technology will

13 See more: K. Marx, *Kapitał 1.1. Rezultaty bezpośredniego procesu produkcji*, Wydawnictwo Naukowe PWN, Warszawa 2013.

14 See more: J.M. Keynes, *Economic Possibilities for Our Grandchildren*, [in:] J.M. Keynes, *Essays in Persuasion*, Harcourt Brace, New York 1963, pp. 321–332.

15 See more: G. Friedmann, *Maszyna i człowiek*, Książka i Wiedza, Warszawa 1961.

16 See more: H. Braverman, *Labour and Monopoly Capital. The Degradation of Work in the Twentieth Century*, Monthly Review Press, New York 1974.

17 J. Rifkin, *The End of Work: The Decline of the Global Labour Force and the Dawn of the Post-Market Era*, Wydawnictwo Dolnośląskie, Wrocław 2001, p. 331.

18 A World Bank Group Flagship Report, *World Development Report 2019. The Changing Nature of Work*, <http://documents.worldbank.org/curated/en/816281518818814423/pdf/2019-WDR-Report.pdf> (accessed: 26.10.2019).

cause a numerical rise of workplaces at a rate close to or faster than their elimination¹⁹. According to a report by PricewaterhouseCoopers, around 6% of all professions in the United Kingdom in 2013 did not exist in the 1990s²⁰. What is more, the citizens of the European Union are also optimistic, with 75% of them believing that jobs can only benefit from new technology²¹.

The link between available employees and the needs of employers for warehousemen (depicted in Figure 2), as well as the very high costs of implementing such autonomous technologies that, allegedly, creates people-less warehouses, confirm the thesis that people cannot be fully replaced by automation and robots in the warehouse. It is also assumed that some human skills, such as: social competences (empathy, argumentation, negotiation); intellectual creativity; IT skills, such as programming and system administration; perceptiveness; ability to move and work in a turbulent environment cannot be automated²².

The interaction between people and machines in warehouse work has not been given much attention in the contemporary literature on the subject, even though, despite the fact that warehouse processes are becoming ever more automated, people will still have to work, cooperating with machines. A vision of automation that relieves people from tedious work and allows them to devote themselves to more important professions appeared over 60 years ago, when the world was impressed by the first generation of robots²³. To achieve this, the relationship between human and machines in the context of modern technology should be analysed. The impact of automation and modern technologies on work are come, primarily, form a study of Frey and Osborne from the Oxford University Engineering Sciences Department: *The Future of Employment: How Susceptible Are Jobs to Computerization?* conducted in 2013 in the United States. They made an attempt to determine computerization ratios for 702 positions, from the least “computerizable” (recreational therapist) to the most

19 A. Smith, J. Anderson, *AI, Robotics, and the Future of Jobs*, Pew Research Center, 2014, <http://www.pewinternet.org/2014/08/06/future-of-jobs/> (accessed: 27.10.2019).

20 PricewaterhouseCoopers, *Will robots really steal our jobs? An international analysis of the potential long term impact of automation*, 2017, <https://www.pwc.co.uk/economic-services/assets/international-impact-of-automation-feb-2018.pdf> (accessed: 26.10.2019).

21 Special Eurobarometer 460, *Attitudes towards the Impact of Digitization and Automation on Daily Life*, <https://ec.europa.eu/digital-single-market/en/news/attitudes-towards-impact-digitisation-and-automation-daily-life> (accessed: 27.10.2019).

22 Houses of Parliament, Parliamentary Office of Science & Technology, *Automatic and Workforce*, Postnote no. 534, London, August 2016, p. 3, <https://post.parliament.uk/research-briefings/post-pn-0534/> (accessed: 4.09.2020)

23 G. Friedmann, *Maszyna...*, p. 176.

(telemarketer)²⁴. An empirical assessment of the study by Frey and Osborne on OECD countries was conducted in 2016 by Arntz, Gregory, and Zierahn entitled *The Risk of Automation for Jobs in OECD Countries*²⁵, though changing the research approach a little. According to the authors, the main limitation of the research by Frey and Osborne is that they examined jobs rather than the actual tasks threatened by automation. They postulate that many professions classified as “susceptible to automation” are, in fact, not at risk; the reason is that employees also perform non-routine and interactive tasks that are not that susceptible to automation. Another example of using the methodology of the aforementioned research (conducted between 2013 and 2016) is the analysis conducted by PricewaterhouseCoopers in 2018 under the title: *Will robots really steal our jobs? An international analysis of the long-term impact of automation*²⁶. What differentiates this research is that the predictions made in this research are based on the assumption of the technical possibilities of automation, so, in practice, the actual range of automation could be smaller due to economic, legal, regulatory and organizational reasons. Research on automation and work developed by the McKinsey Global Institute are: *A future that works. Automation, Employment and Productivity*²⁷ from January 2017, *Jobs lost, jobs gained: Workforce transitions in a time of automation* from December 2017, *Skill Shift. Automation and the Future of the Workforce* from May 2018. Considerations about changes in the nature of work in the context of advanced technologies were also included in the World Bank: *The World Development Report (WDR) 2019: The Changing Nature of Work*²⁸.

Research on warehouse employees regarding their personality traits and motivational factors, was carried out by the scientists from Erasmus University of Rotterdam in 2016, entitled: *Exploring the role of picker personality in predicting picking performance with pick by voice, pick to light and RF-terminal picking*²⁹ and

24 C.B. Frey, M.A. Osborne, *The Future of Employment*, Delloite, 2013, https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf (accessed: 27.10.2019).

25 M. Arntz, T. Gregory, U. Zierahn, *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis*, OECD Social, Employment and Migration Working Papers, No. 189, OECD Publishing, Paris 2016, <http://dx.doi.org/10.1787/5jlz9h56dvq7-en> (accessed: 27.10.2019).

26 PricewaterhouseCoopers, *Will robots really steal our jobs?...*

27 McKinsey Global Institute, *A Future that works: automation, employment, and productivity. January 2017. Executive summary*, <https://www.mckinsey.com/~media/mckinsey/featured%20insights/Digital%20Disruption/Harnessing%20automation%20for%20a%20future%20that%20works/MGI-A-future-that-works-Executive-summary.ashx> (accessed: 29.10.2019).

28 A World Bank Group Flagship Report, *World Development Report 2019...*

29 J. De Vries, R. De Koster, D. Stam, *Exploring the role of picker personality in predicting picking performance with pick by voice, pick to light and RF-terminal picking*, “International Journal

*Aligning order picking methods, incentive systems, and regulatory focus to increase performance*³⁰, which concern the automated picking process.

Results and Discussion

The research was carried out using the CAPI method on respondents from warehouse employees from various regions of Poland. The survey enquired about the technical equipment of their warehouses, working conditions and whether warehouse workers feel under threat of losing their jobs in the next 5 years due to the increasing automation of work. The main aim of the survey was the identification of the opinion warehouse workers have regarding the automation of their work. 83 respondents selected by the targeted selection method took part in the survey. The respondents were warehouse employees from all over Poland, occupying a range of positions in the warehouse (Figure 3) and having different professional experience.

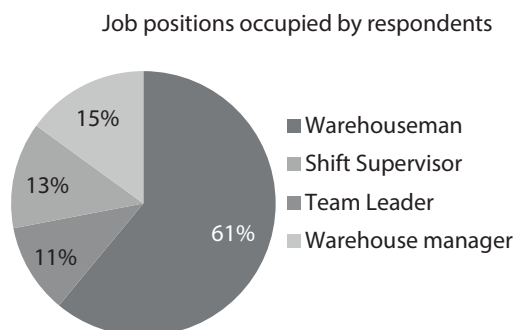


Figure 3. Positions occupied by respondents

Source: own elaboration based on research results.

Most of the respondents were men (75%). Women constituted a quarter of all respondents (25%). Both groups of respondents are young, 70% of respondents are people under 35 years of age (Figure 4) with professional experience not exceeding 15 years.

of Production Research" 2016, vol. 54(8), pp. 2260–2274.

30 J. De Vries, R. De Koster, D. Stam, *Aligning order picking methods, incentive systems, and regulatory focus to increase performance*, "Production and Operations Management" 2016, vol. 25(8), pp. 1363–1376.

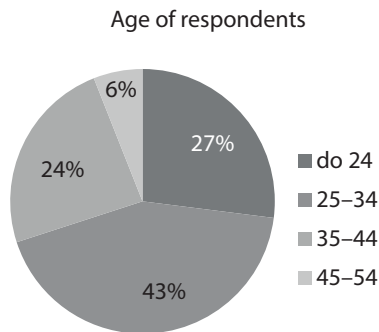


Figure 4. Age of respondents

Source: own elaboration based on research results.

The largest group were employees aged 25–34 (43%). 44% of respondents have a relatively limited work experience, up to 5 years, including working in a warehouse for up to 4 years. Regardless of job seniority, age, position, education and gender, all respondents found that the use of ancillary equipment significantly facilitates warehouse work. 3% of respondents work in warehouses where there are none of the auxiliary devices listed below. Among the auxiliary devices available in their warehouses respondents most often mentioned:

- lifting forklifts 83%;
- pallet truck 81%;
- sliding shelves 36%;
- conveyor belts 33%;
- conveyors 29%;
- mechanical loading bridges 12%;
- stacker cranes 12%;
- warehouse bridge cranes 9%.

Despite these numerous auxiliary devices, 39% of warehouse workers, 25% of warehouse managers and 22% of team leaders believe that their work is physically exhausting. 27% of shift managers and 29% of warehouse staff hold the opposite view – these respondents believe that their work is neither physically nor mentally tiring. In terms of mental tiredness, half of the managers believe that their work is exhausting. The same opinion is expressed by 36% of shift managers, 44% of team leaders but only 8% of warehouse workers. 25% of managers, 36% of shift managers, 33% of team leaders and 27% of warehouse workers feel both physical and mental exhaustion. To sum up, it can be stated that working in a warehouse exhausts a third of warehouse employees physically, while over a quarter of employees feel that their work exhausts them both physically and mentally. In contrast, 22% of employees believe that their work in the warehouse is not exhausting.

Every fifth respondent believes that working in a warehouse exhausts them mentally. Detailed research results are presented in Table 1.

Table 1. Exhaustion of warehouse employees in physical and mental terms

Exhaustion	Warehouse manager	Shift Supervisor	Team leaders	Warehouseman	All
Physical	25%	0%	22%	39%	30%
Mental	50%	36%	44%	8%	22%
Physical and mental	25%	36%	33%	24%	27%
Work is not exhausting	0%	27%	0%	29%	22%

Source: own elaboration based on research results.

The survey also asked respondents whether their warehouse role would be fully automated and whether they were afraid of losing their job due to automation. The respondents' answers depended on their position and, therefore, on the work they performed.

In general, 40% of respondents believe that their work cannot be fully automated, the same number of responders (40%) disagreed. 20% are not determined in this matter. Opinions are also divided on the issue of job loss. 52% of respondents believe that despite automation they will not lose their jobs, while 48% express such a fear.

Detailed results for the position held by the respondents are presented in Tables 2 and 3.

Table 2. Employees' concerns about job loss due to warehouse automation

Do you think that your warehouse work could be fully automated?				
Job position	Answer	%	I will be out of work	I will have a job
Warehouse manager	Yes	42%	25%	75%
	I have no opinion	0%	0%	0%
	No	58%	33%	67%
Shift Supervisor	Yes	55%	40%	60%
	I have no opinion	9%	100%	0%
	No	36%	0%	100%
Team leaders	Yes	44%	67%	33%
	I have no opinion	12%	100%	0%
	No	44%	0%	100%
Warehouseman	Yes	35%	67%	33%
	I have no opinion	30%	64%	36%
	No	35%	78%	22%

Source: own elaboration based on research results.

The wider the range of devices that facilitate work in the warehouse, the greater the fear of losing a job – 80% vs. 0% (Table 3).

Table 3. Concerns about job loss due to automation with regard to the number of different technical devices used in a given warehouse that facilitate warehouse work

		Number of different technical devices	
		0–1	6–8
My work will be completely automated	Yes	55%	20%
	I have no opinion	10%	20%
	No	30%	60%
I will lose my job because of automation	Yes	0%	80%
	I have no opinion	0%	0%
	No	100%	20%

Source: own elaboration based on research results.

The research shows that 58% of managers strongly believe that their work cannot be automated. For all other groups, 35–44% of respondents replied that their work would not be fully automated. In these groups participants also answered “I have no opinion”. The lower the position held, and therefore the easier tasks to perform, the greater this uncertainty (30% of warehouse workers versus 9% of shift managers). Interestingly, both team leaders and shift managers who are not certain whether their work will be replaced by machines are convinced that they will be out of work due to progressing automation. More than half of shift managers (55%) answered this question in the affirmative. The smallest percentage of positive answers was in the group of warehouse workers (35%). It is intriguing that the same percentage of team leaders (44%) and warehousemen (35%) believe that their work can and cannot be automated. Warehouse personnel have the greatest concerns over job loss among those respondents who believe that their work will not be fully automated (78%).

It has to be emphasized that the above answers were not influenced by education, gender, age or seniority. However, as mentioned, the answers depended on the position held and the range of machine equipment in the warehouses in which the respondents work. Warehouse employees who have no or only one type of such devices are not worried about losing their jobs due to automation. It can therefore be assumed that the greater the technical equipment in the warehouse, the greater the employees’ awareness of human labour being phased out from the warehouse. The summary of the results of the answers to the question about the fear of losing a job in reference to the positions occupied by respondents is also interesting. Overall, 75% of managers are not afraid of losing their jobs due to automation, while more than half of warehouse workers are (53%). For shift supervisors

and team leaders, the percentage of people afraid of losing their jobs is the same (45%). Respondents were also asked if they would like to change jobs in the next five years. As many as 78% of team leaders, 74% of warehouse workers and 67% of warehouse managers answered this question affirmatively. The respondents provide more varied answers when asked whether they would like to change their profession in the next five years. Warehouse managers and shift managers mostly do not have such intentions (respectively 67% and 64%). Whereas 63% of warehouse workers and over half of team leaders (56%) want to change their profession in the near future.

Conclusions

The research shows that work in the warehouse is not particularly exhausting physically, which is associated with the increasing use of various technical devices that facilitate warehouse work. Employees' opinions as to whether their work can be fully automated are divided. 40% of them think it is possible, while another 40% disagree. Every fifth respondent had no opinion on this subject. On the other hand, as the warehouses are equipped with greater numbers of technical devices, employees' fear of losing their jobs increases, although this fear depends not only on the degree of technical infrastructure of the warehouse, but also on the position occupied by a given employee. The higher the position, the more they believe that their work cannot be fully automated and that, despite automation, they will keep their job. None of the employees who work in low-level position in warehouses are afraid of losing their jobs. Perhaps employee confidence is related to the economic situation of the company in which they are employed (this aspect has not been studied), one which does not allow the purchase of expensive technical equipment used in large modern, automated warehouses. Employees of almost all surveyed groups (except team leaders) want to change their position in the next five years (over 67%), although this change is not necessarily related to a change in their profession.

The authors of the article intend to continue their research on the impact of automation on work, accidents in the warehouse and on occupational diseases associated with this work.

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Abstract

Contemporary enterprises operate in conditions of high uncertainty, where competition takes place not only at the level of prices of products or services offered, but above all on quality. The time taken to deliver a product or service is one of the most important quality measures. The role and importance of the logistics system in the current competitive environment is of fundamental importance. Warehouses have ceased to be perceived as cost centers, just being a central place in the flow of goods, and are gaining ever more importance in building a lasting competitive advantage. There are also growing requirements for modern warehouses (identification of the place where the goods are stored, efficient means of internal transport, the possibility of quick product picking). Technological progress and automation has a huge impact on the way warehouse processes are carried out and managed. And this technology is developing extremely quickly, radically changing work in the warehouse. Elimination of errors, increased efficiency, significant reduction of operating costs, assurance of constant availability of the full range of goods, the improvement of process control, increase of precision and speed of information flow are some of the benefits of introducing automation in the warehouse. Although warehouse processes are becoming increasingly automated, people will still have to a role by collaborating and interacting with machines. Due to the fact that the interaction between man and machine in warehouse work has not been the subject of much attention in contemporary literature on the subject, the purpose of the article is to assess the impact of automation on warehouse work, through CAPI research directed at warehouse employees. What impact the current technology has on people's work was assessed, whether large fluctuations and staff shortages among warehouse workers are not a repercussion of treating them as supplementary to modern machines, or whether they feel at risk of losing their jobs due to automation.

Keywords: automated warehousing, automated storage, warehouseman, logistics, human-automation interaction

Role of entities of human resource management in personnel controlling

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Introduction

At present in the organizations in question, one of the elements of effective and efficient management of human resources is the skill of utilizing information from the indicators of personnel controlling. Controlling is increasingly becoming the tool for implementation that is made available to employees at various levels of management. These employees, who are divided up into entities of the management of human resources, generate the appropriate behaviour in terms of the execution of the assumed goals of the organization.

The aim of the herein paper is to present the role that is played by the particular entities of the management of human resources in terms of the execution of the assumptions of personnel controlling. The research questions were formulated as follows: “What are the most important aims of operational personnel controlling according to the entities of human resource management?”, “What are the most important aims of strategic personnel controlling according to the entities of human resource management?”.

Entities of human resource management

The execution of the strategic aims in an organization requires the cooperation of all the people that create it by constituting the entities of human resource management (HRM). In accordance with Król¹ and Pocztowski², these are, among others, top management, line managers, personnel managers and employees. Oleksyn additionally enumerates the owners, as well as the personnel unit or department³. The framework division of roles of these entities is presented in Table 1.

Table 1. Framework division of roles of entities in the sphere of human resource management – chosen elements

Area-function	Top management	Other managers	Personnel specialists	Employees
Selection of top management	Propositions relating to vice-chairmen and members of the board	–	Formal service	–
Shaping strategies and policies of human resource management	Decisions, supervision of execution	Propositions relating to entrusted areas, suggestions of changes in strategies for the whole organization	Projects, propositions, coordination, functional supervision	Participation in designing strategies of human resource management at expert level
Division of labour and shaping organizational structures	Decisions on scale of organization	Decisions on scale of area	Projects, coordination	Propositions
Definition of content of organizational roles	Acknowledgement of principles	Substantive decisions	Advice in sphere of methodics	Active participation in optimization and technical work

- 1 H. Król, *Istota rozwoju kapitału ludzkiego w organizacji*, [in:] H. Król, A. Ludwiczynski (eds), *Zarządzanie zasobami ludzkimi. Tworzenie kapitału ludzkiego organizacji*, Wydawnictwo Naukowe PWN, Warszawa 2006.
- 2 A. Pocztowski, *Zarządzanie zasobami ludzkimi*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2018.
- 3 T. Oleksyn, *Zarządzanie zasobami ludzkimi w organizacji*, Wolters Kluwer, Warszawa 2017, pp. 67–71.

Area-function	Top management	Other managers	Personnel specialists	Employees
Definition of working standards	Acceptance of principles and systems	Leading functions in a particular area	Advice, coordination	Participation, execution
Management of competences	Acknowledgement of system and associated procedures	In a designated area	General concept, coordination, substantive supervision	Propositions, execution
Controlling employment and labour costs	Guidelines and approval	Projects and propositions	Projects and coordination	Partial impact on quality and dimension of employment
Outsourcing	Acknowledgement of principles and decisions referring to important issues	Decisions of lower level of importance	Projects and conducting system on the scale of the firm, general supervision of functional elements	Propositions, participation in operationalization
Recruitment and selection of staff	Staffing important positions	Participation, decisions relating to recruitment to organization	System, participation, service	Participation in process of internal recruitment
Motivation and remuneration	Direct subordinates	Subordinates	Designing, advice, training, inspection	Self-motivation, suggestions for change
Professional enhancement	Acknowledgement of system and plans	Planning, execution, inspection	Advisory service, training, inspection	Propositions, self-participation
Records and analysis	Definition of self-needs, general supervision, utilization in the decision-making process on the scale of the firm	Definition of self-needs, general supervision, utilization in the decision-making process on the scale of the organizational unit	Advisory functions, leading and coordination functions on the scale of the firm, direct execution in the sphere of its parts	Executive functions, propositions for streamlining formulation of applications

Source: self-analysis with supplementation on the basis of T. Oleksyn, *Zarządzanie zasobami ludzkimi w organizacji*, Wolters Kluwer, Warszawa 2017, pp. 67–71.

The principal task of the top management of an organization, which according to Oleksyn is “concentrated on strategic management and has the greatest knowledge of the market environment of the company at its disposal – in terms of its

clients, trading partners and competitors”⁴, which is to build the strategies of HRM on the basis of the strategies of the organization. Activities associated with the selection of people for key positions⁵ is becoming equally important, as well as taking strategic decisions based on data analysis, including information acquired within the framework of the indicators of personnel controlling at a strategic level. The managers at the highest level should display the ability of efficient management, while also have an impact onco-workers and behave in an ethical manner in contacts with them. They should be strategists and visionaries in terms of shaping the power of the organization on the market⁶. The roles attributed to the top management are those of a visionary, architect and promoter⁷.

The medium level of management is first and foremost the execution of the function of the coordinator and integrator of the processes of labour. As emphasized by Oleksyn, “empowering the medium level management staff with the right to decide on the level and structure of employment, forms of remuneration and levels of individual salaries, promotions, working is generally speaking beneficial”⁸. Undertaking such decisions by this entity of HRM is frequently executed on the basis of indicator data within the framework of personnel controlling at an operational level, while also the budget and labour costs relating to a specific organizational unit. The essence of a manager of medium level is first and foremost the professional preparation in the sphere of HRM, the efficiency of leadership, while also the ethics of behaviour towards employees and co-workers, with particular regard for the interpersonal competences⁹. The medium level managers are defined by the roles of a facilitator, inspirer and mentor¹⁰.

The value of HRM in a firm may be realized by personnel specialists with the aid of the following five elements: familiarity with external business conditions, serving internal and external stakeholders, shaping the activities of HR, creating the HR resources, while also ensuring professionalism¹¹. For the execution of these activities, it is necessary to ensure the professional competences of the employees in the personnel departments, designate their appropriate roles, while also possibilities of development.

4 *Ibidem*, p. 73

5 *Ibidem*, pp. 67–71.

6 A. Szejniuk, *Managerial ethics in human resource management*, “Journal of Modern Science” 2016, vol. 1, no. 28, pp. 89–104.

7 A. Pocztowski, *Zarządzanie...*, p. 68.

8 T. Oleksyn, *Zarządzanie zasobami ludzkimi...*, p. 74.

9 A. Szejniuk, *Managerial ethics...*, pp. 89–104.

10 A. Pocztowski, *Zarządzanie...*, pp. 203–204.

11 D. Ulrich, W. Brockbank, *Tworzenie wartości przez HR*, Oficyna Wolters Kluwer business, Kraków 2008.

Personnel specialists should fulfil the following roles: advisory, coordinative, training, service, agent of change, auditor¹²; integrator, advisor/auditor¹³; strategic partner, expert in the field of administration, ombudsman, animator of change¹⁴.

The final entity of HRM relates to the employees in non-managerial positions. These are authors or co-authors of various elements of HRM, who apply the processes of HRM, manage their own competences and their own development by means of activity in trade unions, participate in socio-occupational associations, while also assessing and contesting the existing state of affairs in the organization¹⁵. The employees may be expected to have “the willingness to take on responsibility for their own behaviour and professional career, to perceive the need for flexibility and cooperate with the appropriate line managers and personnel managers”¹⁶. The level of commitment of employees is becoming increasingly important in the management of an organization. According to Borkowska, there is evidence of the necessity to change the traditional model of management of human resources towards the construction and development of a model of management based on the commitment of employees¹⁷.

Strategic and operational controlling

Controlling constitutes a sub-system of management in an organization that coordinates planning, inspection and provision of information, thus supporting the adaptation and harmonization of the entire system of management. All activities conducted within the framework of controlling are geared towards controlling the entire enterprise with regard to the designated aims, namely the achievement of the previously defined results¹⁸. The essence of controlling is that of planning based on aims that are jointly designated by the operational management and members of the board, whereby its efficiency is achieved thanks to the constant comparison of the designated aims with their execution¹⁹. This constitutes a modern concept of management of a firm, which renders the efficient reaction

12 T. Oleksyn, *Zarządzanie zasobami ludzkimi...*, p. 76.

13 A. Pocztowski, *Zarządzanie...*, p. 70.

14 D. Ulrich, *Liderzy zarządzania zasobami ludzkimi*, Oficyna Ekonomiczna, Kraków 2001.

15 T. Oleksyn, *Zarządzanie zasobami ludzkimi...*, p. 78.

16 A. Pocztowski, *Zarządzanie zasobami ludzkimi. Zarys problematyki i metod*, Antykwa, Kraków 1998, p. 38.

17 S. Borkowska, *Rola zaangażowania pracowników*, “Zarządzanie Zasobami Ludzkimi” 2014, no. 2, p. 9.

18 P. Horvath, *Controlling*, Verlag Franz Vahlen, München 2006.

19 H. Vollmuth, *Controlling. Planowanie, kontrola, kierowanie*, Placet, Warszawa 2007.

to changes occurring in the environment possible, as well as adjusting to the requirements of a client²⁰. According to Internationaler Controller Verein, controlling is a managerial process whose task is to support the management (managers) in the pursuit of achieving goals. Its foundations are: planning, calculation, control, management²¹.

The most general and most frequently applied classification of controlling is its division into strategic controlling and operational controlling. This division is conducted from the view point of the nature of tasks, levels of management and time horizon. Distinguishing these two types of controlling is significant in an organization due to the aims and precision of the gauges and predictions (compare Table 2).

Table 2. Features of strategic and operational controlling

Feature	Strategic controlling	Operational controlling
Aims	Securing long-term existence and development of enterprise, growth of value of the firm	Profitability, yield, solvency and economic results
Orientation towards	External circumstances and shaping aims and potential resources on their basis, matching activities to changes in the environs	Utilization of existing resources, economization and regulation of internal processes
Subject of tasks	Development of enterprise	Effective use of resources
Dimensions viewed	Opportunities, threats, strong and weak points	Revenue/outlays, costs/efficiency/profitability
Time horizon	Long or very long period, unrestricted, perspectives	On average up to 3 years, most frequently short-term – one year, quarter
Level of planning	Strategic	Tactical and operative, budgeting
Structuring problems	Low degree of structuring, more qualitative than quantitative nature of aims and tasks	Aims and tasks expressed in quantitative terms, great precision of data
Type of control	System of early warning	Ongoing control of budgets and chosen indicators
Specification of activities	Innovative	Routine

20 J. Konsek-Ciechońska, *Operational and strategic controlling tools in microenterprises – case study*, “Management Systems in Production Engineering” 2017, vol. 25, issue 4, pp. 278–282, <http://doi.org/10.1515/mspe-2017-0041>

21 *Co to jest controlling*, <https://www.icv-controlling.com/pl/o-controllingu/co-to-jest-controlling.html> (accessed: 1.12.2019).

Feature	Strategic controlling	Operational controlling
Degree of formalizing activities	Less formalized	More formalized
Dimension of information	Irrational values, qualitative	Rational values, quantitative

Source: self-analysis on the basis of the following: Z. Sekuła, *Controlling personalny. Część 1. Istota i przedmiot controllingu personalnego*, Oficyna Wydawnicza Ośrodka Postępu Organizacyjnego Sp. z o.o., Bydgoszcz 1999; H. Walica, *Inwestycje i controlling w przedsiębiorstwie*, serie "Prace Naukowe Wyższej Szkoły Biznesu w Dąbrowie Górniczej", Wyższa Szkoła Biznesu, Dąbrowa Górnicza 2007.

The role of strategic controlling is the fulfilment of long-term intentions, which are mainly reflected in the economic and financial performance. Its functioning is of particular importance for large enterprises where there is a need for a multi-dimensional coordination of aims and activities in the particular units in terms of maintaining the maximum flexibility and correctness of decisions²². The significant task of strategic controlling is as follows:

- the creation of organizational, methodological and informational conditions for the preparation and verification of strategic plans, while also to adjust them to management at an operational level;
- to support management in the embodiment of long-term plans referring to the development of the enterprise;
- to provide assistance in taking decisions with the aid of a system of managerial information, analysis of the reality of the aforesaid goals within a long-term timeframe, coordination of the process of planning in this sphere²³, analysis of the long-term tasks and aims, or supervision of the processes of control at a strategic level²⁴.

Long-term tasks and current plans for the functioning of an organization are connected by way of operational management. Operational controlling, which exists within its framework has the following tasks:

- analyse solvency, efficiency, while also the current profitability of the enterprise and concentration on the financial performance;
- execution of short-term and current goals;
- regulation of the processes within the organization, thus focusing on the issues associated with current functioning.

22 T. Reichmann, *Controlling mit Kennzahlen*, Verlag Franz Vahlen, München 2006.

23 S. Marciniak, *Controlling. Filozofia, projektowanie*, Difin, Warszawa 2001.

24 A. Skowronek-Mielczarek, Z. Leszczyński, *Controlling, analiza i monitoring w zarządzaniu przedsiębiorstwem*, Difin, Warszawa 2007.

Quantitative methods are utilized for the fulfilment of tasks within the framework of operational controlling, which serve the comparison of budgets with the actual execution, while also the analysis of deviations, preparation of reports and data for the managers taking the current decisions²⁵.

Strategic and operational personnel controlling

Deyhle defined personnel controlling as the concept of personnel management whose fundamental aim is that of thriftiness, as well as the identification of the personnel plan of the firm, which consequently means moving towards the processes of decentralization, management by aims, as well as motivation and remuneration²⁶. This is distinguished by specialized tasks such as the following: control and coordination of the flow of information in the sphere of human resources, preparation of decisions associated with personnel by means of the analysis of information transferred by people and about people, while also monitoring the implementation of decisions²⁷. This constitutes a system that renders transparent activities within the framework of HRM possible, while also their economicalness, effectiveness and orientation towards the established goals²⁸. The basis of the analysis in personnel controlling is constituted by the following which exist in the area of processes: planning employment, recruitment and selection of candidates, evaluation of employees, ways of motivating them, remuneration, labour efficiency, severance, activities in the field of health and safety, labour costs, or implementation of the notion of sustainable personnel in the organization²⁹. With regard to the levels of management and the time horizon, personnel controlling may be divided into the following areas³⁰:

- strategic – the strategic system of human resource management and HR resources, whose task is to analyse the role of HR activities in terms of achieving the long-term goals of the firm, while also the optimization of activities in this sphere and creating feedback channels for key employees, particularly at managerial levels;

25 *Ibidem*.

26 A. Deyhle, *Personal-Controlling*, "Controller Magazin" 1990, no. 2, pp. 51–57, <https://www.haufe.de/download/controller-magazin-ausgabe-021990-controller-magazin-139022.pdf> (accessed: 22.12.2019).

27 C. Schulte, *Personal-Controlling mit Kennzahlen*, Verlag Franz Vahlen, München 2011.

28 J. Golszewski, *Controlling – koncepcje, zastosowania, wdrożenie*, Oficyna Wolters Kluwer business, Warszawa 2015.

29 A. Kuźniarska, *Controlling personalny w sieciach handlu detalicznego*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2019.

30 P. Břečková, K. Havlíček, *Leaders Management and Personnel Controlling in SMEs*, "European Research Studies" 2013, vol. XVI, issue 4, pp. 3–14.

- operational – which applies the short-term system of indicators for evaluating employees, as well as the system of HR indicators used in the evaluation of HR processes and efficiency of the department (compare Table 3).

Table 3. Strategic and operational tasks of personnel controlling

Strategic personnel controlling	Operational personnel controlling
• Ensuring integration of personnel strategies with strategy of enterprise • Inclusion of aspects of human resource management into strategies of the whole enterprise • Indicating the best possible strategies for execution by the enterprise • Conducting research on dependency between strategies of the enterprises and personnel strategy • Creation of long-term plans in the sphere of human resource management • Implementation of personnel strategies by means of specific action • Monitoring execution of strategies • Preparation and utilization of system of early warning with the aim of reacting to change with the appropriate timescale in advance	• Participation in planning human resources • Researching the degree of matching employees to work positions • In the case of the failure to match – indicating ways of elimination and associated costs • Rationalization of labour costs • Indicating factors evoking labour costs • Control of the accuracy of systems of staff assessment applied (or their creation) • Control and analysis of the effectiveness and efficiency of work • Evaluation of the efficiency of employees responsible for conducting personnel policies in the organization • Comprehensive analysis of activities undertaken within the framework of the broad perception of human resource management

Source: self-analysis on the basis of the following: A. Pocztowski, J. Purgał-Popiela, *Controlling personalny*, [in:] M. Sierpińska (ed.), *Controlling funkcyjny w przedsiębiorstwie*, Oficyna Ekonomiczna, Kraków 2004; A. Sikorski, *Controlling personalny*, "Zarządzanie Zasobami Ludzkimi" 2001, no. 2, pp. 49–58.

The essence of the functioning of strategic personnel controlling in an organization is the definition of the quantity and quality of the contribution of the personnel function in the development of the enterprise³¹, inclusion of the personnel aspects into the strategies of the enterprise, while also reacting to change in the strategic aims with the appropriate time in advance³².

In the case of operational personnel controlling, the tasks are concentrated on the ongoing personnel management with the application of the appropriate information based on the specificity of tasks³³.

31 M. Sierpińska, B. Niedbata, *Controlling operacyjny w przedsiębiorstwie*, Wydawnictwo Naukowe PWN, Warszawa 2008.

32 Z. Sekuła, *Controlling personalny. Część 1. Istota i przedmiot controllingu personalnego*, Oficyna Wydawnicza Ośrodka Postępu Organizacyjnego Sp. z o.o., Bydgoszcz 1999.

33 A. Pocztowski, J. Purgał-Popiela, *Controlling...*

Strategic and operational aims of personnel controlling as exemplified by trading chains – research results

The subject matter of the research conducted was that of an evaluation of the strategic and operational aims of personnel controlling in retail trading chains. The research was conducted between 2016 and 2017 in a large chain of supermarkets which operates across Poland (I am unsure if this was one chain or many chains), whereby a sample of 204 employees were selected (compare Table 4). The principal criteria of selecting the sample was the type of position held (not lower than a department specialist). The research was conducted with the aid of a survey questionnaire that included closed questions, while the evaluation was conducted in accordance with the five-degree Likert scale.

Table 4. Division of respondents according to position held in the organization

Type of position held	Number of respondents according to position held	Percentage of those analysed (%)
Director	5	3
Department head	17	8
Specialist of HR department	41	20
Specialist of controlling department	8	4
Remaining specialists	133	65
SUM	204	100

Source: self-analysis.

During the course of the research, respondents were asked for an assessment of the aims of personnel controlling at a strategic level. In Table 5, the percentage levels of assessment indicators for each of the entities of HRM have been presented separately; whereby evaluation was noted between 1 and 5 on the Likerta scale, in which “1” denotes little, while “5” denotes great significance of the particular feature. The intensity of these features grows together with the growth in figures – the greater the numerical value, the greater the significance of the particular feature.

The strategic aims of personnel controlling were most highly rated by the top management – directors and managers, as well as specialists of controlling. In accordance with the described roles of these entities within HRM, personnel controlling constitutes their subject of work, while also the basic source of information for taking decisions. It has the least significance for specialists in the remaining departments.

Table 5. Strategic aims of personnel controlling in evaluation of research entities (%)

No.	Type of aim	Entity of human resource management	1	2	3	4	5
1	Ensuring long-term functioning of enterprise	Director	20	0	20	20	40
		Manager	0	0	12	35	53
		HR	0	2	5	25	68
		Specialist of controlling	0	0	0	12	88
		Remaining specialists	3	6	11	18	62
2	Enhancement of efficiency of activities of enterprise	Director	20	20	0	20	40
		Manager	0	0	29	18	53
		HR	0	2	5	41	52
		Specialist of controlling	0	0	0	0	100
		Remaining specialists	1	7	9	27	56
3	Rapid reaction to changes occurring in environment	Director	0	0	20	40	40
		Manager	0	0	29	53	18
		HR	2	7	32	24	34
		Specialist of controlling	0	0	12	50	38
		Remaining specialists	5	6	26	35	28
4	Improvement of financial performance	Director	0	20	20	40	20
		Manager	0	0	6	65	29
		HR	0	0	2	27	71
		Specialist of controlling	0	0	0	50	50
		Remaining specialists	1	6	14	32	47
5	Evaluation of significance of human resources for company	Director	0	0	40	20	40
		Manager	0	0	35	35	30
		HR	0	2	10	51	37
		Specialist of controlling	0	13	0	62	25
		Remaining specialists	2	3	19	33	43
6	Reduction of labour costs	Director	20	0	40	0	40
		Manager	6	6	12	35	41
		HR	0	2	27	39	32
		Specialist of controlling	0	0	0	75	25
		Remaining specialists	5	5	18	34	38
7	Provision of useful information for taking decisions	Director	0	0	20	40	40
		Manager	0	18	17	47	18
		HR	0	7	41	32	20
		Specialist of controlling	0	0	25	38	37
		Remaining specialists	2	12	23	37	26
8	Enhancement of processes of planning	Director	0	0	40	20	40
		Manager	12	12	6	46	24
		HR	5	12	34	22	27
		Specialist of controlling	0	0	12	75	13
		Remaining specialists	3	17	26	25	29

Source: self-analysis.

In the research described, the respondents were also asked to conduct an assessment of the operational aims facing personnel controlling (compare Table 6). The evaluation was conducted according to the criteria accepted for the assessment of the afore-mentioned strategic aims.

Table 6. Operational aims of personnel controlling in evaluation of research entities (%)

No.	Type of aim	Entity of human resource management	1	2	3	4	5
1	Evaluation of way of planning employment	Director	0	0	0	40	60
		Manager	12	6	18	35	29
		HR	0	2	27	20	51
		Specialist of controlling	0	0	37	25	38
		Remaining specialists	6	7	28	27	32
2	Evaluation of way of selecting employees	Director	0	20	20	40	20
		Manager	0	12	12	47	29
		HR	0	2	20	24	54
		Specialist of controlling	0	0	25	38	37
		Remaining specialists	3	7	24	33	33
3	Evaluation of ways of recruiting employees	Director	0	0	40	20	40
		Manager	0	0	29	47	24
		HR	0	5	22	29	44
		Specialist of controlling	0	13	12	50	25
		Remaining specialists.	1	6	24	37	32
4	Evaluation of way of motivating employees	Director	0	20	20	20	40
		Manager	0	6	18	41	35
		HR	0	0	15	20	65
		Specialist of controlling	0	0	0	13	87
		Remaining specialists	1	2	11	26	60
5	Evaluation of way of assessing employees	Director	0	20	20	20	40
		Manager	0	6	23	59	12
		HR	0	2	24	17	57
		Specialist of controlling	0	0	12	38	50
		Remaining specialists	1	2	21	36	40
6	Evaluation of level of training and development of employees	Director	0	0	60	20	20
		Manager	0	0	12	59	29
		HR	0	0	5	22	73
		Specialist of controlling	0	0	0	25	75
		Remaining specialists	1	2	18	35	44
7	Evaluation of work efficiency	Director	0	0	0	60	40
		Manager	0	0	24	29	47
		HR	0	0	7	34	59
		Specialist of controlling	0	0	13	13	74
		Remaining specialists	1	2	14	25	58

No.	Type of aim	Entity of human resource management	1	2	3	4	5
8	Evaluation of labour costs	Director	0	20	20	0	60
		Manager	0	12	6	29	53
		HR	0	5	12	12	71
		Specialist of controlling	0	0	0	25	75
		Remaining specialists	1	7	16	32	44
9	Evaluation of communication and flow of information transferred to employees	Director	0	0	0	60	40
		Manager	6	6	29	29	30
		HR	0	5	20	21	54
		Specialist of controlling	0	0	0	50	50
		Remaining specialists	2	14	19	26	39
10	Evaluation of way of resolving conflicts	Director	0	0	40	0	60
		Manager	11	12	29	24	24
		HR	0	15	21	15	49
		Specialist of controlling	0	12	0	50	38
		Remaining specialists	6	14	20	28	32

Source: self-analysis.

The operational aims of personnel controlling were also highly rated by the top management, specialists of controlling, but also by HR specialists who encounter the execution of the short-term aims of personnel controlling on a daily basis. It has the least significance for the specialists in the remaining departments.

Conclusions

Personnel controlling, whose main role is that of a source of advice for the board, while also participation in the creation of plans, reporting on the subject of the state of human resources, information feedback (particularly cost-wise) associated with HRM³⁴, constitutes a significant element of management in the area of human resources³⁵. There is a significant identification among HR specialists and the specialists of controlling with the role of operational personnel controlling that serves the analysis of labour costs, labour efficiency, as well as costs associated with the professional development of those employed.

In the context of the function of management, the role of controlling comes down to the following activities³⁶:

34 M. Nowak, *Controlling personalny w przedsiębiorstwie*, Oficyna Wolters Kluwer business, Kraków 2008.

35 E. Nowak (ed.), *Controlling dla menedżerów*, Wydawnictwo CeDeWu, Warszawa 2013, p. 26.

36 E. Nowak, *Controlling jako podsystem zarządzania przedsiębiorstwem*, [in:] E. Nowak (ed.), *Controlling dla menedżerów*, Wydawnictwo CeDeWu, Warszawa 2013, p. 12.

- planning – one of the fundamental tasks of controlling is that of budgeting, which is the planning of the activities of an enterprise in terms of the notion of value;
- organizational – controlling facilitates the appropriate reorganization of the processes and activities executed in the enterprise on the basis of the gauging of their execution;
- motivational – controlling facilitates the construction of a motivational system based on the gauging of the results of the activities of units within the organization;
- controlling – controlling facilitates the ongoing monitoring of the activities of the enterprise by means of providing a system of short-term and long-term gauges, while also a gauge of the execution of the strategic aims.

In the research conducted, it is possible to note that the managerial staff mainly perceives the role of controlling in the process of taking decisions relating to the reduction of labour costs, the efficiency of the activities of the enterprise, as well as the enhancement of the processes of planning.

In summary, as indicated by the results of the research conducted, the greater the degree of awareness of utilizing controlling is represented by the entities of HRM, the higher it is rated.

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Abstract

At present personnel controlling is becoming increasingly applied as a tool in the management of various areas in an organization. The herein paper presents the essence of personnel controlling applied in the field of HR, its division in terms of the nature of tasks and levels of management for operational and strategic controlling. The role played by the entities of human resource management in terms of the functioning of personnel controlling is worthy of attention. The authors at hand present their research results in this sphere. The research sample encompassed employees in managerial and non-managerial positions in terms of executing their tasks in retail trade chains. Survey research was conducted as a method of research.

Keywords: entities of human resource management, operational personnel controlling, strategic personnel controlling

Young Women in Search for Autonomy. New Generation of Female Professionals Entering the Labour Market

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Introduction

Designing the research project, the authors focused on the main research question: “What are the attitudes of young Polish women (their life choices) in the process of adulthood entering the labour market?”. The literature on the subject shows that young people in Poland are now entering adulthood differently than their parents¹; Polish women give birth to the first children much later than their mothers while starting their professional career earlier, trying to meet their basic psychological needs² through/by building a particular hierarchy of priorities. Previously the

1 D. Wiszejko-Wierzbicka, A. Kwiatkowska, *Jeden czy wiele modeli? Raport z ogólnopolskiego badania młodych Polaków w wieku 18–29 lat*, “Studia Socjologiczne” 2018, vol. 2(229), pp. 147–176.

2 E.L. Deci, R.M. Ryan, *Self-determination theory*, [in:] P.A.M. Van Lange, A.W. Kruglanski, E.T. Higgins (eds), *Handbook of theories of social psychology*, Sage, Thousand Oaks 2012,

family orientation was the one that dominated among life choices, which resulted in the use of traditional patterns (woman, home, family). Nowadays emancipation movements mean that economic independence is much more visible in the sphere of the professional and social activity of women in this area³.

Deci and Ryan's Self-Determination Theory

The Self-Determination Theory (SDT)⁴ assumes that creativity, motivation and performance develop when three universal psychological needs are met: Autonomy, Relatedness and Competence. In circumstances satisfying all the three needs, individuals experience an event, work or task as self-determined, and behaviour is motivated by internal factors that result from personal goals and values, and not from external reinforcements or imposed requirements⁵. According to SDT, Autonomy is defined as a sense of control over processes and results and is associated with increased sustainability and efficiency through greater internal motivation⁶. Relatedness is the search for the possibility of establishing relationships with other people in a meaningful way, creating things and phenomena that matter to others. People have an innate need to establish close relationships with other people⁷ to avoid ostracism⁸ and create a sense of belonging to the group⁹. Finally Competence is a sense of efficiency and learning opportunities, also mastery in a given field. Sense of Competence is a central element in setting goals and motivating for success and avoiding failure¹⁰. Self-determination, according to SDT, occurs when these three needs are met.

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- pp. 416–437, <http://dx.doi.org/10.4135/9781446249215.n21>
- 3 M. Friedman, *Autonomy, gender, politics*, Oxford University Press, New York 2003, <http://dx.doi.org/10.1093/0195138503.001.0001>
 - 4 E.L. Deci, R.M. Ryan, *Self-determination...*; E.L. Deci, R.M. Ryan, *The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior*, "Psychological Inquiry" 2000, vol. 11, pp. 227–268, http://dx.doi.org/10.1207/S15327965PLI1104_01
 - 5 E.L. Deci, *Intrinsic motivation*, Plenum Press, New York 1975.
 - 6 E.L. Deci, R.M. Ryan, *The "what" and "why" of goal pursuits...*
 - 7 E.g. D.C. McClelland et al., *The achievement motive*, Appleton-Century-Crofts, New York 1953, <http://dx.doi.org/10.1037/11144-000>
 - 8 K.D. Williams, J.P. Forgas, W. von Hippel, *The social outcast: Ostracism, social exclusion, rejection, and bullying*, Psychology Press, New York 2005.
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 - 10 A.J. Elliot, M.A. Church, *A hierarchical model of approach and avoidance achievement motivation*, "Journal of Personality and Social Psychology" 1997, vol. 72, pp. 218–232, <https://doi.org/10.1037/0022-3514.72.1.218>; P.R. Pintrich, *The role of goal orientation in self-regulated*

A self-determined experience is crucial for the process of entering adulthood¹¹. Central to the present discussion, self-determination is a part of becoming an independent individual, as well as a citizen actively participating in democratic life on an everyday basis. Such an attitude produces positive outcomes such as intrinsic motivation, performance quality, persistence, professional and private life enjoyment, creative thinking, effective problem solving, well-being, mental health, and high-quality personal relations with others¹². When citizens are motivated by self-determined experiences, they are more likely to care for the common good, become active in shaping the local community life, and demonstrate effective performance, creativity, and problem solving¹³.

In the context of entering the labour market, self-determination may promote professional success and job satisfaction. Indeed, a greater sense of control over constructing the professional development strategy predicts the job market perception of fairness in the selection and promotion process¹⁴. These considerations may be particularly important for increasing the effectiveness of professional development among young women in the growing economy of Poland.

Importantly, SDT does not consider the three needs to be equal in the experience of self-determination. Autonomy is accentuated as the key ingredient. In their review article, Deci and Ryan state:

[...] Autonomy occupies a unique position in the set of three needs: being able to satisfy the needs of Competence and Relatedness may be enough for controlled behavior, but being able to satisfy the need for Autonomy is essential for the goal-directed behavior to be self-determined and for many of the optimal outcomes associated with self-determination to accrue¹⁵.

learning, [in:] M. Boekaerts, P.R. Pintrich, M. Zeidner (eds), *Handbook of self-regulation*, Academic Press, San Diego 2000, pp. 451–502.

11 K.D. Williams, J.P. Forgas, W. von Hippel, *The social outcast...*

12 E.L. Deci, R.M. Ryan, *The “what” and “why” of goal pursuits...*; E.L. Deci, R.M. Ryan, *Self-determination...*

13 See: E.L. Deci, R.M. Ryan, *The “what” and “why” of goal pursuits...*

14 M. Łuźniak-Piecha, A. Lenton, *Supporting Employee Health and Well-being as a Strategy for Managing an Age-diverse Workforce. Greater London Authority Case Study*, “Zeszyty Naukowe Uczelni Vistula/Vistula University Working Papers” 2016, vol. 46(1), pp. 142–160.

15 E.L. Deci, R.M. Ryan, *The “what” and “why” of goal pursuits...*, p. 242.

Absent Autonomy, Skewes' modern take on SDT

In contrast to The Self-Determination Theory created by men and mainly focused on men as the participants of the labor market¹⁶, more contemporary approaches emphasize the participation of women in the job market. According to these concepts the Relatedness is argued to play a central role in achieving Autonomy and Competence, i.e. the whole self-determination experience¹⁷. In other words, it is emphasized that self-determination is based mainly on "Relational Autonomy" – as the ability to independently influence one's own life (autonomy) is largely dependent on the quality of our relations with important people and institutions in a social, political and economic context. Therefore, Relatedness is asserted as the key to understand how a particular social group will build its strategy of achieving goals. In the circumstances of the labour market being shaped by certain gender stereotypes ("giving birth to a child / developing a career" is most important to a woman), the social and political support for young women differs. When the social environment formulates particular expectations towards young women and indicates their certain social roles ("you should go to university / you should start family / you should earn a living"), the economic conditions such as the different pay for similar work performed by women and men will support specific life choices. Summarizing: the patterns of career chosen by young women will be strongly shaped by relationships emphasizing the importance of one and the low usefulness of other life decision. Young women's aspirations are therefore strongly influenced by relations with a specific social, political and economic environment.

According to Skewes Relatedness is crucial for understanding the kinds of challenges that different groups may face in achieving self-determination and in addressing those challenges. When social, political and economic environment is shaped by gendered norms and expectations, challenges to seeking and achieving self-determination might be different along gender lines. Therefore increasing self-determination among young women entering the labor market seems to be a worthwhile goal for efforts¹⁸.

16 S. Buss, *Autonomy reconsidered*, [in:] P.A. French, T.A. Uehling, H.K. Wettstein (eds), *Midwest studies in philosophy*, vol. XIX, University of Minnesota Press, Minneapolis 1994, pp. 95–121; J. Christman, *Relational autonomy, liberal individualism, and the social constitution of selves*, "Philosophical Studies" 2004, vol. 117, pp. 143–164, <http://dx.doi.org/10.1023/B:PHIL.0000014532.56866.5c>

17 M.C. Skewes et al., *Absent autonomy: Relational competence and gendered paths to faculty self-determination in the promotion and tenure process*, "Journal of Diversity in Higher Education" 2018, vol. 11, no. 3, pp. 360–386.

18 *Ibidem*.

The entering the labour market process occurs within the context of significantly limited Autonomy, providing a unique opportunity to examine experiences of Relatedness and Competence importance in the self-determined experience seeking. According to the research results by Skewes et al.¹⁹, the situation of acting in the sense of Reduced or Absent Autonomy provokes the development of various strategies to follow professional aspirations for women and men.

In such a situation, women focus on developing Relational Autonomy, seeking and nurturing relationships with people who are creators of/participants in the situation. Skewes argues that the experience of self-determination for women hinges on relational competence.

The building blocks of competence that lead to self-determination, including information, are contextualized in Relatedness. How information is obtained, and feedback offered is more central to women [labor force] members' experience than the existence of objective rules about the process²⁰.

For men, the experience of self-determination relies more heavily on Informational Competence. Perception of competence begins with the rules and guidelines, and Relatedness falls a distant second. For men, written rules seem to be the place to start the process of the Informational Autonomy development. Men therefore try to compensate for the lack of Autonomy by seeking clear information on the procedures, requirements and specific actions that should be taken to ensure that they meet specific aspirations²¹.

Present Study – Own Research Project

The goal of the conducted study was to explore deeper needs as: relatedness, competency and autonomy (intrapsychic conditions of perception of own adulthood) as well as the perception of traditional social markers ('Big Five') within the group of young woman entering adulthood. The question we asked concerned self-fulfillment in different areas of life they indicate as important. The study was conducted in the period of May until August 2019.

The presented research attempts to understand self-determination among young women in the process of building their professional development strategy, becoming an active part of a democratic society from the political, economical and socio-psychological point of view.

19 *Ibidem*.

20 *Ibidem*, p. 378.

21 *Ibidem*.

Method

The conducted study was based on a qualitative approach. The individual in-depth interview (IDI) was used as the technique which enables the exploration of deeper needs, such as relatedness, competences and autonomy. The sample of young women entering adulthood was created in the procedure of “snowball sampling” used during the recruitment process.

The sample consisted of young women aged 18–29. The selected age range corresponds to the definition of emerging adulthood phenomenon according to Jeffrey Arnett²². Other variables taken into consideration within the process of sample creation are: vocational activity, having a child/ children, education. **Finally, 24 IDIs were conducted in the term of May – August 2019 year (this is part repetition of a previous sentence).** The structure of the sample is presented in the table below (Table 1).

Table 1. Structure of the sample

	1. Single/married woman with a child/children; higher level education	2. Single/married woman with a child/children and secondary level education (studying)/elementary education	3. Single/married woman without a child/children; higher level education	4. Single/married woman without a child/children; secondary education (not studying)/elementary education
Urban	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29
Rural	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29	Three women aged: 18–22; 23–25; 26–29

Source: own, based on the conducted study.

In order to diversify the obtained empirical material, the sample was also differentiated. Women included into the sample were recruited from various social contexts, e.g. institutions for single mother’s or a celebrity’s environment. The average length of interview amounted approximately one hour. All of the interviews (IDIs) were given under full description.

22 J.J. Arnett, *Emerging adulthood: A theory of development from the late teens through the twenties*, “American Psychologist” 2000, vol. 55(5), pp. 469–480.

Data Analysis

Our research team consisted of the four authors as well as another six interviewers. All interviewers were PhD or Doctoral Students, specialists in Psychology, Political Sciences and Social Sciences. Training and expertise among the research team members included quantitative research methods and data analysis, qualitative methods and analysis, social psychology, public policy and administration, political theory, ethics, feminist philosophy and community based participatory research. All team members identified as gender study interested, all are trained in humanist, qualitative, and quantitative traditions of inquiry.

The goal of the analysis was to understand how the SDT constructs of Autonomy, Competence, and Relatedness emerged during interviews focused on entering adulthood. We investigated the process and strategies of entering the labour market. Attention was focused on exploring how young women experienced self-determination in becoming active citizens – context described by the Authors as Democracy in Action – and whether there were differences in the presence and description of these constructs. For the purpose of analysis Skewes' concept of Absent Autonomy was used.

Based on Miles, Huberman, and Saldana's²³ approach to qualitative data coding, the research team used Deci and Ryan's psychological needs (Autonomy, Relatedness, and Competence) as the "basic" categories of conceptual variables that we transformed into descriptive codes representing four main "strategies of Autonomy search" (see Figure 1). Two of them were adapted from Skewes concept of Absent Autonomy, the remaining two were a result of further analysis conducted by the authors. Additionally, two "sub-strategies" were identified (see par. 6.1, Figure 2).

Four members of the research team trained in qualitative research conducted the coding. The Coders reviewed the transcripts and identified emergent descriptors of all four "strategies" as well as two "sub-strategies". The team reconciled the coding decisions over multiple meetings. This process involved the multidisciplinary research team.

Results

The participants reported various approaches towards the process of entering the labour market (see par. 6.1). Depending on their experiences in these activities, participants expressed strengthened or diminished perceptions of perceived

23 M.B. Miles, A.M. Huberman, J. Saldana, *Qualitative data analysis: A methods sourcebook*, Sage, Thousand Oaks 2014.

Autonomy, Competence and Relatedness that lead to self-determination. While all participants described their subjective understanding of adulthood, independence, responsibility and particular life-changing processes as crucial to entering the labour market and therefore to building the Autonomy, the experience of Autonomy was fundamentally different among four groups of participants assigned to four “strategies of Autonomy search”. Understanding these divergent pathways may shed light on the types of interventions and support that could effectively assist the process of encouraging young women in becoming independent participants of a modern economy and a democratic society.

Results are discussed by STD categories enriched by Skewes²⁴ categories of Absent Autonomy with findings supported by illustrative quotes from the data.

In search for Autonomy – Strategies investigated in the present study

The authors of the research presented in this paper have investigated four main strategies for building autonomy in the process of entering the labour market (Figure 1).

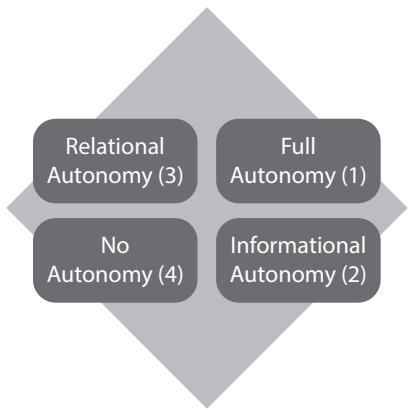


Figure 1. Four main autonomy building strategies in the process of entering the labor market

Source: own, based on the conducted study.

1. Full Autonomy – defined by us as a series of conscious decisions forming a strategy of professional development. This strategy combines informational competence with relational awareness. It therefore consists of knowledge

24 M.C. Skewes et al., *Absent autonomy...*

of the rules governing the labour market, and at the same time the ability to build relationships useful to developing a career.

Examples:

In fact, a woman never knows when she will be alone and will have to deal with various issues on her own. However, it is easier for her to deal with it having an education than without it. I believe that work is very important, and the [old times] when a man earned money for the family and women sat at home raising children, without education and without being able to discuss any topic, have already passed. So it seems to me normal and absolutely needed. [...] I would like to have a medical practice and work with mentally ill people. I think it is a matter of stubbornness and implementation [of the plan].

(Female, 27 years old, married with one child)

I moved out because I couldn't reconcile my autonomy and the one of my mother. Since I have moved out, everything is done 'my way' and I can do what I want. If I don't do something, I won't do it – it's my choice. [Dirty] dishes are my problem, nobody can yell at me. This is a burden... but on the other hand I think that I needed it so much. [For me] the biggest change and feeling of happiness comes from my independence.

(Female, 27 years old, single without children)

[...] my family questioned the choice of my life partner and got separated from me. Despite [this] fact, I've chosen my happiness [...]. Such a personal choice is an adult, mature decision. I understand that the family may be afraid that the choice of a partner is inappropriate, but well the process of growing up and choosing a life partner by my parents has already ended in my life and I'm already independent [...]. Whatever goes wrong, I can only blame myself at this moment and in my opinion it's fair.

(Female, 29 years old, single with one child)

2. Informational Autonomy strategy – the strategy described by Skewes as “male” – although constituting the choice of some young women.

Examples:

Career is... probably this ladder one climbs higher and higher. I gain new competences, higher and higher position, better earnings. One is in a different place than he/she was some time ago, [one] is able to do more.

(Female, 27 years old, single without children)

I think work is a great antidepressant. Work gave me a feeling of stability. That there is [...] something I control completely. Well [...] that work is for me... it is mostly predictable.

(Female, 29 years old, in partnership relation with one children)

In 5 years I see myself very high in the hierarchy, I do not like this word but I don't know how to name it differently. I already have a managerial position but I know that I can go one step further. Now I feel that I fulfill my potential and I know it not from the feedback I receive directly from the company's owners, but from the one I receive from my subordinates. They keep saying that I'm the best leader they could choose [laugh] I had to say it. I would not be myself if I didn't. I think that in general I still see myself being part of this company, although generally I think that it will be the end of my career. And this will be the moment when I will have some savings to fulfill my biggest professional dream – work and travel. [...] I could write a book about travelling [...].

(Female, 25 years old, married with two children)

Well, I would like to work professionally in some [...] boutique clinic. By boutique I mean not a corporation in the Hotel, but some very nice, intimate clinic. Expensive. Very expensive. But also providing services of a very high quality. Thus, I realize that I also have to [gain some experience] to be good. Well, because my profession is a type of craft work. So I just have [improve] certain skills.

(Female, 29 years old, in partnership relation with one child)

3. Relational Autonomy strategy – described by Skewes as “feminine”

Examples:

Stabilization and getting to know the right life partner who could possibly help to get this certainty in life [are very important].

(Female, 29 years old, single with one child)

As we can see, nowadays, marriage doesn't matter that much [...] But for sure if the child is brought up in such a family... [people] ask. You know, yes? When there is a mum and dad who are married, [they] have the same surname.

(Female, 27 years old, married with one child)

4. No Autonomy – which would constitute lack of strategy per se, or a strategy of passive waiting for the external support. It assumes relying on other people's decisions rather than on making any active choices.

Examples:

My parents insisted on me to go to work, because after finishing school I stayed at home for a year and did nothing. I got a nice job and now I cannot imagine not working.

(Female, 26 years old, single without children)

[Laugh] My, my dream job... I don't know. Maybe one day I will find one. At the moment I haven't found one yet, but maybe when I will raise my children, I will start something on my own. I do not know.

(Female, 29 years old, married with two children)

Frankly, I don't even know what I would prefer, because on the one hand I would like to stay at home if my husband would earn so much that I could only look after the house and children, but on the other hand I know that I would miss working.

(Female, 26 years old, single without children)

We also investigated two sub-strategies (Figure 2):

- A. Difficult Autonomy – describing individuals who realize that there is a significant lack of autonomy in their career strategy and therefore struggling with this realization. This realization might constitute a beginning of the search for the Full Autonomy, if the person who reflects on it starts to develop solutions and ideas for gaining independent life. We describe it as Full Autonomy subcategory (1A).

Examples:

I [started studying various] degrees and I still don't know what I would like to do in my life. I am calm that I don't have to worry about the finances so far, but I would like to do something because of stupid boredom. Because... I'm just sitting and I'm bored. Ymm... And now I signed up to another makeup school. Well, maybe it will work, but I'm not sure either.

(Female, 29 years old, single with one child)

Every day [my kids] set requirements for me. Not only them, my husband too. We know everyone would like you to be 100% efficient and... and 100% amazing. And that at home everything would work and shine. What about the job? [...] You go [to work] for 9 hours, then you come back [home], cook... You should cook, clean and take care of children. [...] Thus, there are daily requirements being made. Well... But if you would worry about all this, you would be worn-out.

(Female, 29 years old, married with two children)

- B. Insta-Autonomy – absent in the Skewes concept²⁵, however quite significantly present in the research data collected by the authors of the presented research. The Insta-Autonomy strategy is based on seeking operators of the Relatedness of one's own work in the eyes of others. Those are a very particular Relatedness operators – the so-called “Likes” and “Stars in reviews”. It is a strategy that includes proficiency in navigating a digitized environment, a strategy of informational competence in accordance to the cyber-reality actions combined with the fluency in building relationships in a virtual world. This strategy goes beyond gender stereotypes, therefore we define it as a sub-strategy

25 *Ibidem*.

of a Full Autonomy (1B). However, we do not define it as fully mature mode. It is rather a strategy built on the assumption that dreams come true. The strategy adopted from celebrities, inspired with Insta-Life presented by idols and role-models of a young generation.

Combined with growth, hard work, motivation and actual search for opportunities this strategy might result in building ambitious but realistic aspirational plans for the future. When dreams and ambitions are no longer foggy and distant, when they become operationalized, planned choices, taking into account the political, social and economic circumstances in which young Polish women live, this may become a Full Autonomy. Without a time bound realistic plan, this strategy remains however just an Insta-Dream dreamed in virtual reality.

Examples:

Future dream job? I [...] wanted to open my hairdresser's school to be able to teach girls there, or I wanted to [...] do hairstyles, but for more famous people, not for ordinary people.

(Female, 23 years old, single with two children)

When my friends post photos, many of them are just 'so perfect'. Perfect smiles, perfect hairstyle, makeup etc. No place for natural look. So insta-genius. Yes, because generally when I upload [pictures] they are like this. Maybe it is a kind of self-admiration. It annoys me a little that these photos must be brilliant to have more value. If likes are what counts, then this picture pays off.

(Female, 18 years old, single without children)

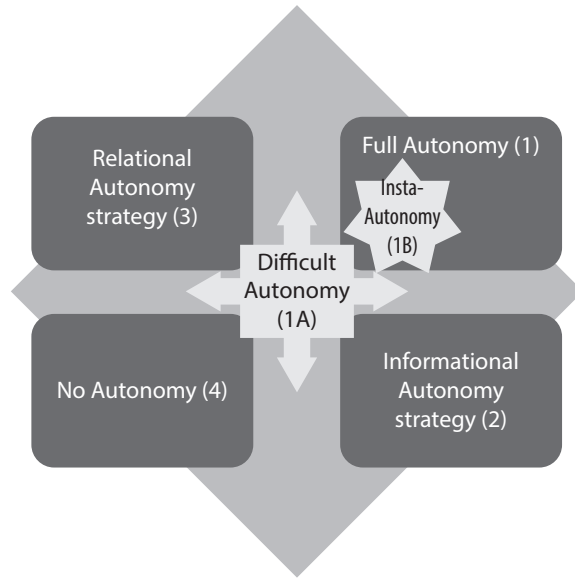


Figure 2. Two sub-strategies in the process of entering the labour market

Source: own, based on conducted study.

Sometimes it might be necessary to go from Insta-Autonomy through Difficult Autonomy to reach Full Autonomy.

Discussion

The goal of the analysis was to understand how the constructs of Autonomy, Competence, and Relatedness emerged during interviews focused on entering adulthood, building independence and entering the labour market process. The authors investigated the young women's experience of self-determination in becoming active professionals. The main question was focused on the differences in the emergence of these constructs among participants while referring to different levels of perceived Autonomy.

Certainly, individual differences in perceived autonomy play an important role in this process, greater perceptions of autonomy relate to greater intrinsic motivation, satisfaction, and well-being²⁶. However, searching for labour market opportunities is conditioned by an externally imposed evaluation, making it low in autonomy according to Deci and Ryan's definition²⁷.

26 E.L. Deci, R.M. Ryan, *The "what" and "why" of goal pursuits...*; M.C. Skewes et al., *Absent autonomy...*

27 E.L. Deci, R.M. Ryan, *Intrinsic motivation and self-determination in human behavior*, Plenum Press, New York 1975, <http://dx.doi.org/10.1007/978-1-4899-2271-7>; E.L. Deci, R.M. Ryan, *The "what" and "why" of goal pursuits...*

Conclusion

This research contributes to the wider discussion on gender in the workforce and in shaping the economical and socio-psychological status of women, and to the literature on gender studies. The authors analyzed the search for Autonomy in a low-autonomy situation investigating the youngest generation of females while introducing their choices and strategies into an everyday economic and professional context.

Because the context of entering the labour market, being evaluated (selected) is inherently low in autonomy²⁸, providing support for competence and relatedness needs during the whole process may be crucial for self-determination. This also means that becoming an independent, fully grown professional may be a process of going from Absent Autonomy to Full Autonomy. Promoting a self-determined process of labour market participation may be particularly important for enhancing the advancement of young women's professional development.

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28 E.L. Deci, R.M. Ryan, *The "what" and "why" of goal pursuits...*; M.C. Skewes et al., *Absent autonomy...*

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Abstract

The Paper presented here examines a part of findings of the research project "Polish Women Entering Adulthood". The authors focus in particular on adulthood patterns accompanying young women entering the labour market. The theoretical foundation of the analysis is Deci and Ryan's Self-Determination Theory, however, the authors of the study also referred to modern and innovative developments of this concept.

The research conclusions contribute to the discussion on building new lifestyles and the professional development opportunities for young Polish women. Important elements of this process are the views of young women on the socio-psychological conditions of their development, as well as on the factors shaping their professional environment. The data analyzed in this paper gives us a micro-scale picture of the lifestyle of the youngest generation of female employees entering the labour market. This is therefore the analysis of the socio-political dynamics of change facilitated on a day-by-day scale by the youngest generation of professionals. Public policy makers will find this study a useful source of information on the professional aspirations of the youngest generation of women building the future shape of the Polish economy and labour market.

Keywords: young women, entering the labor market, Self-Determination Theory, Insta-Autonomy, Difficult Autonomy, Full Autonomy

Beyond gender role stereotypes – the changing view of women in IT managerial positions

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Introduction

Information Technology is rapidly changing the world; it has significantly changed the way we do things, and the way we communicate with people all over the world. IT has also advanced the teaching system used at all levels of education. The gradual transformation of the IT industry has entered all spheres of life.

However, inequality between women and men has persisted in terms of hiring and retention of women at all levels of information technology (IT). This accounts for the low number of girls who have had an understanding of computer modules in schools, to the low percentage of women/females who take up any IT course at an undergraduate level and more visibly the lack of females in excellent organisational and academic positions. Moreover, the belief exists that women are naturally equipped for less intense IT professions. It now has seemingly become a man's world due to the low participation of women in this sector. The situation is no different in the engineering sector.

Gender indifferences in IT careers seem to be affecting the competitiveness of countries and companies globally. The presence of women in IT jobs is quite low. Adding to that, in Poland only 13% of IT students are women. In technological corporations there are fewer of them. The lack of IT specialists in Poland is assessed at 50,000 jobs and in Europe a shortage of 1 million is predicted by 2020¹.

The attraction of skilled and competent women to traditionally male-dominated occupations, and their retention, have now become a great concern for today's organizations. Not enough is known about the challenges faced by women professionals

1 Forum Akademickie, *Rusza największy program wspierający kobiety w informatyce "IT for SHE"*, <https://forumakademickie.pl/news/rusza-najwiekszy-program-wspierajacy-kobiety-w-informatyce-it-for-she/> (accessed: 10.12.2019).

who possess the credentials, skills and knowledge that would allow them to be considered, alongside their male counterparts for top-ranking positions. While, statistically, figures show an increase in women's representation in the Science, Engineering and Technology domain, academic research is yet to explore in greater depth both the reasons for women's continuing challenges they face at senior levels and their work experiences. The experiences of women in gender-atypical work contexts (e.g. information technology (IT) firms) continue to garner scholarly attention, given the rise in women entering non-traditional work domains² and the many challenges faced by them in such contexts³. The main objective of the following paper is to identify the barriers for women in IT managerial positions. This paper intends to fill this research gap considering the context of the Polish market and women in IT managerial roles.

IT industry as highly gendered

The IT industry is mainly categorized as a knowledge intensive industry. Although at first glance the IT profession appears "gender neutral"⁴, where men and women play equal and impartial roles, irrespective of gender, and work expectations are set without regard to gender⁵, the profession is nonetheless "gendered"⁶. Bhattacharjee and Takruri-Rizk state that the IT culture is characterized by competitiveness and individualism, and is sexualized and gendered, with women employed in such organizations often having to adjust and fit into the male-dominated work culture⁷. Gender imbalance is still a key issue in the industry⁸. Internet pioneer Martha Lane Fox identified the under-representation of women in technology companies

- 2 J.E. Wallace, *Gender and supportive co-worker relations in the medical profession*, "Gender, Work & Organization" 2014, vol. 21, no. 1, pp. 1–17.
- 3 O. Kyriakidou, *Fitting into technical organizations? Exploring the role of gender in construction and engineering management in Greece*, "Construction Management and Economics" 2012, vol. 30, no. 10, pp. 845–856.
- 4 L. Miller et al., *Saying welcome is not enough: women, information system and equity in work*, "Career Development" 2000, vol. 5, no. 7, pp. 379–389.
- 5 S. Jayaweera, T. Sanmugam, L. Wanasundara, *Information and communication technologies and gender in Sri Lanka*, Institute of Social Studies Trust, New Delhi 2006; G.P. Sudhakar, A. Farooq, S. Patnaik, *Soft factors affecting the performance of software development teams*, "Team Performance Management" 2011, vol. 17, no. 3, pp. 187–205.
- 6 D.M.W. Kovacs, M. Ryan, A. Haslam, *The glass-cliff: women's career paths in the UK private IT sector*, "Equal Opportunities International" 2006, vol. 25, no. 8, pp. 674–687.
- 7 S.D Bhattacharjee, H. Takruri-Rizk, *Gender segregation and ICT: an Indo-British comparison*, "International Journal of E-Politics" 2011, vol. 2, no. 1, pp. 45–67.
- 8 A.M. Balcita, D. Carver, M.L. Soffa, *Shortchanging the future of information technology: the untapped resource*, "SIGCSE Bulletin" 2002, vol. 34, no. 2, pp. 32–35; G. Valenduc, P. Vendramin, *Work organisation and skills in ICT professions: the gender dimension*, [in:] *Proceedings of ICT, the Knowledge Society and Changes in Work*, Den Haag 2005.

as a great concern during her recent Richard Dimbleby public lecture broadcast on the BBC⁹. The social constructionist perspective also shows the social construction of IT as a male domain that is interpreted as incompatible with the social construction of women's identity¹⁰. Not surprisingly, STEM industries face the common issue of attracting and retaining women as an untapped resource¹¹.

Poland ranks high, fifth among European countries, in terms of the number of registered enterprises from the ICT sector, which is presented in Table 1.

Table 1. Number of registered companies from ICT sector

Country/year	2008	2009	2010	2011	2012	2013	2014
Great Britain	132,943	–	128,957	–	–	–	163,325
France	–	69,900	95,204	94,627	108,515	126,705	131,835
Italy	108,507	105,331	104,614	103,239	103,075	101,893	102,330
Germany	70,134	71,252	74,973	80,767	82,554	86,378	97,972
Poland	42,833	48,517	52,566	57,887	63,462	69,169	76,302
Holland	30,898	33,998	47,953	51,135	55,825	70,914	73,131
Spain	–	–	44,222	45,095	48,986	49,863	52,204
Sweden	39,215	40,041	41,876	43,925	44,186	43,903	44,913
Romania	19,519	19,190	17,157	16,127	17,318	18,188	19,485
Austria	13,617	13,466	14,420	14,798	15,088	15,388	15,795
Slovakia	2,906	1,512	9,847	11,719	11,838	13,022	14,324
Denmark	10,624	10,797	11,650	12,396	12,733	13,074	13,619
Portugal	12,408	12,052	11,747	12,004	12,035	12,680	12,975
Norway	12,113	11,345	11,237	11,215	11,546	11,817	11,939
Greece	–	–	–	9,054	8,939	8,975	9,455
Bulgaria	5,752	7,126	7,279	7,685	8,228	9,024	9,452
Finland	7,402	7,344	7,517	7,679	7,825	8,130	8,185
Slowenia	4,162	4,703	5,170	5,422	5,676	6,091	6,614
Croatia	4,432	4,879	5,111	5,134	5,187	5,438	5,630
Latvia	2,559	2,780	3,151	3,406	4,391	5,063	5,432
Lithuania	2,415	2,270	2,532	2,779	3,435	3,818	5,127
Estonia	1,849	1,394	2,266	2,731	2,917	3,364	3,527
Luxemburg	1,554	1,618	1,694	1,755	1,838	1,960	2,054
Macedonia	–	–	–	947	1,065	1,143	1,170

Source: *Perspektywy rozwoju polskiej branży ICT do roku 2025*, <https://www.parp.gov.pl/component/publications/publication/perspektywy-rozwoju-branzy-ict-do-roku-2025> (accessed: 2.01.2020).

- 9 M.L. Fox, *Dot everyone – power, the internet and you*, Richard Dimbleby Lecture, 2015, March 30, www.bbc.co.uk/mediacentre/speeches/2015/martha-lane-fox-dot-everyone (accessed: 10.11.2019).
- 10 M.A. Lemons, M. Parzinger, *Gender schemas: a cognitive explanation of discrimination of women in technology*, "The Journal of Business and Psychology" 2007, vol. 22, no. 1, pp. 91–98.
- 11 J.L. Glass et al., *What's so special about STEM? A comparison of women's retention in STEM and professional occupations*, "Social Forces" 2013, vol. 92, no. 2, pp. 723–756.

The above data show the great potential of this sector, both for economic growth and directly for employment. The large number of enterprises is a potential on the basis of which further international successes of Polish entrepreneurs can be built. Polish companies constitute around 7.6% of the total number of enterprises operating in the sector in the European Union. This emphasizes the importance of Polish companies both on a national scale and from a European perspective. The dynamics of the number of enterprises also allows for the forecast that Poland's position on the international arena will strengthen. The average annual growth of the studied variable over the years 2009–2014 was over 10.1% (CAGR¹²). This gives Poland the seventh place in terms of average growth dynamics among all the analyzed European countries. It is worth noting, however, that among the 10 countries with the largest number of enterprises, Poland came in third. The growing number of enterprises from the ICT sector is also in line with increasing the industry's potential to generate innovative solutions of international importance.

Gender stereotyping – literature review

Stereotypes are “beliefs about the characteristics, attributes, and behaviors of members of certain groups”¹³. Gender stereotyping of the managerial role occurs when the characteristics believed to be necessary to fulfil the role are ascribed to one sex¹⁴. Attributes such as achievement orientation, forcefulness and strength in decision-making are commonly ascribed to men, and these traits are considered to be essential to fulfil jobs gender-typed as male, such as management and leadership roles¹⁵.

Research spanning three decades has shown that management is strongly associated with a male gender type, with male managers and male management students in particular believing that males are more likely to have the necessary characteristics, attitudes and temperament to achieve managerial success.

12 *Perspektywy rozwoju polskiej branży ICT do roku 2025*, <https://www.parp.gov.pl/component/publications/publication/perspektywy-rozwoju-branzy-ict-do-roku-2025> (accessed: 2.01.2020).

13 J.L. Hilton, W. von Hippel, *Stereotypes*, “Annual Review of Psychology” 1996, vol. 47, pp. 237–271.

14 V.E. Schein, *A global look at psychological barriers to women's progress in management*, “Journal of Social Issues” 2001, vol. 57, no. 4, pp. 675–688; V.E. Schein, *Women in management: reflections and projections*, presented at the 26th International Congress of Applied Psychology, Athens, 17 July 2006.

15 K. Lyness, M. Heilman, *When fit is fundamental: performance evaluations and promotions of upper-level female and male managers*, “Journal of Applied Psychology” 2006, vol. 91, no. 4, pp. 777–785.

The pervasive nature of this phenomenon is illustrated clearly in an early study by Brenner, Tomkiewicz, and Schein¹⁶, who reported that the attitudes of male middle managers in their sample were found to be similar to the attitudes held by male managers more than a decade prior¹⁷. A disturbing finding in this research was that the relationship between gender stereotypes and male attitudes toward the requisite management characteristics had actually strengthened.

Gender stereotyping has also been shown to have an impact on the evaluation of women's performance when they have achieved a management role. Eagly and Karau¹⁸ considered that there was a significant incongruity between the gender roles often attributed to women, and the roles considered to be appropriate for a leader.

Prejudicial attitudes toward women were the result of this incongruity, which often took the form of negative assessment of women to fill leadership roles¹⁹. Recent findings have clearly illustrated that there continues to be a perception of a lack of fit between the requirements of line management roles and the stereotypical attributes ascribed to women, with women in these roles receiving lower performance ratings than either their female colleagues in staff jobs, or their male counterparts in either line or staff jobs²⁰. This suggests that particular management roles, such as line management, are more strongly associated with the characteristics attributed to males, rather than females.

These are overt examples of how gender stereotyping perspectives can influence the career of female managers. There are also covert examples as suggested by a large Australian study into attitudes of opportunities within the financial industry workplace. It found that over a third of male respondents (37 per cent) believed that women were less committed to their careers "because they have babies and leave the company while their children are young"²¹. Only 19 per cent of female respondents agreed with this statement. Such attitudes toward women will

16 O. Brenner, J. Tomkiewicz, V.E. Schein, *The relationship between sex role stereotypes and requisite management characteristics revisited*, "Academy of Management Journal" 1989, vol. 32, no. 3, pp. 662–669.

17 V.E. Schein, *The relationship between sex roles stereotypes and requisite management characteristics*, "Journal of Applied Psychology" 1973, vol. 57, no. 2, pp. 95–100; V.E. Schein, *Relationship between sex role stereotypes and requisite management characteristics among female managers*, "Journal of Applied Psychology" 1975, vol. 60, no. 3, pp. 340–344.

18 A.H. Eagly, S.J. Karau, *Role congruity theory of prejudice toward female leaders*, "Psychological Review" 2002, vol. 109, pp. 573–598.

19 *Ibidem*.

20 K. Lyness, M. Heilman, *When fit is fundamental...*

21 L.V. Still, *Glass ceilings and stick floors: barriers to the careers of women in the Australian finance industry*, Human Rights and Equal Opportunity Commission, Commonwealth of Australia, Canberra 1997.

be likely to underpin decisions relating to selection, professional development and promotion possibilities. However, these findings illustrate a commonly held view, which does not necessarily reflect the reality of the majority of women in contemporary management positions.

Gender stereotypical attitudes

There is now a growing recognition that a relatively large proportion of women in management roles are remaining childless, or even “partnerless”²² in order to continue on in their senior or executive management career. One study in the USA has reported that almost half (49 per cent) of women classified as high achievers were childless. This was in stark contrast to male colleagues, where only 19 per cent were childless²³. The above results outline how gender stereotyping can influence the career advancement of women in management. There is evidence that negative stereotyping by others is a powerful barrier to the career advancement of women in management. Such attitudes are pervasive and deeply entrenched and continue to exert an impact on women’s career advancement in managerial roles.

It would appear that the stereotypes and preconceptions of women’s roles and abilities, rather than the actual abilities and qualities women possess have been instrumental in creating barriers to women’s career advancement. Underpinning such stereotypical views are attitudes and beliefs that management is a male domain.

This theory was clearly elucidated in the seminal book *Women Managers: Travellers in a Male World*²⁴, and similar restraints are reported in research almost two decades later²⁵.

It is worth remembering that such views have the capacity to impact the career advancement of women in management roles from recruitment and selection practices, training opportunities, allocation of roles, overseas placements, through to decisions related to promotion opportunities.

This paper proposes that gender stereotypical views may also affect perceptions about future representation of women in senior leadership roles, if men, rather than women, continue to be seen as a more appropriate person-job fit in senior

22 G.J. Wood, J.N. Newton, *Childlessness – a choice among women in Management?*, “Gender, Work and Organization” 2006, vol. 3, no. 4, pp. 338–358; G.J. Wood, J.N. Newton, *Facing the wall’ – ‘equal’ opportunity for women in management?*, “Equal Opportunities International” 2006, vol. 25, no. 1, pp. 8–24.

23 S. Hewlett, *Baby Hunger: The New Battle for Motherhood*, Atlantic Books, London 2002.

24 J. Liu, D. Wilson, *The unchanging perception of women as managers*, “Women in Management Review” 2001, vol. 16, no. 4, pp. 163–173.

25 J. Marshall, *Women Managers: Travellers in a Male World*, John Wiley & Sons, Chichester 1984.

management roles. It is argued that given the pervasive nature of gender stereotyping in attitudes toward the role of management that predictions are the long-term possibility of women filling senior management roles in equal proportion to their male colleagues, will still be influenced by a “think manager-think male” perspective.

Although it has been reported that male managers’ attitudes toward women in management have remained stable over previous decades, there has been a change in the attitudes of women toward women in management roles as evidenced by a reduced tendency to gender type the managerial position²⁶ and a propensity to consider that women and men are both capable of possessing characteristics that are appropriate to the management role.

Along with the increase in the number of women entering management at junior and middle management level, there is a heightened level of awareness that exists over the last decade toward a more politically correct environment, particularly in relation to employment, gender issues and legal repercussions arising from inappropriate organisational behaviour. For example, it is now not unusual for women to bring gender discrimination charges against employers – and win. Successful outcomes have resulted in millions of dollar payouts in settlement costs²⁷. This suggests that female managers may have a more confident outlook regarding the suitability of women in management roles.

Job embeddedness

This study draws upon JE (job embeddedness)²⁸ as a theoretical frame to explain the specific strategies used by women on IT managerial to embed and stay in their jobs. Mitchell et al. state that “people stay if they are satisfied with their jobs and committed to their organizations and leave if they aren’t”²⁹. There are women who stay in gender-atypical contexts, facing the dilemma of adverse gender expectations at work, even though it comes at a social and personal cost of being part

26 K.A. Dodge, F.D. Gilroy, L.M. Fenzel, *Requisite management characteristics revisited: two decades later*, [in:] N. Struthers (ed.), *Gender in the Workplace*, “Journal of Social Behavior and Personality” 1995, vol. 10, special issue, pp. 253–264.

27 E. Porter, *UBS ordered to pay \$29 million in sex bias lawsuit*, “The New York Times” 2005, 7 April.

28 E. Zhao, L. Liu, *Comments on development of job embeddedness about study on turnover and exploration into application in enterprises*, “Asian Social Science” 2010, vol. 7, no. 6, pp. 63–70.

29 T. Mitchell et al., *Why people stay: using job embeddedness to predict voluntary turnover*, “Academy of Management Journal” 2001, vol. 44, no. 6, pp. 1102.

of a technical/engineering diaspora. For example, Gherardi and Poggio³⁰ show that women in male-dominant work employ the strategy of behaving “like a man” to get ahead in their jobs. These strategies are not mere random behaviors but consciously developed by women to suit the demands of their work. In their pioneering work, Mitchell et al.³¹ defined JE as encompassing a broad collection of influences on employee retention. Although this theory is relatively young in the management discipline³², it has contributed significantly to understanding human mobility at work. The theory discusses the dimensions of link, fit and sacrifice existing within an individual’s organization and community that can be likened to a web that works toward enmeshing the individual to stay in the organization³³.

Research methodology

Research problem and questions

The main purpose of this paper is to fill the research gap on indicating what are the barriers for women in IT managerial positions. To meet the purpose of the paper and to answer main research question the study focuses on addressing the following specific research questions have been asked:

RQ1: What career strategies did women use to get to the top?

RQ2: What barriers did women have to overcome to be able to pursue their career in IT?

RQ3: What stereotypes did women face when moving up for a managerial position?

This research followed the recommendations of Dubé and Paré³⁴ regarding the protocol development and expert validation of the interviews. Three IT professors validated the instrument in the period of January to February 2019. Following minor revisions to the wording of the questions, the main study was carried out between April and May 2019.

30 S. Gherardi, B. Poggio, *Creating and recreating gender order in organizations*, “Gender & Society” 2001, vol. 4, no. 2, pp. 139–158.

31 T. Mitchell et al., *Why people stay...*

32 D.C. Feldman, T.W.H. Ng, *Careers: mobility, embeddedness, and success*, “Journal of Management” 2007, vol. 33, no. 3, pp. 350–377.

33 M. Zhang, D.D. Fried, R.W. Griffith, *A review of job embeddedness: conceptual, measurement issues, and directions for future research*, “Human Resource Management Review” 2012, vol. 22, no. 3, pp. 220–231.

34 L. Dube, G. Pare, *Rigor in information systems positivist case research: current practices, trends and recommendations*, “MIS Quarterly” 2003, vol. 27, no. 4, pp. 597–635.

The following research is based on 10 semi-structured interviews with women who occupy IT managerial positions. Participants were self-recruited following a call for participation in research posted to graduate students at Warsaw School of Economics.

The research project aimed to assess success factors associated with women pursuing careers in IT managerial positions. Women were asked to reflect the influence of their education on their career, the importance of mentorship, motives to choose a career in IT, strategies that helped to get to their current position and barriers that they had to overcome particularly to pursue their career.

The following research discusses mainly barriers for women in their career advancement. The production of data followed GDPR guidelines. The overall methodological approach was based on an understanding of fieldwork as an interactional accomplishment, and a view of research as a collaborative partnership between the researcher and the researched. The interviews were run for two months and each interview lasted around 30 minutes.

Table 1. Profile of the interviewee

Interviewee	Education background	Employment sector	Age	Marital status	Years in the IT business
A1	Bachelor degree – Technological	Construction company	41–45	Single	Above 16 years
A2	Management degree	IT telecommunication	36–40	Single	From 11–15
A3	Economics	Banking	36–40	Married	From 11–15
A4	Linguistics, Management	Banking	36–40	Single	From 11–15
A5	Banking and Finance	Banking	36–40	Married	From 11–15
A6	Management	Banking	Below 30	Married	Up to five years
A7	IT	Banking	30–35	Single	From 11–15
A8	Economics	Banking	36–40	Married with 2 kids	From 11–15
A9	Management	Banking	30–35	Single	From 11–15
A10	Finance and Banking	Telecommunication	30–35	Single	From 6–10

Source: own development.

The data were analyzed using content analysis, as recommended by Bardin³⁵. What emerged is that 80% of interviewee had no IT background, 60% of them were single.

35 L. Bardin, *Content analysis*, Edições, São Paulo 2011.

Research results

Career strategies

As is evident in the literature, the IT culture globally is competitive, individualised, sex segregated, gendered and often offering a chilly climate for women in terms of organisational culture. IT workplaces are not always ideal for women's progression and well-being in the sense that women often have to "adjust" and fit into a male-dominated work culture³⁶.

Lemons and Parzinger state that women who stay in IT professions have the strongest non-traditional gender schemas compared to women from the general public, especially in IT project work, where men outnumber women³⁷.

Successful performance by women, particularly in masculine and demanding situations, is perceived as a freak phenomenon due not to their real abilities but to other external factors³⁸. Similarly, Rigg and Sparrow³⁹ indicated that women are caught between two forms of male prejudice. When women behave with more feminine qualities, men like them but perceive them as unintelligent and incompetent. At the same time, when women behave and perform assertively men see them as intelligent and competent, but they are disliked for being unfeminine⁴⁰.

To answer the first research question, women were asked what were their career strategies they used to get to the top.

A1 respondent said: "I had no strategy to reach that position. The bosses recommended me for the right positions with the right person. Successive positions in the company directed me to the position in which I am now". A2 respondent adds: "Opportunities appeared, I took them but it was connected with hard work and determination in achieving my goals". The answer is in line with A7 respondent

36 M. Griffiths, K. Moore, H. Richardson, *Celebrating heterogeneity? A survey of female ICT professionals in England*, "Information, Communication and Society" 2007, vol. 10, no. 3, pp. 338–357; N. Gupta, *Rethinking the relationship between gender and technology: a study of the Indian example*, "Work Employment and Society", December 2015, vol. 29, no. 4, pp. 661–672.

37 M.A. Lemons, M. Parzinger, *Gender schemas*...

38 R.M. O'Neill, *Gender and race in mentoring relationships: a review of the literature*, [in:] D. Cluttbuck, B.R. Ragins (eds), *Mentoring and Diversity: An International Perspective*, Butterworth-Heinemann, Oxford 2002, pp. 1–22.

39 C. Rigg, J. Sparrow, *Gender, diversity and working styles*, "Women in Management Review" 1994, vol. 9, no. 1, pp. 9–16.

40 *Ibidem*.

who says: "I have always had clear objectives, which I want to achieve. Consequence of actions and diligence of executed work brought me to the current position". A10 echoes: "chance, hard work and good opportunities".

The respondents' narratives revealed that task orientation, hard work, taking challenges and risks at work were the major work expectations of the IT industry. These expectations are compatible with masculine traits, as characterized by the masculine terms of authoritative, tough, individualistic⁴¹, aggressive, persistence, competitive, assertive⁴², masculine, task orientation⁴³.

Even though the women do not want to admit directly they had a strategy, it is said between the lines. Like A8: "I didn't have a strategy. I do what I like, I set objectives, but what I was able to achieve was hard work. I always repeat to myself that successful people do what other do not want to do". A3 said: "I always wanted to learn, develop. I was applying for positions inside the company for which I did not have the qualifications. But my bosses allowed me to learn, they believed in me that I will manage". A5 adds: "I was promoted because of the job well done, but when I saw I am not learning anything new I was either changing to a different position or applying for a new one". A7: "I was staying in the company up to the moment where I felt I learn, I develop. When I felt it has stopped I was changing a company".

It can be stated that gendered work role expectations, emanating from masculine norms and ideologies in IT firms, compel women to intentionally engage in gendered strategies if they are to stay and be promoted in their positions. Some women adopted masculine characteristics. The respondents did this in various ways, by being task oriented and undertaking more challenges at work.

To sum up the preceding discussion, findings from the study show three different gendered strategies used by women not only to survive but to be promoted in gender-atypical work environments. In the first strategy, some women adopted masculine characteristics. In the second, women used a hybrid approach by being conscious of required gender roles in different situations. The third was demonstrating self-confidence, where women worked hard and showed extraordinary performance in order to develop their self-confidence.

41 M. Syed, P. Murray, *A cultural feminist approach towards managing diversity in top management teams*, "Equal Opportunities International" 2008, vol. 27, no. 5, pp. 413–432.

42 L. Karakowsky, K. McBey, Y. Chuang, *Perception of team performance: the impact of group composition and task based cues*, "Journal of Managerial Psychology" 2004, vol. 19, no. 5, pp. 506–525.

43 C. Erwin, *Social identity in diverse workgroups: an empirical investigation*, "Research Journal of International Studies" 2010, vol. 15, pp. 69–76.

Gender stereotypes

To answer the second and third research questions, women were asked what barriers they had to overcome in getting their position. In general, research on gender stereotypes reveals that people consider women to have more communal qualities (e.g. are more gentle, kind, supportive, expressive, affectionate, and tactful) and men more agentic qualities (e.g. are more assertive, competitive, daring, and courageous)⁴⁴. Despite the considerable increase in the proportion of women managers over this period of time and the emergent call for a greater emphasis on feminine characteristics in management, men and women of varying age, education, and work experience still described a good manager as possessing predominantly masculine characteristics.

What is quite interesting, women do not refer directly to stereotypes but instead say for example A1: "Being a woman means that you have to work/prove more than men to be considered a competent person".

We can say that the attitude is changing as A3 respondent says: "I didn't have to overcome any barriers, I was meeting bosses who believed in women, even though they were men themselves". A9 respondent expresses the same view, saying: "No barriers, I had very good bosses, who trusted me, gave a freedom in executing tasks. They were available when I needed them. They were open for new ideas". A4 and A10 also talk about none barriers. Only four respondents directly talk about stereotypes: A5 mentions: "When women talk men seem do not really listening to it" and A6: "Role of women in IT is no regarded seriously. Knowledge has to be proven all the time. As an IT project manager you have to prove your knowledge, customers will go to the IT analyst or IT architect (assuming both are men) to confirm that a woman IT manager is right".

A7 respondent is in line with A6 respondent: "In my opinion a woman has to prove her competences all the time, unless she does not prove it she is not regarded as competent amongst men colleague or clients. I had to work a lot to gain respect". A8 respondent adds: "men do not want women in my company, especially on such positions". A4 respondent adds that "a strategy that worked out in her case is when a woman can move away the elements of her femininity and change it for professionalism, adjust style of behaviour to being in a corporate environment".

Why have managerial stereotypes persisted in placing primary emphasis on masculine characteristics? Powerful forces serve to perpetuate existing stereotypes, whatever group of people is being stereotyped and whatever the content

44 J.E. Williams, D.L. Best, *Measuring sex stereotypes: A multination study*, Sage, Newbury Park 1990.

of its stereotype may be⁴⁵. In the case of managerial stereotypes, men and women who chose a career path may not seek to be managers if they do not see themselves as fitting the prevailing stereotype of managers. In addition, organizations may only select applicants for managerial positions whom they see as adhering to managerial stereotypes. Further, organizations tend to exert strong pressures on their members to conform to ways acceptable to other members, particularly those in power.

Conclusions

Being a minority group in the IT sector, professional women face challenges and barriers. Gender inclusivity in the sense of involving more women in the workforce is nowadays considered to be a wise business decision. Earlier, it was considered to be corporate social responsibility on part of the companies. This is no longer the case. According to the *NASSCOM Report*, the reason behind this change in attitude is due to the fact that women are actually contributing significantly in the development of a company. Women are a vital part of the workforce and their participation ensures continuous growth for the organization. Women bring in unique qualities like emotional intelligence and empathy in a decision-making process. There is direct correlation between employment of women and economic well-being of a nation⁴⁶.

This research was designed to explore women's efforts not only to stay in gendered, and hence challenging, environments but also to be promoted in such a setting. Findings show that the IT industry is predominantly masculine and women are expected to perform roles similar to their male counterparts. The study identified different strategies used by women to compromise their gender identities and link and fit with their work environments. It is hoped that this study reveals the importance of protecting the pride of women engineers and the significance of retaining them. Survival and sustaining employment in gender-atypical work contexts is challenging for women irrespective of the industry they work in and the issues they experience. Hence, academics and practitioners can create a more positive experience for women in male-dominant work contexts by understanding the strategies women use to link and fit with the organizational environment.

45 D.L. Hamilton, J.W. Sherman, *Stereotypes*, [in:] R.S. Wye Jr., T.K. Srull (eds), *Handbook of social cognition*, vol. 2, applications, Erlbaum, Hillsdale 1994, pp. 1–68.

46 *NASSCOM Report. Gender inclusivity and diversity in the Indian IT-BPO industry*, NASSCOM, New Delhi 2008.

Such understanding and better work environments in gender-atypical work contexts are important for women who like challenges and who want to enter and stay in male-dominant occupations.

Managers of IT firms need to create positive work environments for their women employees that aid them to fit and link with their workplaces.

The present study has a number of limitations. The sample size is small, and the study scope is narrow, with an individual focus. The views of male counterparts and management of these selected organizations were not sought. Future research can include the perspectives of all parties to obtain a broader and more comprehensive picture. Another limitation is that the cultural dimensions of these organizations were not considered.

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Abstract

The attraction of skilled and competent women to traditionally male dominated occupations, and their retention, have now become a great concern for today's organizations. Not enough is known about the challenges faced by women professionals who possess the credentials, skills and knowledge that would allow them to be considered, alongside their male counterparts, for top-rank positions. Therefore, the purpose of the following paper is to identify and delineate the barriers for women in IT managerial positions. The research is based on 10 semi-structured interviews with women who occupy IT managerial positions. Participants were self-recruited following a call for participation in research posted to graduate students at Warsaw School of Economics. Findings show that the IT industry is predominantly masculine, and women are expected to perform roles similar to their male counterparts. The study identified different strategies used by women to compromise their gender identities and fit within their work environments.

Keywords: women in IT managerial positions, gender role stereotypes, competent women

The influence of lean-oriented team performance management practices on lean service requirements

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Introduction

Lean methodology is known for its process-oriented, value-stream mapping approach, in order to decrease all kinds of waste and to allow smoother team based workflow in a never-ending drive towards perfection¹. Bear in mind that no teamwork should ever be the cause of waste. Teamwork is necessary when a lean service is introduced, when a 5S tool is put into practice or when kaizen workshops are organized². However, it is not clear which lean-oriented teamwork practices can be universally observed with regards to typical team performance management (TPM) as presented by Armstrong and Aguinis³. When introducing teamwork, many western managers would like to emulate what they perceive to be as a source of advantage in other cultures, just like it is in Japanese firms⁴. As a matter of fact we can distinguish some of the aforementioned practices within process-oriented teams, kaizen workshops

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- 1 A. Chiarini, *Lean Organization: from the Tools of the Toyota Production System to Lean Office*, Springer-Verlag Italia, Milan – Heidelberg – New York – Dordrecht – London 2013; D. Locher, *Lean Office and Service Simplified*, CRC Press, Taylor and Francis Group, Boca Raton 2011.
 - 2 A. Chiarini, *Lean Organization ...*; D. Locher, *Lean Office ...*; D. Tapping, *The lean office pocket guide. Tools for the elimination of waste in the administrative areas*, MCS Media Inc., Chelsea 2005.
 - 3 M. Armstrong, *Armstrong's handbook of performance management. An evidence-based guide to delivering high performance*, Kogan Page, New York 2015; H. Aguinis, *Performance management*, Pearson/Prentice Hall International, Harlow 2009.
 - 4 C. Atkinson, S. Shaw, *Managing performance*, [in:] R. Lucas, B. Lupton, H. Mathieson (eds), *Human Resource Management in an International Context*, Chartered Institute of Personnel and Development, London 2006, p. 182.

or within quality circles. However, there is still little research on how team performance management (TPM) works at all⁵. Interestingly, employee performance management (EPM) is broadly presented in the HRM-oriented Polish literature and used in practice as a result of cultural individualism in Poland. Lean methodology goes against such typical EPM practices.

The aim of this paper is to present the current literature and the author's findings regarding the influence of lean-oriented TPM practices on lean service (LS) requirements within Polish service departments. In order to do this there was a need to identify how lean-oriented teamwork practices reflect the practices and stages of the universal TPM model as presented by Armstrong and Aguinis⁶. It also highlights the importance of EPM practices in lean-based TPM activities.

Team performance management (TPM) practices and lean-oriented teamwork

Performance management (PM) is a "continuous process of identifying, measuring, and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization"⁷. PM refers to the range of activities engaged in by an organization to enhance the performance of a target person or group, with the ultimate purpose of improving organizational effectiveness⁸. It involves performance reviews focusing on the future rather than the past⁹. The integration of performance levels (individual, team and organizational) means that team performance management also has an impact on the level of individual performance and on the level of organizational effectiveness¹⁰. In other words,

5 *Ibidem*.

6 M. Armstrong, *Armstrong's handbook...*; H. Aguinis, *Performance...*

7 H. Aguinis, *Performance...*, p. 3.

8 A.S. DeNisi, *Performance appraisal and performance management: a multilevel analysis*, [in:] K.J. Klein, S.W.J. Kozlowski (eds), *Multilevel theory, Research and Methods in Organizations*, Jossey-Bass, San Francisco 2000, pp. 121–156; also see D.N. Den Hartog, P. Boselie, J. Paauwe, *Performance management; a model and research agenda*, "Applied Psychology: An International Review" 2004, vol. 53, no. 4, pp. 556–569.

9 D.N. Den Hartog, P. Boselie, J. Paauwe, *Performance management...*

10 M. Armstrong, *Armstrong's handbook...*; J. Shields, *Managing employee performance and reward. Concepts, Practices, Strategies*, Cambridge University Press, Cambridge 2007; A. Pocztowski, *Zarządzanie zasobami ludzkimi. Strategie, procesy, metody*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2008, p. 252; S. Borkowska, *Strategie wynagrodzeń*, Oficyna Ekonomiczna, Kraków 2001, p. 195; G.B. Brumback, *Blending the "we/me" in performance management*, "Team Performance Management: An International Journal" 2003, vol. 9, no. 7/8, pp. 167–173.

there is a need to measure and manage the performance of individual employees in the hope of ultimately influencing the performance of the team or the entire organization¹¹. It is worth noting that the TPM literature presents a few stages of the aforementioned process as a continuous process with team and individual development activities at its core¹². Each stage consists of a few practices and if they are all set together in the correct order then they can influence the team's level of performance (Table 1).

Table 1. A typical set of TPM practices versus in-service lean-oriented teamwork practices with regards to the TPM stages

Stages	TPM practices	In-service lean-oriented teamwork practices
Prerequisite	• job descriptions • competencies needed to fulfill responsibilities	• process-oriented documents, i.e. Value Stream Mapping (VSM) • competencies/behaviors to cater for process needs • lean requirements preparation, e.g. visual management and control
Planning team performance	• setting objectives and tasks • performance outcome and measures (i.e. Key Performance Indicators, KPIs) • both individual and team performance improvement and development plans	• setting objectives and tasks by using the hoshin kanri process (i.e. keeping up with work standards, competency improvements) • KPIs e.g. Lead Time; % of JiT tasks, OPE indicators • avoiding measures of individual performance • team 5S audit plans • no. of innovations/ideas in terms of process performance improvements • team performance improvement by the usage of PDCA tool

11 A.S. DeNisi, *Performance appraisal...*, p. 123; D.N. Den Hartog, P. Boselie, J. Paauwe, *Performance management...*

12 M. Armstrong, *Armstrong's handbook...*; H. Aguinis, *Performance...*; D.N. Den Hartog, P. Boselie, J. Paauwe, *Performance management...*

Table 1 (continued)

Stages	TPM practices	In-service lean-oriented teamwork practices
Executing/Supporting team performance	• team/individual performance monitoring done by individuals and/or conducted by a manager • feedback transmitted between individuals and from a manager • self-assessment • coaching from a manager	• process-based team/individual performance monitoring of “what is being done” (i.e. quick standards review or how lean tools are used in practice) done by individuals and/or conducted by a manager (during gemba walking) • individual performance coaching from a manager (during gemba walking to solve work problems; kaizen process) • feedback transmitted between individuals and from a manager and team (employees moved around the process where needed)
Assessing/Reviewing team performance	• team performance assessment of “what was done” conducted by a manager; peer input assessment • team performance review of “how it was done” conducted by the team during a meeting with a manager • self-assessment • individual performance review and assessment done during a meeting with a manager	• process-based team performance assessment of “what was done” conducted by a manager • no individual performance assessment

Source: own study based on: M. Armstrong, *Armstrong’s handbook of performance management. An evidence-based guide to delivering high performance*, Kogan Page, New York 2015; H. Aguinis, *Performance management*, Pearson/Prentice Hall International, Harlow 2009; A. Chiarini, *Lean Organization: from the Tools of the Toyota Production System to Lean Office*, Springer-Verlag Italia, Milan – Heidelberg – New York – Dordrecht – London 2013; M. Imai, *Gemba kaizen. Zdroworozsądkowe podejście do strategii ciągłego rozwoju*, Wydawnictwo MT Biznes, Warszawa 2018; J.K. Liker, K. Ross, *Druga Toyoty do doskonałości w usługach*, Wydawnictwo MT Biznes, Warszawa 2018; J.K. Liker, G.L. Convis, *Druga Toyoty do lean leadership*, Wydawnictwo MT Biznes, Warszawa 2012; D. Locher, *Lean Office and Service Simplified*, CRC Press, Taylor and Francis Group, Boca Raton 2011; D. Tapping, *The lean office pocket guide. Tools for the elimination of waste in the administrative areas*, MCS Media Inc., Chelsea 2005.

The cycle of TPM stages is similar to its employee/individual performance management counterpart (EPM). It shows a close relationship of practices between TPM and EPM, although there are some constraints in building the bridge between these levels of performance. Brumback points out that managing individual and team performance meets the challenge of blending individualism with teamwork.

Parties that play their roles in TPM include individuals, the team and a manager who is more coach than judge¹³.

Bearing the above in mind we can highlight the lean-oriented teamwork practices found in the lean literature, which reveals that they have their counterparts in the typical TPM stages (Table 1). This is why they can be developed in the form of lean-oriented TPM.

Toyota doesn't believe in autonomous teams or lean groups without strong leadership¹⁴. Line management is responsible for objectives regarding work quality, costs, delivery and kaizen for workers at their workstations¹⁵. Locher's remarks on leadership in a lean service are helpful to single lean-oriented teamwork practices out¹⁶. He lists driving continuous improvement (Plan-Do-Check-Act – PDCA), delivering mentoring, gemba walking (i.e. to the workstation), performance measurement and recognition. Liker and Convis point out that a team leader is responsible for achieving and coordinating objectives (i.e. hoshin kanri) and everyday kaizen (continuous improvements)¹⁷. The team leader can influence team individuals, coordinate and monitor team objectives and coach workers. Building employee – team leader trust is key.

As far as the prerequisite stage is concerned preparing visual management and control principles becomes absolutely vital for the manager and workers in the industry, e.g. when it comes to the next stage of planning goals and tasks with regards to appointments between sales workers and customers¹⁸. It is also helpful to monitor appointments by simply crossing them off from the noticeboard. However, transactions are often hard to visualize. Chiarini also points out that Overall Professional Effectiveness (OPE) and its three indicators which includes availability, efficiency and quality can be adapted to the lean service¹⁹. Many other performance indicators regarding lean requirements can be met, including lead time, percentage execution of JiT (Just-in-Time), etc.

Supporting team performance is represented by a wide span of lean practices. Training Within Industries (TWI) is usually conducted by a superior and aims to improve the process by making the best use of people, equipment, materials,

13 G.B. Brumback, *Blending...*

14 J.K. Liker, K. Ross, *Druga Toyoty do doskonałości w usługach*, Wydawnictwo MT Biznes, Warszawa 2018, p. 423.

15 M. Imai, *Gemba kaizen. Zdroworozsądkowe podejście do strategii ciągłego rozwoju*, Wydawnictwo MT Biznes, Warszawa 2018, p. 55.

16 D. Locher, *Lean Office...*, p. 131.

17 J.K. Liker, G.L. Convis, *Druga Toyoty do lean leadership*, Wydawnictwo MT Biznes, Warszawa 2012, p. 178.

18 A. Chiarini, *Lean Organization...*

19 *Ibidem*, p. 151.

etc.²⁰ Leaders in a lean organization can coach, counsel, guide and tutor an employee. Such mentoring often occurs during one-to-one interactions between the leader and an individual²¹, by the usage of step-by-step improvements²².

According to Locher assessing team performance means using team-based measures of a single process whilst avoiding measures of individual performance due to lean requirements²³. As a consequence, there is no room for job descriptions, individual performance appraisal or pay for individual performance²⁴.

In spite of the many doubts about lean being used in the service sector, many organizations have already introduced this methodology²⁵, which derives from the lean requirements briefly presented in Table 4.

Methodology, findings and hypothesis verification

The research aim of this paper is to develop, verify and analyze the findings of a model which will reveal grouped sets of lean-oriented TPM practices, presented in the form of factors which influence lean service (LS) requirements. In order to do this there was a need to identify such lean-oriented teamwork practices that have their counterpart in the universal TPM process (Table 1). It is also worth highlighting that lean-oriented TPM practices still have much to do with practices regarding individual EPM.

Based on the aforementioned remarks we have four key research questions:

1. "Which sets of practices regarding lean-oriented teamwork can be grouped into mutually supporting factors?"
2. "Do these groups of factors refer to the stages of the typical TPM model approach presented by Armstrong and Aguinis?"
3. "Do the requirements regarding a LS form a single factor?"
4. "What is the impact of lean-oriented TPM factors on the LS factor?"

20 D. Locher, *Lean Office...*, p. 134.

21 *Ibidem*, p. 137.

22 R. Maurer, *Filozofia kaizen. Małymi krokami ku doskonałości*, Wydawnictwo Helion, Gliwice 2016.

23 D. Locher, *Lean Office...*, p. 140.

24 J.P. Womack, *Why are rewards tied to individual performance so dangerous?*, <https://planet-lean.com/womack-rewards-metrics-yokoten/> (accessed: 7.07.2019); W.J. Rothwell, J. Graber, N. McCormick, *Lean but Agile: Rethink Workforce Planning and Gain a True Competitive Edge*, Amacom, American Management Association, New York 2012, pp. 146–147; J.K. Liker, G.L. Convis, *Droga Toyoty...*, p. 219; D. Locher, *Lean Office...*

25 J.C. Chen, R.A. Cox, *Value Stream Management for Lean Office – A Case Study*, "American Journal of Industrial and Business Management" 2012, no. 2, pp. 18–21; J.K. Liker, K. Ross, *Droga Toyoty...*

With these questions in mind the following five hypotheses were developed:

- H1: Lean-oriented TPM factors are similar in comparison to those stages presented in the literature models by Armstrong and Aguinis.
- H2: There are employee-oriented TPM factors.
- H3: TPM factors as a whole influence the LS factor.
- H4: There are some independent TPM factors that affect the LS requirements regardless of other factors.
- H5: The number of years of lean influences the TPM-LS relationship.

The method used in creating factors is exploratory factor analysis (EFA) by generalized least squares (GLS) and Kaiser's normal varimax rotation. The application of this method was dictated by the use of secondary data (the author's database for the needs of verification of the impact of EPM on LS). By isolating the factors, the same method was always used throughout the paper. Based on Table 1 a set of in-service lean-oriented teamwork practices was chosen from a database regarding lean-oriented TPM practices (18 items; Table 2 and 3) as well as lean requirements (7 items; Table 4). The EFA method helped to group items into entities known as "factors". The development of factors for the model was carried out using IBM SPSS Statistics.

Database includes $n = 173$ purposefully selected Polish service departments in terms of the following criteria: service delivery and identification of lean requirements by managers of these departments in terms of principles, methods, tools and lean measures. The analyzed departments included support for the production process (i.e. maintenance, forwarding, logistics, 28.9%), as well as departments providing services to internal and external clients (HR, accounting and finance, purchasing, quality control, customer service, R&D and lean, 57.22%) and "other" service departments (13.87%). A 5 point rating scale was used in the questionnaire.

Out of 13 questions (Table 2) 4 factors were developed and isolated for lean-oriented TPM practices (C1, C2, C3, C4). Not all of them were used in building the factors. A few items were removed: p5.6, p14.1, p16.3 and 17.1 because they have less than 0.3 of common volatility (it should be over 0.3).

Table 2. Lean-oriented TPM practices

Items	Descriptions
p2.2	Goals and tasks for the next work period have repeatable standards in terms of behavior or quality of work
p2.3	Goals and tasks for the next work period are set for the whole team
p2.4	Goals and tasks for the next period are consistent with the job description or other workstation instructions
p2.8	The achievement of goals and tasks for the next period are measured with performance indicators

Table 2 (continued)

Items	Descriptions
p5.2	The manager monitors the goals, progress and reviews the achievements of the entire team
p5.5	The manager provides feedback to the entire team during meetings
p5.6	The manager uses applications and mobile tools in the process of monitoring and reviewing achievements
p7.15	Team achievements only count
p7.16	Individual assessment is a component of team performance
p14.1	There are multi-functional teams known as “nests” or “linear work offices” in which employees perform tasks of a different nature
p16.3	To ensure all rules and regulations are adhered to, a periodic audit is necessary
p17.1	The team meets regularly and works on implementing improvements in a given area of the organization’s activity
p17.9	The goals of continuous improvement are visible to the team and take a visual form, e.g. a worksheet, a table containing problems, etc.

Source: based on the author’s own research.

The EFA methodology needs to call the factors:

- C1 – p2.8, p17.9 – prerequisite phase;
- C2 – p2.2 and p2.3, p 2.4 – planning team performance;
- C3 – p5.2 and p5.5 – supporting team performance;
- C4 – p7.15 and p7.16 – both individual and team performance assessment.

Statistics on the correctness of factor creation:

- Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy = 0.713 and confirms that the grouping of these items is correct (should be over 0.5);
- Bartlett’s test of sphericity: chi square = 333.562;
- Degrees of freedom (Df) = 66;
- P-value = 0.000, $p < 0.05$;
- The correlation matrix has all values greater than 0.5 on the main diagonal, which indicates the adequacy of the sample selection.

The findings at this stage point out that the lean-oriented TPM factors (C1, C2, C3, C4) represents a typical set of TPM stages. However, the prerequisite phase (C1) includes indicators and visual solutions of the goals and tasks to be planned in the next stage (factor C2, i.e. planning performance). Supporting team performance (factor C3) is part of the manager’s domain. In turn, the assessment stage (factor C4) joins together employee and team performance assessment. Bear in mind that assessing individual performance goes against lean methodology. Each factor represents 2–3 practices.

Out of 5 questions (Table 3) 2 factors were developed and isolated for employee-oriented TPM (I1 and I2).

Table 3. Employee-oriented TPM practices

Items	Descriptions
p2.6	Goals and tasks for an individual employee are determined with the help of the team
p3.4	An individual performance improvement plan is developed with the support of the team
p6.1	The team monitors and acts as a coach and helps to solve problems related to individual performance
p6.2	The team provides an ongoing feedback to the employee about his individual performance
p7.10	Individual performance assessment is carried out by a team

Source: based on the author's own research.

The EFA methodology needs to call the factors:

- I1 – p6.1, p6.2 – supporting individual performance;
- I2 – p2.6, p3.4, p7.10 – planning and assessing individual performance.

All questions were used in building the factors. Statistics on the correctness of factor creation are the following:

- Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy = 0.682;
- Bartlett's test of sphericity: chi square = 154.788;
- Degrees of freedom (Df) = 10;
- P-value = 0.000, $p < 0.05$;
- The correlation matrix has all values greater than 0.624 on the main diagonal. This stage of the findings shows the importance of TPM practices on the performance of individuals by giving feedback and monitoring (factor I1) and setting their objectives, and teaching and assessing performance (factor I2).

The items found in Table 4 are represented by statements regarding the most fundamental lean service requirements²⁶: VSM, Kaizen, work standards, 5S, pull and push systems, and flow and visualization. They were also used to build the LEAN factor.

Table 4. Lean Service requirements – key statements

Items	Descriptions	Lean requirements
p18.1	The processing of information, documents or the provision of a service is subordinated to the expectations of the final recipient and takes the form of a value stream map for the customer	Value Stream Mapping (VSM)
p17.1	The team meets regularly and works on implementing improvements in a given area of the organization's activity	Kaizen
p12.1	There is a set sequence of activities for each task, its implementation time, and other parameters that guarantee repeatability of the results (documents, information, services)	Work standards

Table 4 (continued)

Items	Descriptions	Lean requirements
p16.1	Each employee regularly identifies and disposes of unnecessary items on the station (e.g. materials, books), puts the necessary items in marked places (e.g. in the described drawers), cleans and ensures the safety of the workplace – performs these activities routinely and in accordance with the standards	5S
p15.2	Teams control the flow of resources using visual signals (e.g. on noticeboards, using colors, labeling documents in the right way, etc.)	Pull
p14.3	In a multi-tasking environment, the employee knows “what” and “when” to do (this is related to high predictability of work and its schedule)	Flow
p14.4	Visual tools are used (e.g. noticeboard for monitoring work progress and results, signs, flags, computer applications, etc.)	Work visualization

Source: own study based on D. Locher, *Lean Office...*

Statistics on the correctness of the LEAN factor creation are as follows:

- Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy = 0.806;
- Bartlett’s test of sphericity: chi square = 251. 239;
- Degrees of freedom (Df) = 21;
- P-value = 0.000, $p < 0.05$;
- The correlation matrix has all values greater than 0.755 on the main diagonal;
- Exploratory factor analysis shows that all 7 items form one factor, isolated here for lean service (called LEAN). The value of one of the items (p18.1) is 0.277, but converges to 0.3. and was considered to be proper in the factor.

Having developed all factors there is now a need to check how they all correlate with one another. Therefore, correlations between factors were examined. Table 5 shows two important points:

- firstly, all these factors statistically significantly correlate with each other and affect the LEAN factor, except for the C4 factor; lack of correlation between C4 and LEAN shows that there is no statistically significant relationship between both the team and individuals in terms of assessment practices (p7.15, p7.16) and the implementation of lean requirements (LEAN factor); similarly, the causal relationship between individual, team and organizational performance (implementation of LEAN requirements) is also postulated in the literature, although difficult to grasp in practice; however, there is a statistically significant correlation between lean-oriented TPM practices (C1, C2, C3, C4), applied practices of employee-oriented TPM (I1 and I2), and lean requirements (LEAN factor);
- secondly, the correlation between all factors translates the same information into LEAN factors.

Table 5. Global correlation between highlighted factors ($n = 173$)

Correlations		C1	C2	C3	C4	I1	I2	LEAN
C1	Pearson's correlation	1	.395**	.303**	-.053	.293**	.162*	.655**
	Significance		.000	.000	.245	.000	.017	.000
C2	Pearson's correlation	.395**	1	.336**	-.143*	.197**	.199**	.420**
	Significance	.000		.000	.031	.005	.004	.000
C3	Pearson's correlation	.303**	.336**	1	-.004	.247**	.231**	.354**
	Significance	.000	.000		.479	.001	.001	.000
C4	Pearson's correlation	-.053	-.143*	-.004	1	.263**	.389**	.032
	Significance	.245	.031	.479		.000	.000	.337
I1	Pearson's correlation	.293**	.197**	.247**	.263**	1	.357**	.332**
	Significance	.000	.005	.001	.000		.000	.000
I2	Pearson's correlation	.162*	.199**	.231**	.389**	.357**	1	.244**
	Significance	.017	.004	.001	.000	.000		.001
LEAN	Pearson's correlation	.655**	.420**	.354**	.032	.332**	.244**	1
	Significance	.000	.000	.000	.337	.000	.001	

*. Significant correlation at the 0.05 level (1-tailed).

**. Significant correlation at the 0.01 level (1-tailed).

Source: based on the author's own research.

Therefore, in order to determine the actual impact of each individual factor on LEAN, it was necessary to check which of the distinguished factors (C1, C2, C3, C4 and I1, I2) reflect the impact on the LEAN factor, according to a model built based on the regression function:

$$L = a_1C_1 + a_2C_2 + a_3C_3 + a_4C_4 + a_5I_1 + a_6I_2 + b,$$

where:

L – factor LEAN,

$a_1, \dots, a_6$ – parameter indicating the strength of influence,

C1, ..., C4 and I1, I2 – developed factors,

b – constant term.

To assess the impact of factors (C1, C2, C3, C4 and I1, I2) on LEAN, the significance of the model was assessed (Table 6). Other parameters of the model are the following: change in dependent variable by changes in independent variables $R\text{-square} = 49.3\%$, standard error of estimating the model $S = 0.564$. Then the strength of the impact of each factor and its significance on the dependent LEAN variable was determined (Table 7).

Table 6. Assessment of model significance of the factors impact on LEAN

Anova ^a					
Model	Sum of squares	Degrees of freedom	Mean square	F-value	P-value
Regression	51.415	6	8.569	26.883	.000 ^b
Residuals	52.914	166	.319		
Total	104.329	172			

^a Dependent variable: lean.

^b Predictors: (constant) C1, C2, C3, C4, I1, I2.

Source: based on the author’s own research.

Table 7. Assessment of significance of model parameters

Model	Non-standardized coefficients		Standardized coefficients	t	Significance
	B	Standard error	Beta		
(Constants)	.898	.317		2.828	.005
C1	.361	.043	.528	8.398	.000
C2	.147	.062	.151	2.371	.019
C3	.114	.064	.108	1.771	.078
C4	.029	.050	.036	.577	.565
I1	.065	.045	.090	1.435	.153
I2	.051	.059	.056	.869	.386

Source: based on the author’s own research.

The research results indicate that only two factors (C1 and C2), independently of each other and other factors, show the statistically significant influence on the LEAN factor with a strength of C1 = 0.5 and C2 = 0.15. Therefore, only (a) the pre-requisite phase, i.e. performance indicators and goals and tasks visualization, and (b) planning performance in terms of the quality of work, standards and workstation instructions affect the implementation of LEAN requirements independently. Nevertheless bear in mind that correlation between all factors translates the same information into LEAN factors.

Based on the above findings the hypotheses were verified. In conclusions, hypotheses H1 and H2 were confirmed. They both show that in a lean-oriented TPM process there are still practices turned onto individuality and being similar to EPM process. Hypothesis H3 was not confirmed. Factor C4 doesn’t correlate with LEAN factor. Hypotheses H4 was also confirmed by factors C1 and C2. As a consequence all but one factor correlate with the LEAN but only two of them independently. Hypotheses H5 was not confirmed because the determinant called “years of lean” doesn’t change the model at all.

Conclusions

The aforementioned verification of hypotheses generates some remarks regarding the findings. Firstly, the sample of secondary data tested is small and so it is not possible to speak of representativeness in statistical terms. Secondly, the research concentrated only on TPM stages paying little attention to strategy and any connection with personnel decisions (remuneration, training, etc.). Thirdly, the line managers, not the workers, observed the lean-oriented TPM practices and then were respondents of the research. Fourthly, a set of lean-oriented teamwork practices can change depending on the stage of lean requirements being used.

By answering the research questions we can say that: (1) 6 factors with 2–3 lean-oriented TPM practices each were able to be developed, which (2) reflect the regular TPM model by Armstrong or Aguinis, with special attention on TPM supporting individual performance. In fact, we can talk about cyclic stages of planning, supporting and assessing team performance conducted by a manager, with special team responsibility for EPM. Only the characteristic features of practices are concentrated on lean requirements. Nevertheless, assessing individual performance goes against lean methodology. Moreover, (3) the LS requirements developed in the form of a single factor, (4) which in turn allowed us to show the influence of lean-oriented TPM factors on the LS factor. Bear in mind that only two initial factors (prerequisite and planning performance of a team) independently influence the LS factor.

National culture indeed brings about problems for western rooted work teams to accept the Asian culture of lean methodology²⁷. However, an interesting notion is that the performance management cycle corresponds exactly with Deming's PDCA tool, which makes it similar to a continuous improvement process²⁸. There is still much room to broaden the investigating areas regarding the TPM – LS relationship and to concentrate on constraints which mainly derive from different work environments.

27 J.K. Liker, K. Ross, *Druga Toyota...*, p. 362.

28 W.E. Deming, *Out of the Crisis*, Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge 1986.

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Abstract

The aim of this paper is to show the influence of lean-oriented team performance management (TPM) practices on lean service (LS) requirements within Polish service departments. To do this, it was necessary to identify how lean-oriented teamwork practices reflect the practices and stages of the universal TPM of selected authors. Exploratory factor analysis (EFA) by generalized least squares (GLS), Kaiser's normal varimax rotation methods and secondary data were used. The results reveal that lean-oriented TPM practices resemble universal TPM, and also that they help in the implementation of LS requirements, and the team has its share in managing individual performance.

Keywords: team performance management, lean service, practices, employee performance management

Employee Net Promoter Score (eNPS) as a Single-item Measure of Employee Work Satisfaction An Empirical Evidence from Companies Operating in Poland

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Introduction

Living in the modern world means a high probability of being invited to a survey and facing the question: “How likely is it that you would recommend X company to a friend or colleague?”. Those respondents taking part in an employee satisfaction survey may have heard the version “[...] would you recommend work at our company to a friend or colleague [...]”. This single question concerning the willingness to recommend is a base for the Net Promoter Score¹ indicator. It became so popular in customer surveys that it could claim the title of The Holy Grail of social research. Does it deserve it?

This text will focus on NPS methodology and its possibility to be adapted in an employee satisfaction survey. An important task is checking what the “would recommend” question really measures. A fair part will be devoted to deliberation about the development of the NPS and showing how the “would recommend” question works in practice of the employee satisfaction surveys.

1 Net Promoter®, Net Promoter System®, Net Promoter Score® and NPS® are registered trademarks of Bain & Company, Inc., Fred Reichheld and Satmetrix Systems, Inc.

Who created the NPS and why it became so popular?

The NPS was created by Frederick F. Reichheld² who published in Harvard Business Review the text with convincing title: *The One Number You Need to Grow*³. Reichheld was ensuring his readers that: “you don’t need expensive surveys and complex statistical models. You only have to ask your customers one question”⁴. Having a good professional reputation⁵ and being sure of his research was probably one reason of Reichheld’s success. The other reasons may be the simplicity of the NPS, the easiness in understanding for managers and the focus on business growth. The item created by Reichheld was even called “the ultimate question”⁶. There is much research confirming the success of the NPS in the business world. For example, in one piece of research, 71% of the large companies in the sample were using the NPS⁷ or another research showing that the majority of Customers Experience Directors use the NPS as one of the key indicators⁸.

Development of the NPS

Reichheld, in his text, is rather modest when it comes to the description of his methodology. He mentions that the research took 2 years and “the ‘would recommend’ question generally proved to be the most effective in determining loyalty and predicting growth”⁹. What we know, is that the author of the NPS was looking for correlation between the survey questions and business results based on over 4000 surveys.

2 With assistance of his team at Bain company.

3 F. Reichheld, *The One Number You Need to grow*, “Harvard Business Review”, December 2003, vol. 81(12), pp. 46–54, <https://pubmed.ncbi.nlm.nih.gov/14712543/> (accessed: 7.12.2019).

4 *Ibidem*, p. 1.

5 D.B. Grisaffe, *Questions about the Ultimate Question: Conceptual Considerations in Evaluating Reichheld’s Net Promoter Score (Nps)*, “Journal of Consumer Satisfaction, Dissatisfaction & Complaining Behavior” 2007, vol. 20, pp. 36–53.

6 F.F. Reichheld, S.R. Covey, *The ultimate question: Driving good profits and true growth*, vol. 211, Harvard Business School Press, Boston 2006.

7 B. Temkin, *Is Net Promoter Score A Savior Or A Demon?*, 2015, <https://experiencematters.blog/2015/07/09/is-net-promoter-score-a-savior-or-a-demon/> (accessed: 7.12.2019).

8 A. Pogrebniak, *15 Net Promoter Score Statistics You Need to Know in 2019*, Lumoa 2018, Research, <https://lumoa.me/blog/net-promoter-score-statistics> (accessed: 7.12.2019).

9 F. Reichheld, *The One Number...*, p. 3.

Although linking survey results to actual companies' results and customers behaviour is surely a good idea, there is a statement of Reichheld's which can cause confusion:

[...] my colleagues and I looked for a correlation between survey responses and actual behavior – repeat purchases, or recommendations to friends and peers – that would ultimately lead to profitable growth. Based on information from 4,000 consumers, we ranked a variety of survey questions according to their ability to predict this desirable behavior¹⁰.

Interestingly, that actual recommendations to friends and peers was treated as a depend variable. It seems obvious that the question about the willingness of such a recommendation happened to be a good predictor of such behaviour. It is not a mistake. The same information was later repeated in the Reichheld's article: "The data allowed us to determine which survey questions had the strongest statistical correlation with repeat purchases or referrals"¹¹. There was no information which of the output (repeated purchases or referrals) was more important. There is also no information about the correlation indicator.

The scale

In the question that the NPS is based on (How likely is it that you would recommend X company to a friend or colleague?), an 11 point scale is used. The respondents mark their willingness of recommendation from 0 to 10, where 10 means "extremely likely" to recommend, five means neutral, and 0 means "not at all likely". Reichheld and his team noticed that the customers (or respondents) can be divided into 3 groups. Based on that, he created a quite strict rule how to characterize them. Depending on the answer, the respondents were categorized as "promoters" in the case of those who answer 10 and 9, "passively satisfied" refers to those who marked 8 and 7 and those who chosen from 6 to 0 are called "detractors". Taking only the 2 highest answers to describe "promoters" was in Reichheld's opinion the solution for the tendency of people to give rather positive answers in such surveys. This decision however, leads to an asymmetry during the final score computation. The score of the eNPS indicator is counted as the percentage of promotes deducted by percentage of detractors. So theoretically the eNPS scores can be from -100% (only detractors) to +100% (only promoters).

¹⁰ *Ibidem*, p. 5.

¹¹ *Ibidem*.

How likely is it that you would recommend product X to a friend or colleague?

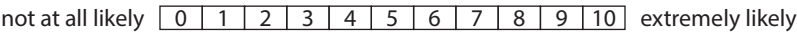


Figure 1. Example of NPS question and scale

Source: own work.

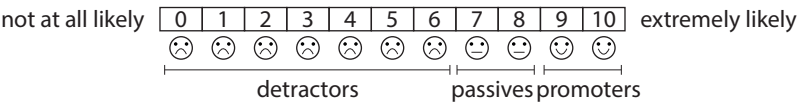


Figure 2. Mechanics of calculating the NPS indicator

Source: own work.

Is 11 points a good choice? Reichheld has not explained why the question was developed with 0–10 scale. There is a long debate among researchers of how many points the scale should have. Five points is believed to be enough for general questions¹². Most of the research found by the author of this text suggest using scales consisting from 5 to 7 point. Of course, it must be kept in mind the purpose of the survey, the content of the question itself, and the statistical operations to be undertaken. Fortunately, it is not a decision for a lifetime, and in many cases a procedure of rescaling can be used¹³. Another issue is that fully labeling the scale (which is not the case in the NPS) is believed to bring positive impact on research quality¹⁴.

Criticism of the NPS

There is as much enthusiasm in the business world¹⁵ as criticism about the NPS in science. First, there is no agreement on the fact that the NPS is the most important and only indicator to measure¹⁶ as Reichheld was implying originally. Secondly, many researchers failed to replicate original results and therefore found the

12 D.F. Birks, N.K. Malhotra, *Marketing Research, An Applied Approach*, Pearson Education Limited, Harlow 2005.
13 J. Dawes, *Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10-point scales*, “International Journal of Market Research” 2008, vol. 50(1), pp. 61–104, <https://doi.org/10.1177/147078530805000106>
14 J. Eutsler, B. Lang, *Rating scales in accounting research: The impact of scale points and labels*, “Behavioral Research in Accounting” 2015, vol. 27(2), pp. 35–51, <https://doi.org/10.2308/br-ia-51219>
15 For example: K. Appold, *Do You Know Your NPS Score? The new metric to watch*, “Managed Healthcare Executive”, March 2018, pp. 12–15.
16 D.B. Grisaffe, *Questions about the Ultimate Question...*

NPS as a poor predictor of customer loyalty and customer satisfaction¹⁷. Perhaps, the harshest words were used by Sharp, who called Reichheld's work a snake oil and fake science¹⁸. In other articles, it was pointed out that there was no consideration of research bias during NPS development¹⁹. Among other criticism we may find that the NPS is focused on the user, not exactly a person who make buying decision²⁰.

An important factor we should keep in mind is the influence of national culture on the NPS. Originally the indicator was developed in the USA. Americans are the nation of optimists and for example Europeans are more modest in describing the positive view of something²¹. There are opinions that in Europe, the NPS should be measured differently and those who gave 10 and 9 but also 8 should be promoters and detractors should be limited only to those who gave 5 or less on the scale²².

Employee Net Promoter Score (eNPS) and Employee Satisfaction

In the literature there is not much written about the Employee Net Promoter Score (eNPS)²³. What we know for sure is that the idea behind the eNPS is to ask employees how likely they would recommend their company as an employer. The measurement method, the definition of detractors and promoter remains the same²⁴.

- 17 K. Kristensen, J. Eskildsen, *Is the NPS a trustworthy performance measure?*, "The TQM Journal" 2014, vol. 26(2), pp. 202–214, <https://doi.org/10.1108/TQM-03-2011-0021>
- 18 B. Sharp, *Net promoter score fails the test*, "Marketing Research" 2006, vol. 20, no. 4, pp. 28–30.
- 19 T.L. Keiningham et al., *A Longitudinal Examination of Net Promoter and Firm Revenue Growth*, "Journal of Marketing" 2007, no. 71 (July), pp. 39–51.
- 20 N.I. Fisher, R.E. Kordupleski, *Good and bad market research: A critical review of Net Promoter Score*, "Applied Stochastic Models in Business and Industry" 2019, vol. 35(1), pp. 138–151, <https://doi.org/10.1002/asmb.2417>
- 21 J. Keller, *What Makes Americans So Optimistic*, 2015, <https://www.theatlantic.com/politics/archive/2015/03/the-american-ethic-and-the-spirit-of-optimism/388538/> (accessed: 7.12.2019).
- 22 O. Faltejsková, L. Dvořáková, B. Hotovcová, *Net promoter score integration into the enterprise performance measurement and management system – A way to performance methods development*, "E a M: Ekonomie a Management" 2016, vol. 19(1), pp. 93–107, <https://doi.org/10.15240/tul/001/2016-1-007>
- 23 For 27.12.2019, scholar.google found 143 results for "employee net promoter score" phrase compering to 9150 for "net promoter score".
- 24 B.J. Kaufman et al., *Who's responsible for employee engagement?*, "Bain Company Materials" 2013, pp. 1–12, https://www.bain.com/contentassets/47694dff757b45c0b1bb34ebad6b9fc9/bain_brief_whos_responsible_for_employee_engagement.pdf (accessed: 7.12.2019).

Before answering the question if the eNPS may be used to measure job satisfaction, it is good to clarify the latter.

So, what exactly is job satisfaction? On an everyday basis, satisfaction would be connected with a positive, pleasant feeling, often the word satisfaction is connected with fulfillment. There is an important component of emotions when we speak about work satisfaction. Locke briefly described it as “pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences”²⁵. Having satisfaction defined as an emotional state, it has to be remembered that it is only part of the whole story. Satisfaction is in fact an attitudinal construct reflecting one’s evaluation of his or her job²⁶. The same opinion is presented by Stample and Higgins, who treats satisfaction as a positive attitude towards work and duties²⁷. The term attitude encompasses affect, behavior, and cognition²⁸ which confirms that satisfaction is rather a multidimensional construct.

Research Methodology

The author has conducted the employee satisfaction surveys for several companies. In this paper there will be presented parts of this research. Presented data was gathered in 2019 in three different companies. To ensure data confidentiality, further in the text these firms will be referred to as Company A ($N = \text{ca. } 6000$), Company B ($N = \text{ca. } 100$) and Company C ($N = \text{ca. } 400$)²⁹. The companies were operating in Poland and all the surveys were conducted in Polish. In each case, all the employees employed, at the moment of the research, were asked to participate in the surveys. The respondents received an invitation to a CAWI (Computer Assisted Web Interviewing) survey, sent to the company’s email address. The average response rate in these 3 surveys was 63%. The structure of surveys was different in all the companies.

25 E.A. Locke, *The nature and causes of job satisfaction*, [in:] M.D. Dunnette (ed.), *Handbook of industrial and organizational psychology*, Rand McNally, Chicago 1976, p. 1304.

26 R. Lies, T.A. Judge, *An experience-sampling measure of job satisfaction and its relationships with affectivity, mood at work, job beliefs, and general job satisfaction*, “European Journal of Work and Organizational Psychology” 2004, no. 13, p. 368.

27 D.S. Staples, C.A. Higgins, *A Study of the Impact of Factor Importance Weightings on Job Satisfaction Measures*, “Journal of Business and Psychology” 1998, vol. 13(2), pp. 211–232.

28 S.J. Breckler, *Empirical validation of affect, behavior, and cognition as distinct components of attitude*, “Journal of Personality and Social Psychology” 1984, vol. 47(6), pp. 1191–1205, <https://doi.org/10.1037/0022-3514.47.6.1191>

29 The sample size was rounded down to nearest hundred, in order ensure anonymity of the companies. Further all computations were done on exact data. N shows actual, gathered number of answers. It is not the size of the company.

An Empirical Results of how eNPS Works

In the surveyed companies, except company B, the whole spectrum of answers was used by the respondents.

Table 1. The distribution of the answers to eNPS question in company A, B and C (in percent)

The eNPS answer	The company A	The company B	The company C
0	14	0	1
1	5	4	3
2	7	1	4
3	8	2	8
4	6	2	7
5	13	11	13
6	8	11	14
7	11	22	20
8	12	25	16
9	7	15	7
10	9	9	7
Total	100	100	100
Distribution statistics	$M = 5,1$ $SD = 3,2$	$M = 7,1$ $SD = 2,0$	$M = 6,2$ $SD = 2,3$
eNPS score	-44%	-6%	-35%

Source: prepared by the author.

Looking at the answers distribution, it can be seen that there is no common pattern, or common peaks. In the case of the company B, 82% of the respondents chose the score 6 or higher, the mean result was 7.1. This can be interpreted as at least a good situation. However, the eNPS score (% promoters – % detractors) is minus 6%, so below zero, which may be understood as something going wrong. Neither of the companies described in this paper have a positive eNPS value. The author had opportunities to visit company B and conduct some interviews with managers and line employees. The qualitative data confirms that the opinion about the company among its employees was good or even very good. Clearly the way of counting the eNPS score percentage of people who chose 2 values (in the scale 10 and 9) deducted by the percentage of people who chose 7 values (from 0 to 6) is hard to agree on, and can be misleading for eNPS users. It should be borne in mind that the research was conducted in Poland and the culture influence on the eNPS results³⁰.

The eNPS question, in the case of all the surveyed companies, has proven to highly correlate with items concerning the general opinion about work satisfaction and with the whole work satisfaction scales. As all the scale items cannot be disclosed,

30 J. Kaufman et al., *Who's responsible...*

the following text will focus only on items treated as separate entities. Described correlation suggest that the eNPS can be used as a single-item work satisfaction measure. Although such simplification causes information loss and due to the fact that there are no other possibilities, this solution should work on a sufficient level when it relates to measuring work satisfaction and engagement³¹.

Table 2. Spearman's Correlation Matrix for Question Asked in company A

	In general, I am satisfied with my job	I see my future in this organization	eNPS
In general, I am satisfied with my job	1.0	0.74	0.62
I see my future in this organization		1.0	0.68
eNPS			1.0

Source: prepared by the author; $p < 0.05$, $N = \text{ca. } 6000$.

Table 3. Spearman's Correlation Matrix for Question Asked in company B

	I have a feeling of professional satisfaction	I like my job	The company I work for is a good employer	I often think about changing my job	eNPS
I have a feeling of professional satisfaction	1.0	0.60	0.43	-0.57	0.55
I like my job		1.0	0.43	-0.44	0.60
The company I work for is a good employer			1.0	-0.56	0.63
I often think about changing my job				1.0	-0.62
eNPS					1.0

Source: prepared by the author; $p < 0.05$, $N = \text{ca. } 100$.

The research of Legerstee provides similar results to the material gathered by the author. What is important is that Legerstee also measured the employee engagement which correlated with the eNPS even higher than work satisfaction³². Engage-

31 K. Kulikowski, *Measurement of work engagement with single-item measure*, "Polish Psychological Bulletin" 2018, vol. 49(4), pp. 406–415, <https://doi.org/10.24425/119509>

32 T. Legerstee, *Asking employees "the ultimate question": Developing the Employee Promoter Score*, series "Public Administration", 2013, September 6, <http://hdl.handle.net/2105/17875> (accessed: 7.12.2019).

ment is also considered an attitude³³ but puts more emphasis on behavioural. In the surveys used in this text, there was no possibility to extract engagement components in order to have a chance of establishing if the eNPS predicts work engagement better than work satisfaction.

Table 4. Spearman’s Correlation Matrix for Question Asked in company C

	The company I work for is a good employer	I like my job	I have a feeling of professional satisfaction	eNPS
The company I work for is a good employer	1.00	0.42	0.56	0.67
I like my job		1.0	0.59	0.52
I have a feeling of professional satisfaction			1.0	0.66
eNPS				1.0

Source: prepared by the author; $p < 0.05$, $N = \text{ca. } 400$.

Conclusions

The extraordinary popularity of the NPS question resulted in market demand for a similar construction in employee satisfaction and engagement research. In the author opinion, the eNPS item is good for a general opinion evaluation. Still many differently constructed questions may lead to similar results. Using a single-item measure provides information about general opinion but does not give the company’s managers any further information. The manager will know if his team is happy or not, but will not have access to the reason of such an opinion. The eNPS alone will not help to improve the situation in the company as it is not directed at any factors causing satisfaction or dissatisfaction.

On the plus side of the eNPS, there is certainly simplicity. The question does not require any special instructions for respondents, it is easily understood by management. An exception is the score itself which may be below 0 in situations when the majority of the people chose, for example, 7 and 8 on the 0 to 10 scale. This last issue in the authors opinion is the biggest disadvantage of the eNPS, especially when used by people who do not know how the score is calculated.

33 W.B. Schaufeli, *What is engagement?*, [in:] C. Truss et al. (eds), *Employee Engagement in Theory and Practice*, Routledge, London 2013, [https://www.wilmarschaufeli.nl/publications/Sc haufeli/414.pdf](https://www.wilmarschaufeli.nl/publications/Sc%20haufeli/414.pdf) (accessed: 7.12.2019).

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- Kaufman J., Markey R., Burton S.D., Azzarello D., *Who's responsible for employee engagement?*, "Bain Company Materials" 2013, pp. 1–12, https://www.bain.com/contentassets/47694dff757b45c0b1bb34ebad6b9fc9/bain_brief_whos_responsible_for_employee_engagement.pdf (accessed: 7.12.2019).
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- Keller J., *What Makes Americans So Optimistic*, 2015, <https://www.theatlantic.com/politics/archive/2015/03/the-american-ethic-and-the-spirit-of-optimism/388538/> (accessed: 7.12.2019).
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- Reichheld F.F., Covey S.R., *The ultimate question: Driving good profits and true growth*, vol. 211, Harvard Business School Press, Boston 2006.
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Abstract

The goal of the article was to evaluate the pros and cons of using the eNPS indicator and its possible adaptation in employee satisfaction surveys.

The author conducted 3 independent surveys on over 6500 employees in 3 different companies. The eNPS results were correlated with questions concerning the general opinion about work and the employer.

The eNPS indicator was proven to highly correlate with items describing the general employee opinion about work satisfaction. The numerical value of the indicator itself is considered by the author as misleading due to asymmetry in the classification of positive and negative opinions.

Keywords: NPS, Employee Net Promoter Score, eNPS, work satisfaction

Payrolling – outsourcing in human resource management

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Introduction

Globalization and the free transfer of resources, capital and workforce drives outsourcing and has increased its popularity. According to Aird and Sappenfield¹ the current and future trends of outsourcing strongly depends on the development of Information Technology. Transferring a company's operation to an external provider has been well-known and used for many years by many multinational companies as a part of their strategies to minimise operating costs. With increasing competition and scarce resources, companies are looking for new more efficient ways of delivering various functions and operations. In recent years one of the most outsourced function part of Human Resource Management is payrolling.

This paper investigates the opportunities provided by outsourcing the payrolling function. Firstly, the outsourcing will be defined, and its benefits discussed. This will be followed by an analysis of payrolling within HRM outsourcing. And finally, the benefits of outsourcing of the payrolling function will be presented.

The research methodology adopted in this paper started from a basic literature search focusing on the intended research objectives. The following sources were utilized: ProQuest, Emerald, SCOPUS to gain access to publications with an international scope. A selection was chosen on the basis of the following key words: outsourcing, outsourcing HR, personnel outsourcing and payrolling.

1 C.L. Aird, D. Sappenfield, *IT the 'Enabler' of Global Sourcing*, "Financial Executive" 2009, vol. 25, issue 5, pp. 62–65.

In the subsequent stage, the literature review was expanded to include Polish scientific publications, including monographs and papers reviewed in the leading Polish journals collected in the Library of the Jagiellonian University².

The accumulated sources were narrowed by excluding papers such as communiques, conference presentations and book reviews. Finally, content analysis of the abstracts was conducted and focussed on the area of management science. The references obtained were subsequently subjected to an in-depth analysis of the content in the systemization of the literature. The methodology adopted facilitated the collection of sources that are significant for further analysis.

What is outsourcing?

The word outsourcing derives from the English expression “outsider-resource-using”, which means use of external resources. Many publications define outsourcing as a part of business areas where they have expertise and then place their resources accordingly to achieve a competitive advantage³.

According to Trocki⁴, outsourcing should be understood as extracting certain functions from the organizational structure of a company and transferring them for execution to an external entity. He stresses that such actions inevitably affect the organization and substantially changes the companies’ structures. On the other

2 The Jagiellonian Library has the obligation of collecting the published works of Polish scientists in its statutory aims, thus it is one of the largest and most valid sources for the purposes of reviewing Polish references.

3 See: R.E. Miles, C. Snow, *Designing strategic human resources systems*, “Organizational Dynamics” 1984, vol. 13, no. 1, pp. 36–52; N. Rajagopalan, S. Finkelstein, *Effects of strategic group membership and environmental change in senior management reward systems*, “Strategic Management Journal” 1992, vol. 13, no. S1, pp. 127–141; F.C. Santos, *Integration of human resource management and competitive priorities of manufacturing strategy*, “International Journal of Operations & Production Management” 2000, vol. 20, no. 5, pp. 610–628; D.P. Lepak, K.M. Bartol, N. Erhardt, *A contingency framework for the delivery of HR practices*, “Human Resource Management Review” 2005, vol. 15, no. 2, pp. 139–159; H. Abdul-Halim, N. Che-Ha, A. Geare, *The influence of business strategy on the decision to outsource human resource activities: a study of Malaysian manufacturing organizations*, “Journal of Human Resource Costing and Accounting” 2009, vol. 13, no. 4, pp. 274–293; H.A. Shih, Y.H. Chiang, *Exploring the effectiveness of outsourcing recruiting and training activities, and the prospector strategy’s moderating effect*, “The International Journal of Human Resource Management” 2011, vol. 22, no. 1, pp. 163–180; R. Gonzalez, J. Llopis, J. Gasco, *Outsourcing and strategy in Spanish town halls: a field study*, “Management Decision” 2013, vol. 51, no. 1, pp. 97–119.

4 M. Trocki, *Metoda restrukturyzacji działalności gospodarczej*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2001.

hand, Penc⁵ defines outsourcing as the use of comprehensive services that are a combination of a variety of services provided by external contractors (bidders).

One of the most popular and most commonly used definitions is the one developed by Greaver's. He describes outsourcing as "the act of transferring some of an organization's recurring internal activities and decision rights to outside providers, as set forth in a contract"⁶. In addition, Lysons and Gillinham⁷ highlight that 'outsourcing requires strategic use of external resources for the implementation of activities that in the past has been traditionally conducted by its own staff using internal resources of the company'. So outsourcing is a management strategy that involves the separation of the organizational structure of certain auxiliary functions and entrusting their implementation to external specialised organisation.

Moreover, a number of authors⁸ define outsourcing as distributing one or many of the business processes to an outside vendor. The firm that provides outsourcing services is given ownership of one or more operational activities of the business⁹, so transferring activities traditionally done within a firm to third party providers within the country or "off-shore"¹⁰. The companies quite often discontinue in-house activities to minimize the operational cost¹¹.

As companies look for maximization of operational efficiency by focusing on the core competencies, the numbers of organization that heavily rely on outside provider increases¹².

5 J. Penc, *Encyklopedia zarządzania*, Agencja Wydawnicza Placet, Warszawa 2008.

6 M.F. Greaver, *Strategic Outsourcing. A Structured Approach to Outsourcing Decisions and Initiatives*, Amacom, New York 1999, p. 7.

7 K. Lysons, M. Gillingham, *Purchasing and supply chain management*, Pearson, Prentice Hall, Harlow 2012.

8 See: A. Sharma, P. Loh, *Emerging Trends in Sourcing of business services*, "Business Process Management Journal" 2009, vol. 15, no. 2, pp. 149–165; A. Kakabadse, N. Kakabadse, *Sourcing: new face to economies of scale and the emergence of new organizational forms*, "Knowledge and Process Management" 2000, vol. 7, no. 2, pp. 107–118; W. Scott-Jackson, T. Newham, M. Gurney, *HR Outsourcing: the Key Decisions*, Chartered Institute of Personnel and Development, London 2005.

9 A. Mehta et al., *Challenges and Opportunities of Business Process Outsourcing in India*, "Journal of Labour Research" 2006, vol. 27, issue 3, pp. 323–338.

10 F. Sen, M. Shiel, *From business process outsourcing (BPO) to knowledge process outsourcing (KPO): Some issues*, "Human Systems Management" 2006, no. 25, pp. 145–155.

11 B.S. Klaas, J.A. McClendon, T.W. Gainey, *Outsourcing: the impact of organizational characteristics*, "Human Resource Management" 2001, vol. 40, no. 2, pp. 125–138.

12 A. Mehta et al., *Challenges and Opportunities...*

According to Kremic et al.¹³ outsourcing is driven by three major factors: cost, strategy and politics. Costs and strategy are typical drivers for private industry, as political agendas are usually the main factor in public organizations¹⁴. Bers¹⁵ as well as Harler¹⁶ claim that the cost factor occurs when providers can offer service for a lower price that already include provider's overhead, profit, and transaction costs. Reducing cost via outsourcing can be very significant. Domberger and Fernandez¹⁷ claim that outsourcing of cleaning services saved an average of 46 percent of in-house activity. In addition, many companies look for saving indirect costs by reducing the number of employees as this will lead to less infrastructure and support systems¹⁸.

Lately one of the main reasons for outsourcing is the strategic factor such as core competence and flexibility as this can improve business performance on numerous dimensions¹⁹. The most emphasised motive for outsourcing is the opportunity for the organization to concentrate on its core competencies due to increased competition and scarce resources²⁰.

Payrolling within HR outsourcing

The most outsourced function is Human Resource Management (HRM)²¹. HRM outsourcing is a process in which the human resource activities of an organization are contracted to an external provider so the company can focus on the organization's core competencies. In other words, it is entrusting an external

- 13 T. Kremic, O.I. Tukeld, W.O. Rom, *Outsourcing decision support: a survey of benefits, risks, and decision factors*, "Supply Chain Management: An International Journal" 2006, vol. 11, no. 6, pp. 467–482.
- 14 A. Kakabadse, N. Kakabadse, *Sourcing: new face...*
- 15 J.S. Bers, *Outsourcing: a deal or dilemma for FMs?*, "Facilities Design & Management" 1992, vol. 11, no. 3, pp. 54–57.
- 16 C. Harler, *Opting for outsourcing*, "Business Communications Review" 2000, vol. 30, no. 7, pp. 56–61.
- 17 S. Domberger, P. Fernandez, *Public-private partnerships for service delivery*, "Business Strategy Review" 1999, vol. 10, no. 4, pp. 29–39.
- 18 R. Fontes, *The outsource option*, "Folio: The Magazine for Magazine Management" 2000, pp. 112–115.
- 19 See: L. Wright, *Market viewpoint: outsourcing is a no-claims bonus*, "Insurance Brokers' Monthly & Insurance Adviser" 2001, vol. 51, no. 1, pp. 12–15; J.B. Quinn, *Strategic outsourcing: leveraging knowledge capabilities*, "Sloan Management Review" 1999, vol. 40, no. 4, pp. 9–21.
- 20 G. Avery, *Outsourcing public health laboratory services: a blueprint for determining whether to privatize and how*, "Public Administration Review" 2000, vol. 60, no. 4, pp. 330–337.
- 21 K. Kalinowska, *Outsourcing jako metoda zarządzania przedsiębiorstwem*, "Zeszyty Naukowe Polityki Europejskie, Finanse i Marketing" 2010, nr 3(52), pp. 253–264.

company the responsibility for part or all of the human resources management processes including providing IT system that supports those processes. Frequently HR functions are complex and time consuming and if those activities can be delivered by an external company, the effectiveness of the business can be enhanced by focussing on what the organization is best at²². It will also improve the flexibility and adaptability of the organization to the rapidly changing business environment²³.

Recently, one of the fastest growing areas of HR outsourcing is outsourcing remuneration systems known as payrolling²⁴. Payrolling is a business service that provides payroll processing, pay-check writing, payroll tax administration and all legal matters relating to hiring employees²⁵. A company offering a payrolling package is responsible for collecting and remitting payroll taxes and for paying all the employer taxes. The aim of the Payrolling Company is to provide either a part or the entire payroll function. In practice, this means efficient processing of a large amount of data obtained from the customer. Activities under payrolling are adapted to the individual needs of the client. Mostly they include the creation of a payroll list, the calculation of wages/salaries, creating payroll databases, the preparation of payslips and monthly statistical reports²⁶.

- 22 See: J. Delmotte, L. Sels, *HR outsourcing: threat or opportunity?*, "Personnel Review" 2008, vol. 37, no. 5, pp. 543–563; C. Sheehan, B.K. Cooper, *HRM outsourcing: the impact of organisational size and HRM strategic involvement*, "Personnel Review" 2011, vol. 40, no. 6, pp. 742–760.
- 23 See: F.L. Cooke, J. Shen, A. McBride, *Outsourcing HR as a competitive strategy? A literature review and assessment of implications*, "Human Resource Management" 2005, vol. 44, no. 4, pp. 413–432; T. Nesheim, K. Olsen, A.L. Kalleberg, *Externalizing the core: firms' use of employment intermediaries in the information and communication technology industries*, "Human Resource Management" 2007, vol. 46, no. 2, pp. 247–264; M.M. Stuss, *Payrolling jako narzędzie rozwoju ZZL we współczesnych przedsiębiorstwach*, [in:] J. Engelhardt, M. Brojak-Trzaskowska, M. Porada-Rochoń (eds), *Nowoczesne przedsiębiorstwo*, "Zeszyty Naukowe Uniwersytetu Szczecińskiego" 2009, no. 572, pp. 275–281.
- 24 See: M. Dickmann, S. Tyson, *Outsourcing payroll: beyond transaction-cost economics*, "Personnel Review" 2005, vol. 34, no. 4, pp. 451–467; D. Shelgren, *Why HR outsourcing continues to expand*, "Employment Relations Today" 2004, vol. 31, no. 2, pp. 47–53; C. Sheehan, B.K. Cooper, *HRM outsourcing...*; T. Nesheim, R. Rørvik, *Exploring dilemmas in the relation between temporary help agencies and customer firms*, "Personnel Review" 2013, vol. 42, no. 1, pp. 67–82; R. Remont, *Outsourcing HR – moda czy tendencja biznesowa?*, 2017, <http://www.outsourcing.com.pl> (accessed: 8.02.2017).
- 25 C. Mise, *Payroll and HR outsourcing. Is it viable solution for tour organisation*, CMA management, 2001 March, pp. 30–32, <https://www.cmamanagement.com/uploaddocs/cma/webseite/Home.asp> (accessed: 6.02.2019).
- 26 See: D. Gotterdello, M. Valverde, *Human resources management outsourcing in Spanish firms: evaluation over time and implication for devolution*, "Intangible Capital" 2018, vol. 14(1), pp. 56–73.

Payrolling as outsourcing service can be delivered in three forms²⁷:

- Application Maintenance Outsourcing (AMO) – a third-party provides operating system and support all its users of the HR application, including any necessary updates;
- Managed Payroll Services (MPS) – outsourcing company has been entrusted with the responsibility for a wider administration of payroll of the employees;
- Business Process Outsourcing (BPO) – outsourcing company provide all processes of the administration of personnel and payroll, or a group of other HR business processes.

The outsourcing contracts usually include a mix of the above three services²⁸. It should be noted that in Europe as well as in Poland, unlike in the US, BPO is a rather uncommon practice.

An increasing number of companies use payrolling services to reduce company risks as well as reduce the administrative workload associated with being an employer. Payrolling leads to a reduction of administrative and personnel costs. Some experts already highlight that cost-effectiveness of payrolling can be achieved even in small companies with fewer than 50 employees²⁹. Of course, the effectiveness of payrolling increases with the larger number of employees.

In Poland, HR outsourcing has a small share of the market. In addition, various analysis show that modern HRM outsourcing products such as mentoring, managerial coaching, training and development that are commonly used in the west are almost completely neglected by Polish companies³⁰. The growing interest in payrolling does not mean that outsourcing payrolling does not have its flaws, however it should be noted the advantages outweigh its disadvantages.

Characteristics of outsourcing payrolling

Nowadays, outsourcing the payroll has become an option that many organisations are looking for³¹.

27 C. Brooks, *Choosing a Payroll Service: A Buying Guide for Businesses*, 2017, March 17, <http://www.businessnewsdaily.com/7477-choosing-payroll-service.html#sthash.jlkXJBly.dpuf> (accessed: 15.11.2019).

28 R. Remont, *Outsourcing HR...*

29 M.M. Stuss, *Payrolling jako narzędzie rozwoju ZZL...*

30 *Ibidem*.

31 See: K.M. Gilley, C.R. Greer, A. Rasheed, *Human resource outsourcing and organizational performance in manufacturing firms*, "Journal of Business Research" 2004, vol. 57, no. 3, pp. 232–240; M. Oshima, T. Kao, J. Tower, *Achieving post-outsourcing success*, "People and Strategy" 2005, vol. 28, no. 2, p. 7; B. Duggan, G. Croy, *Should you outsource recruitment?*, "Supply Management" 2004, vol. 3, no. 7, pp. 26–27; H. John, *HR outsourcing in operation*:

ADP³² stress that one in three small businesses receive tax penalties for the miscalculation of tax obligations. Research shows that in companies with up to 20 employees two full days per month need to be solely dedicated to the payroll function. In addition, small businesses spend over \$1,300 per employee on tax compliance³³. So they look to minimise those costs. Furthermore, large companies search for various options to make their payroll function cost-effective and efficient³⁴.

Businesses can outsource their entire payroll function or decide on a specific tailored service provided by an external supplier. The vendor usually provides 3 three sets of payroll services³⁵:

- Administration Payroll Services:
 - Data collection and gross-to-net payroll calculation;
 - Administration and archiving of personal files/documents;
 - Statutory and management reporting;
 - Preparation and distribution of payslips;
 - Payments realization via trustee account;
 - Issuing certificates or any other employee documents;
 - Online employee support;
 - Representation during payroll audits/inspections;
- Payroll consultancy:
 - Payroll Taxes & Employment Regulations;
 - Employee registration;
 - Labour Law consultancy;
 - Personal income tax & social security advisory Non-resident tax consultancy;
 - Expats: work & residence permits, relocation support;
 - Employee benefits – budget optimization;
 - Revision/preparation of labour contracts, supplements and termination documents;

critical success factors, “Human Resource Management International Digest” 2005, vol. 13, no. 3, pp. 39–42; J. Marquez, *Reducing costs a sore subject at HRO meeting*, “Workforce Management” 2007, vol. 86, no. 9, pp. 7–8.

32 ADP, 2019, <https://www.adp.com> (accessed: 8.12.2019).

33 N.V. Crain, W.M. Crain, *The impact of regulatory costs on small firms*, US Small Business Administration, Office of Advocacy, 2010, September, [https://www.sba.gov/sites/default/files/The%20Impact%20of%20Regulatory%20Costs%20on%20Small%20Firms%20\(Full\).pdf](https://www.sba.gov/sites/default/files/The%20Impact%20of%20Regulatory%20Costs%20on%20Small%20Firms%20(Full).pdf) (accessed: 8.02.2017).

34 R. Parish, *Modern payroll outsourcing. A success story*, “Nursing Home Magazine”, 28 January 2008, <https://www.iadvanceseniorcare.com/modern-payroll-outsourcing-a-success-story/> (accessed: 6.02.2019).

35 IRIS, <http://www.iris.co.uk/insight/iris-rti-managed-payroll-service/> (accessed: 20.12.2019).

- Drafting internal regulations or any other local or group procedures related to employees;
- Establishment, registrations and other corporate services;
- Payroll Platform for Management & Employees Payroll & HR online document management:
 - Online approval workflow for payroll & HR documents;
 - Time & attendance;
 - Absences management;
 - Electronic payslips;
 - Electronic archive of payroll and HR related documents;
 - Payroll inquiry online handling, hotline service.

By outsourcing the payroll function, the company can focus on their core activities and obtain the following benefits³⁶:

- Minimise legislative changes and related stress – the responsibility of managing legislative changes is transferred to the outsourcing company.
- Save time and effort – payroll is an essential function of any business, but it can be a time-consuming task. Outsourcing this activity to an external provider allows company staff to focus on important business tasks. Reduce costs – running a payroll department can be expensive for some companies. According to TotalJobs.com³⁷, the average Payroll Manager cost at least £32,500 per year and the average cost of printing and distributing payslips is £1.75 per employee. In addition, a company needs to consider purchasing payroll software and regular training for legislative updates. According to Surepayroll³⁸ a company that has around 10 employees will usually spend at least \$2,600 per year in direct labour costs associated with payroll.
- Utilise knowledge of experienced payroll professionals – the company needs at least one or two designated members of staff operating payroll function. The business needs to invest time and financial resources to get those members of staff trained on a regular basis and update them on the latest legislative changes. Using outsourcing gives a company access to a much wider range of knowledge, experience and expertise from payroll dedicated professionals.
- Improve efficiency – outsourcing payroll gives access to a huge variety of reports customised to suit numerous needs of different businesses. These can help in various areas of the business and streamline internal processes. Some of the reporting function include payroll summaries, payroll control report,

³⁶ *Ibidem*.

³⁷ TotalJobs, www.TotalJobs.com (accessed: 21.12.2019).

³⁸ Surepayroll, www.surepayroll.com (accessed: 11.12.2019).

tax payment, summary report, payments to third parties, general ledger reports and payroll analysis.

The cost of payroll services will differ depending on the type, size and scale of the software and service included in the package. Companies can approach the payroll function in three ways³⁹:

- In House – typically used by those business that have fewer than 5 members of staff as well as some large companies that have a fully functioning accounting department. It usually requires only the purchase of a software package and some expertise regarding payroll. For some packages the company will need to pay a monthly fee that can range from £20 per month to up to £500, while other deals can consist of one-off payments that can run into tens of thousands of pounds. One of the most famous In House Providers is SAGE.
- Partly Managed – these packages allow companies to administer the front end of the payroll function while allowing a professional service to deal with the more complex and time-consuming data processing. This is the most popular approach for those companies that want to maintain some control and oversight of the payroll while keeping their staff focused on the jobs they were hired to do.
- Fully Managed – the company outsources the entire payroll function to the external provider. There are many firms that offers such services on the market, however it is important that a reputable and secure provider is selected as it will be dealing with the business's most sensitive data. Some of the most famous fully managed payroll providers are Eagle Consulting, ADP, Ceridian, Genpact. NGA.

According to Turek⁴⁰ there are several factors to consider when deciding on outsourcing the payroll function. The top three are the reliability of the provider of the service, the providers financial soundness and trustworthy and the type of payroll services the provider can offer.

Apte and Mason⁴¹ as well as Maurer and Mobley⁴² suggest that due to high standardisation, heavy administration and low interpersonal actions payroll is often seen as a prime candidate for outsourcing. The main motivation behind it is to reduce the operational cost of the organisation. According to Dickmann

39 Expert Payroll Services, <http://payrollservices.expertmarket.co.uk> (accessed: 14.02.2018).

40 W. Turek, *Payroll Outsourcing Goes Beyond Payroll*, "Payroll Supplement" 2008, no. 22, p. 16.

41 U. Apte, R. Mason, *Global disaggregation of information-intensive services*, "Management Science" 1995, vol. 41, no. 7, pp. 1250–1262.

42 R. Maurer, N. Mobley, *Outsourcing: is it the HR department of the future?*, "HR Focus" 1998, vol. 75, no. 11.

and Tyson⁴³ firms that invested less in payroll software, systems and equipment are more likely to outsource the payroll function. In addition, the availability of specialised skills is an important factor in some outsourcing decisions⁴⁴. For some businesses the reason to look for outsourcing payroll is the work overload and the need to dispose routine work to concentrate on more “important” activities⁴⁵.

In Poland payroll outsourcing companies offer three types of services⁴⁶:

- Payroll Online – a dedicated group of specialists will be responsible for payroll and contacts with Human Resources Departments;
- Payroll on-site – setting up a unit at the employer’s premises to deliver payroll services;
- Payroll on-demand – dedicated specialist will perform regular or ad-hoc checks of the correctness of calculations of salaries, insurance premiums and taxes, in accordance with relevant regulations.

Paroling contract offered by Polish companies can include some or all of the listed below services:

- calculating remunerations for the employees hired on contractual basis;
- transferring remunerations and public law liabilities (e.g. tax) related to remunerations from company subaccounts into relevant bank accounts;
- reporting monthly information on calculated remuneration for the employees;
- calculating public law liabilities related to remunerations and preparation of ZUS (National Insurance) and PEFRON (State Disabilities Rehabilitation Fund) declarations;
- preparation of the information necessary for accounting in the form of group payroll considering management information required by employer;
- debt collection;
- preparation of yearly declarations: PIT 11, PIT 40, PIT 4R, PIT 8AR, ZUS IWA.

Conclusion

Fierce competition, limited resources and the necessity of cost cutting, force companies to look for new approaches to run their businesses. By entrusting some of the activities previously conducted in-house to an external provider, many companies reduce their operational costs. In the past Human Resources Management

43 M. Dickmann, S. Tyson, *Outsourcing payroll...*

44 K. Abraham, S. Taylor, *Firms’ use of outside contractors: theory and evidence*, “Journal of Labour Economics” 1996, vol. 14, no. 3, pp. 394–424.

45 M. Dickmann, S. Tyson, *Outsourcing payroll...*

46 M.M. Stuss, *Payrolling jako narzędzie rozwoju ZZL...*

mainly used outsourcing for training and coaching. However, in recent years more and more companies use payrolling to outsource some of the HRM function. The scope of the services offered by payrolling companies is extensive and businesses can select those services that suit them best, including the choice of outsourcing part or all of the payrolling functions. Outsourcing the payroll firstly allows the company to reduce operational costs. Secondly, to access to up-to-date technologies and expert knowledge, without engaging extensive resources. In addition, it helps to improve the quality of management and provides an opportunity to focus on the core aspects of the business. Finally, it permits better utilisation of company assets.

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Abstract

The intensified globalization process, the fast-growing development of Information Technology, and the necessity to reduce operating costs, force companies to look for more efficient ways of using resources. Outsourcing some of the operation to external providers can be a good way to reduce cost. Payroll outsourcing can offer various benefits, such as lowering operational costs, access to the newest technologies and expertise without involving extensive use of resources. This is only possible if a reliable provider that is financially sound and trustworthy is available. This paper investigates the benefits that can be gained by outsourcing the payrolling function. Outsourcing will be defined and its benefits discussed, followed by an analysis of payrolling within Human Resource Management (HRM) outsourcing. Finally, the benefits of outsourcing of the payrolling function will be presented.

Keywords: outsourcing, outsourcing HR, Human Resource Management, payrolling

PART 5
Other trends and challenges
for modern organisations

Selected aspects of change adoption and of the functioning of business process management offices in enterprises

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Introduction

Modern companies operating in a turbulent environment expect to be able to improve their competitive position through the implementation of process management¹. The concept allows flexible adaptation to changing environmental conditions and involves the identification, modeling, automation, control, measurement and optimization of business processes while taking into account the strategic objectives². Process-oriented enterprises strive towards systematic process improvement using to this end appropriate methods and tools, leading to their further

- 1 M. Balzarowa et al., *Key to success factors in implementation of process – based management. A UK housing association experience*, “Business Process Management Journal” 2004, no. 4, pp. 387–389; C. Wolf, P. Harmon, *The State of Business Process Management 2014*, <https://www.bptrends.com/bpt/wp-content/uploads/BPTrends-State-of-BPM-Survey-Report.pdf> (accessed: 18.12.2019); A. Bitkowska, *Biuro zarządzania procesami w teorii i praktyce gospodarczej*, Difin, Warszawa 2018; P. Grajewski, *Organizacja procesowa*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2016; A. Bitkowska, *Od klasycznego do zintegrowanego zarządzania procesowego*, C.H. Beck, Warszawa 2019.
- 2 T. Hernaes, *Influence of strategic approach to BPM on financial and non-financial performance*, “Baltic Journal of Management” 2012, vol. 7, no. 4, pp. 376–396; R.K.L. Ko, S.S.G. Lee, E.W. Lee, *Business process management (BPM) standards: a survey*, “Business Process Management Journal” 2009, vol. 15, no. 5, pp. 744–791; B. Niehaves et al., *BPM capability development – a matter of contingencies*, “Business Process Management Journal” 2014, vol. 20, no. 1, pp. 90–106.

development³. What also follows is the assessment of business process maturity⁴. By implementing the concept of business process management, the enterprise is forced to update its business model, accelerate the dynamics of change adoption, and ensure the new rules and principles that respond to the changing demands and expectations of customers. To introduce changes more effectively, some process-oriented enterprises establish business process management offices which help with the implementation of process and design solutions. This article aims to identify, based on the course of action observed in Polish companies, an implementation area of organizational changes for fuller adherence to the requirements of process management. One of these measures concerns the changes with particular emphasis on the creation of business process management offices in organizations. To better determine the actual steps taken in this respect by companies, a survey was conducted giving rise to a number of conclusions and recommendations. To this end, literature review and analysis of personal research findings from the 2019 research study conducted in Poland are used in the article.

Change adoption and the functioning of a business process management office in modern enterprises

The multidimensionality of process management requires additional solutions, in particular changes, including organizational, which will facilitate the implementation and operation of the adopted business model. An inherent solution in process-oriented organizations is change management and appropriate staff training. To make changes, and particularly those related to economic processes, the organization may use simple improvement solutions conducted by individual employees or teams within the current operation model⁵. Changes can be adopted within the framework of process management, using to this end both simple improvements

3 D. Nadarajah, S.L. Kadir, *Measuring Business Process Management using business process orientation and process improvement initiatives*, "Business Process Management Journal" 2016, vol. 22, no. 6, pp. 1069–1078; R. Gabryelczyk, *Samoocena w badaniu dojrzałości procesowej organizacji: studium empiryczne*, "Ekonomika i Organizacja Przedsiębiorstwa" 2016, no. 12, pp. 66–78; R. Brayer-Marczak, S. Nowosielski, *Zdolność organizacji do ciągłego doskonalenia procesów*, [in:] A. Bitkowska, E. Weiss (eds), *Wielowymiarowość podejścia procesowego w zarządzaniu*, Wyższa Szkoła Finansów i Zarządzania w Warszawie, Warszawa 2016, pp. 43–57; A. Jurczuk, *Wieloaspektowa klasyfikacja źródeł niespójności procesów biznesowych*, "Przegląd Organizacji" 2017, no. 4, pp. 4–11.

4 M. Chrapko, *CMMI. Doskonalenie procesów w organizacji*, Wydawnictwo Naukowe PWN, Warszawa 2010; R. Gabryelczyk, *Samoocena w badaniu dojrzałości procesowej organizacji...*

5 S. Nowosielski, *Procesy i projekty w zarządzaniu zmianą organizacyjną*, "Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu" 2017, no. 463, p. 68.

(with the help of Kaizen, Lean) and projects⁶. Selected guidelines for change adoption in process-oriented enterprises may involve the following assumptions:

- process owners/managers recommend changes in the area of business process improvement and coordinate work related to business process implementation;
- employees and process teams have an impact on business process improvement, can propose changes and participate in their implementation;
- all employees have access to business process architecture and current business process models;
- business process changes are implemented in the organization and the effects of these changes are measured;
- introduced changes favour the implementation of the organization's main strategic and operational goals;
- systematic review of all business processes is undertaken, methods (tools) are used to optimize these processes.

Underpinning these improvement measures are the so-called bottlenecks identified in processes in the course of ongoing analysis. According to Nowosielski, a process team acting under a process manager (owner) is enough to handle that task. However, should continuous business process improvement be insufficient and more radical process changes were needed that go beyond the competences and powers of these units, a project will need to be implemented.

Enterprises reaching ever higher levels of process maturity encounter many barriers when adopting changes that can be difficult to solve without the help of qualified professionals. This is why many process-oriented enterprises establish a centralized and separate unit, a business process management office⁷, whose goal is to boost the overall performance of processes, provide recommendations and guidelines as to their functioning, and to manage business change projects in the enterprise. It is also a centre lending support in the scope of adopted changes and of sharing process management knowledge while promoting good practices at a company level. Reflecting on the functions of a business process management office, we can point to perspectives such as: development, knowledge and competences, and technology (Figure 1).

⁶ *Ibidem*, p. 78.

⁷ The following concepts can be found in the literature: Business Process Management Office, Business Process Management Center of Excellence.

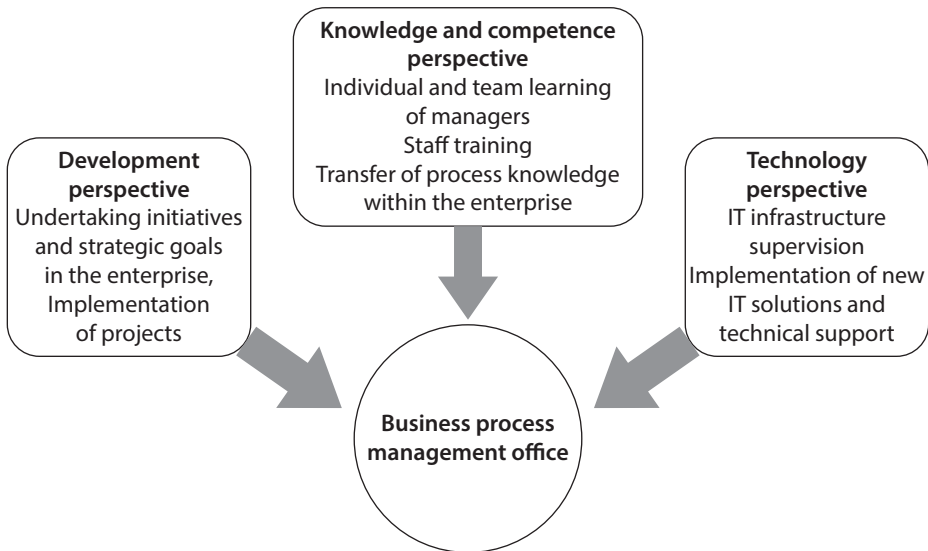


Figure 1. Perspectives for setting up a business process management office in an enterprise

Source: personal elaboration.

This unit offers specialized services and process management support related to changes and implementation of projects⁸. Rosemann⁹ put forward a comprehensive list of services provided by the business process management office, as shown in Table 1.

- 8 L. Jesus et al., *A Framework for a BPM Center of Excellence*, 2009, <https://www.bptrends.com/publicationfiles/FOUR%2009-09-ART-Framework%20for%20BPM%20Ctr%20Excellence-Jesus%20et%20al.pdf> (accessed: 18.12.2019); C. Richardson, *Process Governance Best Practices: Building a BPM Center of Excellence*, <https://www.bptrends.com/process-governance-best-practices-building-a-bpm-center-of-excellence/> (accessed: 18.12.2019); M. von Rosing, H. von Scheel, A.-W. Scheer, *The Complete Business Process Handbook*, Morgan Kaufman, Amsterdam – Boston – Heidelberg – London – New York – Oxford – Paris – San Diego – San Francisco – Singapore – Sydney – Tokyo 2015; J. Boots, *BPM Organization and Personnel – Part 1: Building a BPM Support Group that Creates Value*, 2011, <https://www.bptrends.com/publicationfiles/12-06-2011-ART-%20BPM%20Org%20and%20Personnel%20-%20Part%201%20-%20Boots.pdf> (accessed: 18.12.2019); P. Harmon, C. Wolf, *Business Process Centers of Excellence Survey*, 2012, <http://www.bptrends.com/reports/2012-BPTrends-CoE-Survey-3.pdf> (accessed: 18.12.2019).
- 9 M. Rosemann, *The Service Portfolio of a BPM Center of Excellence*, [in:] J. vom Brocke, M. Rosemann (eds), *Handbook on Business Process Management 2*, Springer, Berlin 2010, pp. 267–284.

Table 1. Services provided by the business process management office

Type of service	Characteristics
Process management maturity assessment	Marked by an evolutionary development path that allows the transition from the level of inconsistent, uncoordinated activities to the stage of ordered and managed processes in the organization in accordance with selected maturity models.
Strategic dissemination	Serves the implementation of the company's goals, includes defined relationships of customers, suppliers and other business partners in the aspect of process management.
Business process modeling	Creating process models involves the use of various IT tools using standard notation.
Business process library management	Concerns supervision and coordination of different versions of process models.
Business process improvement	Requires specialist knowledge and competences to improve the functioning of processes, in particular basic ones, often labour-intensive activities that do not lead to immediate positive financial and economic effects.
Designing information systems	Involves the planning and implementation of modules dedicated to specific stages of process management.
Business process automation	Enables supporting individual activities in processes through IT systems.
Change management in business processes	Involves the implementation of change management in individual processes and in the entire process system.
Business process project management	Enables the implementation of support for projects improving the process management system.
Business process supervision	Processes are measured using the balanced scorecard, can be part of the system for monitoring and assessing the status of an organization.
Audit of business processes	Consists of scheduled and regular assessment of all aspects of the process (effectiveness, efficiency, or supply of resources). The internal audit may cover many aspects of business operation and various processes (basic, auxiliary, management).
Measuring business process performance	Processes measured in relation to strategic goals and assumptions.
Business process monitoring	Measurement of processes requires a formalized procedure for data collection and interpretation.
Business process management training for employees	Training for employees to help them understand the underpinnings of process management, process modeling in accordance with selected notations.
Business process portfolio management	A project portfolio is a collection of projects or programs that have been grouped together to facilitate effective management and achievement of strategic goals. Projects in the portfolio are linked in a certain way, usually institutionally, financially, or with reference to time or site.

Source: personal elaboration based on: M. Rosemann, *The Service Portfolio of a BPM Center of Excellence*, [in:] J. vom Brocke, M. Rosemann (eds), *Handbook on Business Process Management 2*, Springer, Berlin 2010, pp. 267–284.

The range of services presented in Table 1 is rather extensive while not all services are fully provided by a business process management office. Over time, the scope of services increases depending on the company's needs and the development of organizational maturity. Business process management offices are also responsible for the internal promotion of knowledge about process management as such, which they create, accumulate and distribute by organizing training sessions or workshops (e.g. dedicated IT tools, soft process management, methods and tools used in improving process solutions). Preservation of business process and design knowledge is stored in databases (e.g. project documentation, project experience registers, process models, process experience registers, performance indicators). In the case of many processes being implemented in an enterprise, difficulties may arise due to inconsistencies in process designs and process management practices, which themselves stem from a lack of coordination and inconsistent management of the process environment, including knowledge management and intra-organizational learning. For this reason, the business process management office supports the implementation of business processes, enables the implementation of projects improving the business process management system overall and acts as the integrator of the process environment and also the coordinator of the knowledge management system.

Measures aimed at institutionalizing business process management initiatives and consolidating the benefits they entail throughout the enterprise require establishing a business process management office. In making that decision, the question must be answered about the value such a solution will add to the enterprise, bearing in mind that its main role is to actively support business process management at many levels: organizational, social, technological and knowledge. The proposed solution will bring benefits in the form of a more effective implementation of business processes and projects in the company. Establishing a business process management office may be necessary due to the creation of informal networks of practitioners and specialists in solving complex problems or due to the difficulty in acquiring and distributing knowledge. An argument in favour of business process management offices is that they relieve process teams from tasks involving knowledge exchange, especially investing significant resources in methods of knowledge exchange and transfer.

Along with the changes, more projects and new initiatives, and the development of process maturity that comes with it, the demand for new specialists also increases. The process management office gathers various professionals: these are process managers, project managers, process architects, business analysts, process analysts, process designers, HR specialists. They should all have knowledge and skills in the field of change management, knowledge of process management,

skills in managing complex projects, communication skills, be task-driven, able to solve problems and to motivate a team of lower-rank employees. Their tasks may include: participation in the work of analytical teams in the field of business process management, holding workshops aimed at developing the target form of business processes, their reflection and modeling, drafting analysis and implementation documentation in the field of business process management, participation in analytical work on the integration of implemented business processes with universities' IT systems.

Process-oriented enterprises implement permanent changes. An indispensable resource in change implementation are employees – their knowledge, experience and competences. One of the main areas of responsibility of a business process management office is to provide the right employees with the knowledge and experience necessary to complete projects and business processes related to change management. Because of that, business process management offices are held accountable for making decisions and defining the services, architecture, standards, and rules of continuous business process management. Through their existence, they support the implementation of strategic initiatives, ensure the provision of infrastructure resources and provide specialized process implementation services throughout the enterprise. They also have their say in: defining and implementing process architecture and process management systems in cooperation with senior and middle management, conducting quality audits, managing project teams in change projects, process optimization, managing a team of process specialists, defining the rules of the business process management system and its relationship with other management systems, conducting business process analyses for handling new products forming part of the process. As argued by Nowosielski, the subject of transformational changes is usually the key processes of the organization, but also of the entire business process architecture, both in relation to specific entities – supply chain links – and the entire chain. In the meantime, changes introduced as part of continuous improvement concern individual processes and/or their selected activities¹⁰.

10 S. Nowosielski, *Procesy i projekty...*, p. 75.

Implementing organizational changes in process-oriented enterprises – personal research results

Our research from 2019 analyzed the responses given to the questions about actual measures, or steps, taken by enterprises as part of improving business process management in the context of change management. We were particularly interested in the issue of creating separate organizational units specializing in process management. The survey covered enterprises operating in Poland. The research sample was selected through purposive sampling and included only those enterprises with established business process management. The research technique used in the study was a questionnaire survey addressed to business process management specialists, business process owners and business process experts. The survey was completed correctly by a total of 121 process-managed enterprises.

Changes in process-managed organizations are marked by the continuity of their implementation. Among the drivers of business process improvement, and therefore the improved performance of processes, participants indicated as key the human factor, meaning employees (business process managers, employees forming part of business process teams) along with important technical and organizational solutions. Table 2 shows the measures indicated by the analyzed organizations while column 3 reports survey results showing the actual measures taken by process-managed enterprises to improve processes and successfully pursue a process approach within the organization.

Table 2. Measures taken by enterprises to improve processes and implement a process approach

Code	Factor/measure taken by the organization	Responses (%)
ZP_1	Change proposals can be submitted by any employee	55.74%
ZP_2	Change proposals can only be submitted by managers	12.30%
ZP_3	There is a dedicated unit/team/position responsible for process improvement	37.70%
ZP_4	There is an internal knowledge portal for process management in the organization	22.13%
ZP_5	Managers have been trained in process management	24.59%
ZP_6	Employees have been trained in process management	21.31%
ZP_7	Employees are informed about process management implementation on an ongoing basis	20.49%

Source: personal elaboration based on empirical research conducted in 2019.

Referring to the results in Table 2, it is clear that enterprises focus primarily on making employees aware of their importance in implementing a process

approach. This includes communicating to them a possibility of reporting improvements and changes in the currently implemented processes, regardless of their function (managerial or operative) – a direct reference to Lean Management where problems arising during a process (the concept originally focused on manufacturing processes, but it can be referred to any process in the organization) are first noticed at the place of their origin. In practice it means that the first person to notice an irregularity or the possibility of a different, better solution to a problem is the person directly involved in the implementation of the process. Hence, it is not surprising that more than half (55.74%) of the respondents emphasize the importance of cooperation with employees in process improvement, and **even less surprising due to the fact it** has become common knowledge in Polish business management practice. Further on, the study found that in every fifth enterprise there is an internal portal which aims to provide employees with knowledge about process management and process orientation in the organization. Companies also value training employees in knowledge management, both operative (21.31%) and managerial (24.59%). However, what is particularly telling given the nature of this research is that as many as 37.7% of the surveyed organizations have a dedicated business process improvement unit. For the purposes of this article, the name adopted for this department is business process management office.

Among the questions there was information about the existence of knowledge portals for business process management and the implementation of this concept in organizations. Knowledge portals can take a variety of forms, which is why the following question referred specifically to business process knowledge repositories within the organization, meaning related to its direct activity (Figure 2). However, dedicated repositories were found only in 27.5% of the organizations, with the rest storing process knowledge in a different way. The research does not identify how it is stored but it should be viewed as a premise for a further in-depth investigation using an interview format in order to be more precise than a survey.

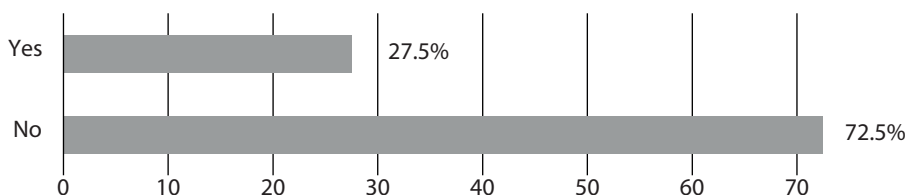


Figure 2. Existence of business process repositories in the analyzed enterprises

Source: own elaboration based empirical research conducted in 2019.

To examine the impact of individual factors previously listed in Table 1 on the improvement of organizational processes, a study of their correlation, meaning

mutual statistical effect, was conducted. Although correlation does not necessarily indicate a causal relationship, its analysis provides a rich insight into the mutual changes occurring between the analyzed factors, their strength and direction. This information should be enough for an initial stage of research such as the one shown in Table 3 below.

Table 3. Correlation analysis for the analyzed factors

	STRAT	ZP_1	ZP_2	ZP_3	ZP_4	ZP_5	ZP_6	ZP_7
STRAT	1	–	–	–	–	–	–	–
ZP_1	0.18	1	–	–	–	–	–	–
ZP_2	0.24	–0.04	1	–	–	–	–	–
ZP_3	–0.17	–0.31	0.06	1	–	–	–	–
ZP_4	0.11	–0.04	0.19	0.31	1	–	–	–
ZP_5	0.10	0.03	0.37	0.20	0.21	1	–	–
ZP_6	0.20	0.28	0.36	0.12	0.22	0.41	1	–
ZP_7	0.25	–0.10	0.25	0.03	0.16	0.18	0.06	1

Source: own elaboration based empirical research conducted in 2019.

The data in Table 3 shows that a correlation of moderate strength appears only for a few variables. The goal here was to examine the relationship between the factors described in Table 2 and the STRAT factor determining the degree of implementation of the business process improvement strategy in the organization. However, it occurred there are clear-cut correlations between the factors stating that changes can be proposed by the manager (ZP_2) and that information on business process management implementation is provided to employees on an ongoing basis (ZP_7). These are certainly interesting conclusions that may pinpoint the real importance of providing information and knowledge about the progress of implementing business process management in an organization – an activity that consolidates process orientation in employees and reinforces their focus on this aspect of company management. As a result, “process thinking” can grow to become a daily routine.

An interesting correlation is also that between ZP_3 (existence of a dedicated business process management unit) and ZP_1, (changes proposed by all employees). In this case, a negative correlation can be observed, meaning the office existence “relieves” employees from thinking about improving processes and submitting their own suggestions. This may also indicate constantly emerging communication problems between the business process management office and the employees. The data in Table 2 also clearly reflects the essence of employee and manager training (ZP_5 and ZP_6, respectively), as this is a factor correlated with the fact of proposing improvements. Interestingly, however, the people who are more active

in reporting ideas for business process improvement are managers, but it can still be assumed that training all employees improves communication within working teams and between the manager and the employees. However, these remain merely hypotheses that will require further, in-depth research.

Implementation of business process management offices in organizations is not easy, since – as already stressed in the previous section of this paper – it entails changes not only at a structural level, but also in the very way processes are implemented in the organization itself (Figure 3). The fact of having separate departments dealing with business process management results from a strong process orientation and represents a shift towards pursuing a strategy of continuous improvement and increasing process efficiency. However, as suggested by the literature review and the observations made in this study, the will to improve organizational processes can take various forms, a business process management office being one of them.

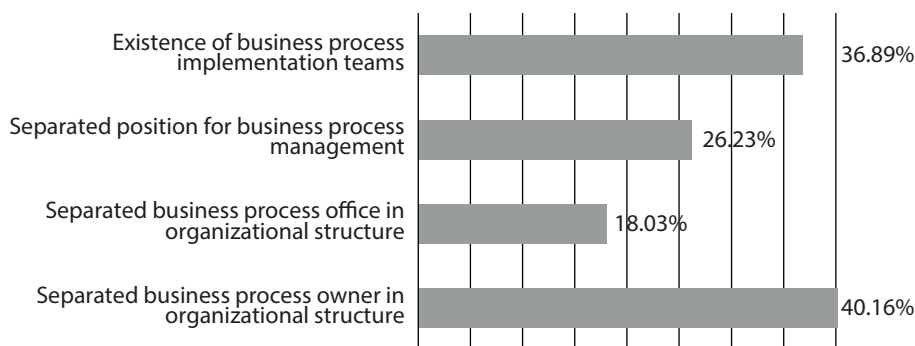
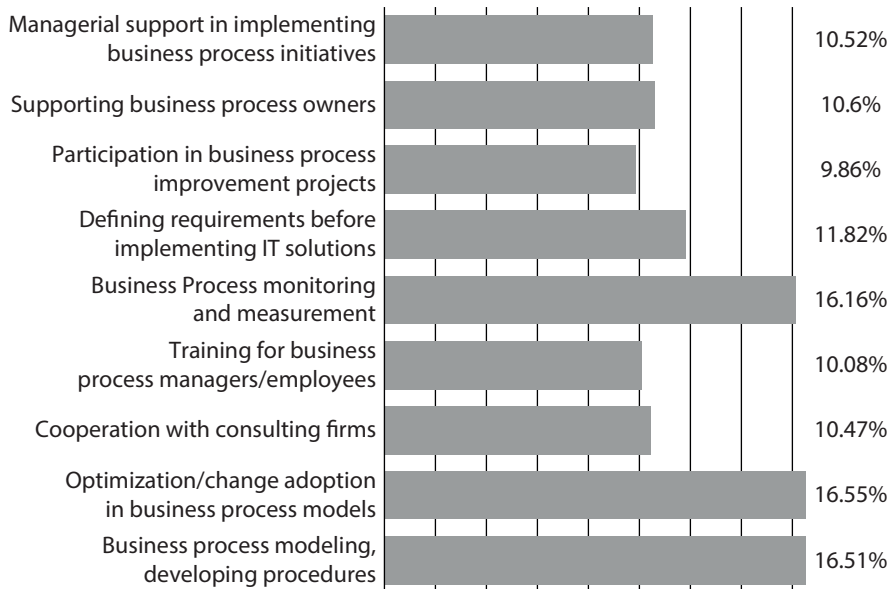


Figure 3. Organizational solutions adopted in enterprises

Source: personal elaboration based empirical research conducted in 2019.

Figure 3 lists the responses given to the questions about the actual measures taken by Polish enterprises at an organizational level. As can be seen, the most common action is to establish separate business process owners and business process management teams. Only 26.23% of the surveyed enterprises have a separate position for process management while the business process management office only appears in 18%.

Establishing a business process management office is a crucial step in the building of integrated process management. Services provided by business process offices seem important, too. Respondents mainly pointed to business process modeling (30.51%), optimization support and change adoption in business process models (26.55%), business process monitoring and measurement (23.16%), training for business process managers (18.08%) and cooperation with consulting firms (21.47%) (Figure 4).



Note: Respondents could select multiple answers.

Figure 4. Tasks of a business process management office in the organization

Source: personal study based on empirical research conducted in 2019.

The research clearly shows that process-oriented companies in Poland are slowly gaining experience in the building and operation of business process offices, even if their importance is not always well embedded into the organizational structure and employees' minds, as clearly shown by the correlation analysis. This may be due to the fact these offices are relatively new units that are still in the development phase. We are also inclined to believe that a parallel study conducted again in two years' time would report different results, therefore allowing forecasts. Our deliberations and research signal a need to strengthen thinking and procedural action as well as to further train managers in this area by supporting specialized units in the organization.

Conclusions

The implementation of a processes-oriented approach in organizations and the continuous improvement of processes is a multi-stage task. Enterprises with an established market position are taking a number of steps towards implementation in process orientation. However, it is neither quick nor easy. It requires numerous adaptations and significant changes both in the organization's structures and the way it functions. An important, if not pivotal, element in the adaptation process

are people who are both a carrier and recipient of change. An example of a measure adopted at the stage of implementing process orientation is the establishment of a business process management office.

The task of the business process management office is to institutionalize process initiatives and consolidate the benefits arising from implementing process management. It is a specialized organizational unit established to gather and develop business process knowledge along with supporting the implementation of individual processes. The growing interest of managers in having a management office indicates the need to consider this problem in research. A business process management office is, after all, a complex and long-term undertaking requiring the involvement of many specialists; it requires proper preparation and readiness to incur additional costs on the part of the enterprise. As a venture, it can happen to be difficult in practice given the significant commitment required from the management and the resources needed to hire the right people or train selected employees. The human factor can also be an obvious limitation, as clearly reflected in the findings of this study. A professional approach to building a business process management office will make processes more efficient and effective while maintaining the required quality standards and will therefore help the company gain a competitive advantage in the market.

The results indicate that process management is inseparable from change management. Changes are implemented in a planned and informed way, hence the need to transfer knowledge, develop it, train employees, create knowledge repositories for process improvement, and establish business process management offices. This is all undoubtedly a positive experience. However, it is not something that can be conducted overnight. Introducing organizational changes has numerous consequences, mainly observed in employee response. There is a risk that an emerging business process management office will become burdened with the whole initiative and responsibility for process improvement instead of being an expert support body. Its goal should be to propel the development of knowledge and process initiatives by providing support in the implementation of new solutions. Over time, such an office can determine the success or failure of process management initiatives, but it must always be fully integrated with the entire business process management and geared towards both economic and social aspects. The findings discussed in this paper may be a reference point for managers in the adoption of centralized solutions supporting the process approach through setting up a business process management office, while the lack of relevant publications in Polish source literature prompts the need for further scientific and research exploration.

This study has a number of limitations, some of which have been highlighted in the previous sections. Notwithstanding, emphasis should be placed on future

research directions which have emerged along the way, such as why only 55.74% of the enterprises stated that each of their employees is encouraged to participate in improving business processes. This value would perhaps not be surprising were it not for the fact that the research sample was selected randomly. Another interesting point of departure for future research may also be the cooperation of working teams and the preferred flow paths for submissions pointing to process improvement. These and other more detailed issues require additional targeted research, or even cyclical analyses, to identify the emerging trends.

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Abstract

Enterprises adapt their activities and structures to the requirements of the environment. One such measure, aimed at a more complete implementation of environmental requirements, is the adoption of process orientation. To this end, organizations take a number of different steps, one of them being to establish a business process management office to support various internal initiatives and thus strengthen the overall performance of the organization. The aim of this article is to present, based on personal research, the actual measures taken by Polish process-managed enterprises. This study attempts to indicate, against the backdrop of the research, the course of action prevalent in these measures and the resulting restrictions.

Keywords: change management, business process management, business process management office

Organizational culture as a risk factor in projects

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Introduction

According to Levine, project management was the most recognizable trend of the 90s¹. It seems that this situation has persisted until today, as evidenced by the number of associations for project management enthusiasts, publications, trainings, postgraduate studies or conferences addressing the project related problems. Currently, projects play an important role even in these industries where repetitive activities are traditionally the basis of functioning (e.g. trade or production). Despite the ongoing development of the project management research area, many projects continue to fail. The research conducted by Standish Group International shows that although the percentage of unsuccessful projects declines year by year, it still remains at the level either equal or close to 60%². In this case, failure is identified with such deviations as:

- delays in the project;
- failure to implement a certain scope of the project;
- higher project costs.

Project definitions draw attention to the fact that a project represents a temporary social system (work system), constituted by a team in order to implement a specific task within a given timeframe and budget constraints. The process-oriented nature of the project, task uniqueness, complexity and complication or the need to apply specific methods are also often highlighted³. Each project, in its essence, including

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- 1 H.A. Levine, *Practical Project Management. Tips, Tactics, and Tools*, John Wiley & Sons, New York 2002, p. 19.
 - 2 Standish Group, *Chaos Report 2015*, The Standish Group International, Inc., 2015, p. 1, https://www.standishgroup.com/sample_research_files/CHAOSReport2015-Final.pdf (accessed: 25.03.2020).
 - 3 For more see: K. Piwowar-Sulej, *Zarządzanie ludźmi w organizacjach zorientowanych na projekty*, Difin, Warszawa 2016, pp. 40–43.

such features as complexity, uniqueness and complication is subject to risk, defined as the “cumulative effect of the probability of uncertain occurrences that may positively or negatively affect completion of a project”⁴. Although this definition carries a positive message, risk is more often identified with the possibility that something will go wrong⁵. Referring to the main goals of each project, as well as the negative consequences, it can be stated that this risk is connected with the possibility of unexpected circumstances causing the aforementioned deviations.

All the activities related to risk, and specifically to higher security of business operations are referred to as the so-called risk management. It is also present in projects. A detailed analysis of the nature and extent of the potential risk allows preventive action to be taken in due time or allows for the impact of risk to be minimized. There is also a risk of not taking specific actions. The goal of risk management is – if not guaranteed (as it is difficult) – to bring the project closer to success. This success can be defined through the prism of achieving the abovementioned three project parameters, but also taking into account such elements as the level of customer or project team satisfaction⁶.

A project and a project team represent the immanently correlated concepts. As indicated earlier, a project is a social system. People, the members of the defined team, should use their competences and motivation effectively in order to achieve the adopted project results. Meanwhile, people, as the most unpredictable so-called “soft resource” of each project, remain the source of risk. It is them who bring their norms, values, routine behaviours to work, thus creating an organizational culture. This culture acts like “glue which bonds the organization together through the shared patterns and meaning”⁷. However, it can have either a positive or a negative impact on the achieved results.

The purpose of this article is to present organizational culture as a project risk factor. In writing this article, references were made to the subject literature presentation of risk areas in projects. It was highlighted in this article that since every organization has its own culture, a single project, as a micro-organization also has its own culture and influence exists between the two. Finally, the empirical research results on the impact of culture on project success are presented. The article

4 C. Pritchard, *Zarządzanie ryzykiem w projektach. Teoria i praktyka*, WIG Press, Warszawa 2001, p. 7.

5 J. Bralczyk (ed.), *Słownik: 100 tysięcy potrzebnych słów*, Wydawnictwo Naukowe PWN, Warszawa 2005, p. 735.

6 For more see: G. Sudhakar, *Understanding the Meaning of Project Success*, “Binus Business Review” 2016, vol. 7, pp. 163–169.

7 C. Siehl, J. Martin, *The role of symbolic management: How can managers effectively transit organizational culture?*, [in:] J. Hunt et al. (eds), *Leaders and managers. International perspectives on managerial behavior and leadership*, Elmsford, Pergamon, New York 1984, p. 227.

is of a theoretical and pragmatic nature. The conducted literature review aimed at answering the following question: “Which features and types of organizational culture have a positive impact on project success?”. The literature review resulted in certain implications for the practitioners and theorists of management.

Organizational culture at the background of other project risk factors – literature approach

The identification of areas, sources, components, risk factors or causes of failures in projects is the basis of risk management. Some factors are internal to the project, others are intra-organizational, whereas still others are a consequence of the processes occurring in an organization’s environment (see Table 1).

Table 1. Areas and examples of the specific sources of project risk

Areas of project risk		
Environment risk	Internal project risk	Intra-organizational risk
External sources of project risk	Internal sources of project risk	Organizational sources of project risk
• Economic situation • Legal environment • Force majeure • External project shareholders	• Project funding • Form of processes in a project • Features of project management entities (including the team adopted management method) • Attitude of the project sponsor • Beneficiaries’ behavior • Features of project executors (competences, behavior of project team members)	• Incorrect training policy • Acceptance for project implementation in isolation from the strategy • Inability to create a truly interdisciplinary team • Lack of commitment from the organization management • Reluctance to change • Absence of adequate resources

Source: author’s compilation based on J. Bizon-Górecka, *W poszukiwaniu modelu zarządzania organizacją przez projekty*, “Przegląd Organizacji” 2009, vol. 2, p. 25; R. Jones, *Zarządzanie projektami. Sztuka przetrwania*, MT Biznes, Warszawa 2007, pp. 23–25; T.L. Young, *Skuteczne zarządzanie projektami*, Wydawnictwo Helion, Gliwice 2006, pp. 16–17.

Organizational culture is, beyond doubt, one of the project risk factors. According to such authors as Kendra and Taplin, success in project management depends, among others, on the management practices representing organizational culture⁸. However, as the table above shows, such components as the adopted method of project management and the behaviour of project team members are critical to project success. A hypothesis can be put forward that these factors represent the elements

⁸ K. Kendra, L.J. Taplin, *Project success: A cultural framework*, “Project Management Journal” 2004, vol. 35(1), pp. 30–45.

of the so-called internal project culture. Each project is a micro-organization with its own values and behaviours. The examples of cultural artifacts in a project team are presented in Table 2.

Table 2. Examples of cultural artifacts in a project team

Groups of cultural artifacts in a project team		
Linguistic	Behavioural	Physical
• Specific project terminology • The way team members address each other • Taboos	• Organization of meetings • Communication rules (channels) • Cooperation rules of team members with the project manager • Keeping the records • Work control rules • Rewarding team members	• Material conditions of teamwork • Outfit of project team members

Source: author’s compilation using P. Wachowiak et al., *Kierowanie zespołem projektowym*, Difin, Warszawa 2004, p. 83.

Finally, the organizational culture of the entire enterprise has to be taken into account, covering such factors as the training policy or the attitude towards changes which are listed in the last column of Table 1. Organizational culture like the subconscious affects aspirations, attitudes and employee behaviour. Feedback is present between the organizational culture of subsequent projects and the culture of the entire organization. The organizational culture of an enterprise defines the approach to change and risk (whereas each project, as indicated in the introduction, is burdened with risk by definition). Organizational culture also shows the value of projects and project work. In turn, norms and rules of cooperation in project teams or a specific language can be “transferred” to the culture of the entire organization. The culture connecting people in an organization is very closely related to the results achieved by this organization. It may fail to facilitate effective actions, or even counteract them through developing or consolidating specific attitudes and employees’ behaviour.

Features of organizational culture having a positive impact on project results

Kerzner is of the opinion that project management is a culture, rather than politics or procedures⁹. Therefore, the concept of the so-called project (pro-project) culture is used. The literature on project management presents the characteristics

9 H. Kerzner, *Applied Project Management. Best Practices on Implementation*, John Wiley & Sons, New York 2000, p. 212.

of the culture under study, which covers the strictly defined features supporting the implementation of changes in an organization or in teamwork. At this point it is, however, worth emphasizing that in English-language publications addressing the problem of project management such terms as “project culture”, “project management culture”, “project climate” and “project environment” function interchangeably¹⁰. In Polish scientific literature, however, working environment is mostly identified with working conditions (material and non-material ones, as well as the broadly understood occupational health and safety¹¹). The climate, in turn, is only an external, easily observable layer of culture and stands for the subjective feelings of employees referring to the atmosphere in the workplace¹².

For example, as the research conducted by Doolen, Hacker, and van Aken shows the organizational culture promoting communication and cooperation between teams affects the satisfaction of team members and the effectiveness of team management¹³. Due to the fact that projects are based on teams, the hypothesis can be formulated that the culture characterized with the indicated features will have a positive influence on the results of projects.

Many authors have conducted a more detailed research on organizational culture, connecting it directly with the problem of project management. For example, Belassi, Kondra, and Tukel showed a significant relationship between culture, positive work environment with strong leadership and the success of projects focused on new product development¹⁴.

Morrison, Brown, and Smit provide evidence that organizational culture has a significant relationship with the effectiveness of project management. In particular, attention should be paid to the relatively strong correlation with the previously mentioned effectiveness of such values as respect and inter-functional integration¹⁵.

10 Y. Du Plessis, C. Hoole, *An Operational “Project Management Culture” Framework (Part 1)*, “SA Journal of Human Resource Management” 2006, vol. 4(1), pp. 36–43.

11 See e.g. E. Janosik et al., *Wpływ fizycznych czynników środowiska pracy na obciążenia pracą monotypową*, “Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie” 2018, vol. 38, no. 2, pp. 121–137.

12 J. Skalik, *Kulturowe uwarunkowania wzrostu i rozwoju organizacji gospodarczych*, [in:] B. Mikuła (ed.), *Historia i perspektywy nauk o zarządzaniu*, Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2012, pp. 123–130.

13 T.L. Doolen, M.E. Hacker, E.M. van Aken, *Impact of organizational context on work team effectiveness: a study of production team*, “IEEE Transactions on Engineering Management” 2003, no. 50, pp. 285–296.

14 W. Belassi, A.Z. Kondra, O.I. Tukel, *New Product Development Projects: The Effects of Organizational Culture*, “Project Management Journal” 2007, vol. 38, no. 4, p. 15.

15 J.M. Morrison, C.J. Brown, E.V.D.M. Smit, *The impact of organizational culture on project management in matrix organizations*, “South African Journal of Business Management” 2008,

In turn, Graham and Englund identified eight factors which have a direct impact on project success. They are as follows: strategic emphasis, upper management support, project planning support, customer/end user input, project team development, project execution support, communication and information system and organizational support¹⁶. In such an environment, teamwork and inter-functional tasks remain a norm, conflicts are identified and resolved, and perfection is the driving force¹⁷.

In addition, project culture is based on such values as: mutual trust, respect, open communication, risk and conflict tolerance of the disciplines combined with flexibility, result orientation, support and faith in making the right decisions, kindness and compliance with the principles of professional ethics¹⁸.

Some researchers address the problem of national culture impact on project outcomes. It is emphasized that national culture determines organizational culture which, in turn, affects the execution of projects. The basic concept used in these studies is the one by Hofstede¹⁹, which distinguishes such cultural dimensions as power distance, the degree of uncertainty avoidance, individualism and collectivism, long- or short-term orientation. Attention is primarily drawn to the need for education in the area of cultural differences for the success of projects executed by international teams²⁰. The impact of these differences on the specific tasks, implemented as part of project management, such as risk management, is also analyzed. Risk is perceived and managed differently in various cultures. The feature of Polish culture, in the form of avoiding uncertainty, results in many rigorous conditions of cooperation included in the agreements with contractors²¹.

vol. 39, no. 4, pp. 27–36.

- 16 R.J. Graham, R.L. Englund, *Creating an Environment for Successful Projects*, Jossey-Bass, San Francisco 1997.
- 17 C.F. Gray, E.W. Larson, *Project Management – The managerial process*, Irwin McGraw-Hill, New York 2003.
- 18 T.L. Young, *Skuteczne zarządzanie...*, pp. 40–41; J.K. Pinto, D.P. Slevin, *Critical factors in successful project implementation*, "IEEE Transactions on Engineering Management" 1987, no. 34, pp. 22–27; J.M. Morrison, C.J. Brown, E.V.D.M. Smit, *The impact of organizational culture...*, p. 32; Y. Du Plessis, C. Hoole, *An Operational "Project Management Culture" Framework...*, pp. 36–43.
- 19 G. Hofstede, *Culture and organizations*, "International Studies of Management and Organization" 1981, vol. 10(4), pp. 15–41.
- 20 B. Shore, B.J. Cross, *Exploring the role of national culture in the management of largescale international science projects*, "International Journal of Project Management" 2005, vol. 23, pp. 55–64.
- 21 J. Liu, F. Meng, R. Fellows, *An exploratory study of understanding project risk management from the perspective of national culture*, "International Journal of Project Management" 2015, vol. 33, pp. 564–575.

Kivrak and his research team showed that collectivism is conducive to knowledge sharing, however, only within a project team (not with outsiders)²². The same author also used Hall's²³ typology to illustrate how national culture determines knowledge sharing in an international project. The indicated typology distinguishes high and low-context cultures. The messages in a low-context culture are unambiguous and reflect fairly accurately the speaker's intentions, which leaves little space for free interpretation. In the case of high-context communication the message contains ambiguity. Studies have shown that high-context content is a strong barrier in the process of tacit knowledge sharing. In addition, such cultural features as hierarchy and competition hamper knowledge sharing in international projects. Religion is not included in the study.

Returning to the organizational culture, the hypothesis can be formulated that the typology of organizational cultures by Cameron and Quinn²⁴ is most often discussed in the studies addressing project management problems, although the output of management sciences includes numerous classifications of organizational cultures. The concept proposed by the aforementioned authors covers such cultural types as clan, market, adhocracy and hierarchy culture. For example, the research conducted in the US involving 86 project managers in 76 companies indicates a strong correlation between clan culture and high project effectiveness and the overall organization activity. It appears that this type of culture – focused on employee participation, social cohesion, shared values, commitment, high morale – guarantees the achievement of project goals, meeting client expectations within the adopted timeframe as well as team satisfaction.

The research conducted by Wiewióra and her research team also confirms that clan culture, promoting a collaborative environment in which people are encouraged to communicate will facilitate knowledge sharing, even about the mistakes made²⁵. In turn, the market culture, centred around such values as competitiveness, achievements and the focus on performance measurements, will probably hamper knowledge and skills sharing in the project. However, according to the results of previous studies by the author of this article, projects are also successfully completed in the cultures with dominant “hierarchical-market” features²⁶.

22 S. Kivrak et al., *Impact of national culture on knowledge sharing in international construction projects*, “Canadian Journal of Civil Engineering” 2014, vol. 41, pp. 642–649.

23 E.T. Hall, *Beyond culture*, Anchor Press, Garden City 1976.

24 K.S. Cameron, R.E. Quinn, *Diagnosing and Changing Organisational Culture Based on Competing Values Framework*, Josey Bass, San Francisco 2006.

25 A. Wiewióra et al., *Uncovering the Impact of Organizational Culture Types on the Willingness to Share Knowledge between Projects*, [in:] *Proceedings of the Conference: Kumamoto, Japan 2012*, pp. 1–16.

26 K. Piwowar-Sulej, *Kultura organizacyjna i jej wpływ na działalność projektową – studium przypadku*, “Marketing i Rynek” 2014, no. 5, pp. 143–148.

Do Carmo Silvaa, Francisco, and Gomes conducted research²⁷ using the typology of cultures proposed by Handy²⁸. This approach identifies four characteristic types of organizational culture: power, role, task and person-oriented culture. It is worth noting here that the task-oriented culture is directly referred to as the project-oriented one. The organizations focused on tasks recognize tasks and their completion as the most important. What matters are personal competences and the contribution to specific actions. Teams following these principles are extremely flexible and easily adapt to the situation requirements. They are formed for a specific purpose, which determines the sense of their existence. Such a team works fast in both taking actions and making decisions. Individual team members have an extensive range of freedom, but also face the responsibility for their work. The effects matter. Mutual relationships are usually quite loose, based more on the value of skills and input rather than age and formal status. The orientation on action allows the solving of problems through discussions and joint negotiations, which gives the sense of co-creating the solution. Such teams usually work well in a changing and highly competitive environment. The research undertaken by the previously mentioned authors shows that diverse cultural types are present in different organizations which conduct projects successfully. Not only the culture type but also the industry specificity is important here. In addition, projects are successfully executed when – apart from culture – other factors also affect this success (e.g. selection of the appropriate project management methodology²⁹).

Conclusions

It has been indicated in the article that wrong organizational culture may become the source of project risk. The elements of organizational culture are recognized within internal and intra-organizational risk areas in projects. The article addresses organizational culture without ignoring the importance of culture in the project itself.

Organizational culture can be developed with due awareness. The conducted literature review identifies the features to be included in organizational culture. While there is general consent that, for example, the culture based on trust has

27 M. Do Carmo Silvaa, C. Francisco, S. Gomes, *Practices in project management according to Charles Handy's organizational culture typologies*, "Procedia Computer Science" 2015, no. 55, pp. 678–687.

28 Ch. Handy, *Understanding organizations*, Oxford University Press, New York 1983.

29 K. Piwowar-Sulej, *Types of Organizational Culture in the context of Project Management Methodologies*, [in:] *Proceedings 35th International Business Information Management Association Conference (IBIMA)*, 1–2 April 2020, Seville [in print].

a positive impact on project success, it is impossible to answer explicitly the question which type of culture (taking into account different typologies) remains the best. Although Clan culture seems to be the most appropriate, other cultural types in combination with various factors can facilitate project success as well.

Referring to the research on the types of culture in the context of project success, it should be observed that in the real world organizations are rarely characterized by one type of culture. It is believed that for its effectiveness an organization may be forced to achieve “good” results in all cultural types. The best results are achieved by the organizations in which all four cultural types listed by Cameron and Quinn are adequately balanced³⁰.

Measuring the impact that culture may have on project outcomes is difficult. The development of organizational culture featuring the specific characteristics is influenced by many factors, both endo- and exogenous. Internal factors include, among others, the organization’s vision and strategy, age or personal traits of the employees (age, gender, education). In addition, certain external factors influencing the formation of organizational culture can be identified, such as market, demographic, cultural, economic and legal determinants. Some of these factors are beyond the influence of an organization participants. Therefore, it is worth undertaking in-depth, comprehensive research on the combined and mutual influence of various factors determining project results.

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30 T. Yu, N. Wu, *A review of study on the competing values framework*, “International Journal of Business and Management” 2009, vol. 4, no. 7, pp. 37–42.

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Abstract

The purpose of the article is to present organizational culture as a project risk factor. The author addressed the literature approach to risk areas in projects. It was highlighted that since every organization has its own culture, a single project as a micro-organization has its own too. There is feedback between these cultures. Finally, the research results on the impact of culture on project success were presented. The article is of theoretical and pragmatic nature. The conducted literature review shows some implications for both management practitioners and theorists. The literature review also identifies features worth implementing in an organizational culture. While there is a general agreement that, e.g., culture promoting cooperation has a positive impact on project success, it is not possible to explicitly answer the question which type of culture (taking into account different typologies) remains the best (some of the above was changed in the main article).

Keywords: organizational culture, project management culture, project risk management

The role of managers in risk management

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Introduction

Risk management, like other management domains, has undergone significant transformations, adapting its semantic, conceptual and instrumental dimension to the changing conditions of business operations and the expectations of stakeholders. The basic directions of changes include: obtaining strategic significance through risk management in connection with its unquestionable impact on gaining a competitive advantage, creating value for stakeholders, or potential effectiveness in conditions of increasing complexity¹. All these transformations generate a number of challenges for company managerial staff, and risk management itself has become one of the obligatory management functions. Therefore, it is extremely important to conduct scientific research related to the scope of responsibilities, competences and the position of managers responsible for the risk management process in the organizational structure of the enterprise.

The purpose of this text is to identify the role of a manager in contemporary enterprise risk management. The main research method was literature review as well as the analysis of professional trainings on offer that certify risk managers competences. Answers to the following questions were sought in the research process:

1 J. Calandro, *A leader's guide to strategic risk management*, "Strategy & Leadership" 2015, vol. 43, no. 1, pp. 26–35; J. De Loach, *The new risk imperative – an enterprise – wide approach*, "Handbook of Business Strategy" 2004, vol. 5, no. 1, pp. 29–34; E. Elahi, *Risk management: the next source of competitive advantage*, "Foresight" 2013, vol. 15, no. 2, pp. 117–131.

- How have managerial functions evolved in the area of risk management?
- What competences should the managers responsible for the risk management process have?
- What professional and certified risk management trainings are currently available for managers?

The evolution of managerial functions in the area of risk management

The emergence of separate job positions responsible for functions related to risk and uncertainty could already be observed at the turn of the 60s and 70s of the last century. At that time, in the United Kingdom, the British Safety Council introduced a safety management diploma as a minimum qualification for managerial functions in the field of occupational health and safety. The purpose of introducing a new requirement for managers was to convince enterprises to professionalize safety management. Since then, the training of safety managers has gradually gone beyond the area of occupational health and safety management, evolving towards the formalization of jobs responsible not only for safety management but much more widely – for risk management. In the 1980s, the same institution ran the only certified competence course in Europe in the area of risk management².

At present, enterprises usually decide independently whether the implementation of the risk management function will be in the hands of the top management or whether a specialized job position (in the form of a risk manager or risk specialist) or a new organizational unit (risk management department) will be created. Knight³ believes that the appointment of risk managers as separate job positions is not necessary, because risk management should be an area integrated with the general management system, not isolated from its other functions. Thus, risk management should be a competence area not merely for one manager, but for all managers in a given entity. However, in large enterprises, often the international ones, the incorporation of multi-person risk management divisions into the organizational structures can be observed. The implementation of the risk management function in the form of a separate organizational unit requires close cooperation with the main management division and full cohesion with the area of strategic management.

2 B. Crew, *Risk Manager – the New Professional*, “Industrial Management & Data Systems” 1982, vol. 82, no. 11/12, pp. 3–30.

3 K.W. Knight, *Risk Management is a journey, not a destination*, Presentation to the RusRisk/Marsh ISO 31000 Risk management standard: principle and implementation trends, Seminar, Moscow, 2010, <https://fermlab.hse.ru/data/2010/12/16/1208283693/A%20Journey%20Not%20A%20Destination%20-%20HO.pdf> (accessed: 26.07.2018).

In addition to placing responsibility for risk management in the organizational structure, the process of the evolution of components of management function in this domain is important. An attempt at chronological mapping is presented in Figure 1.

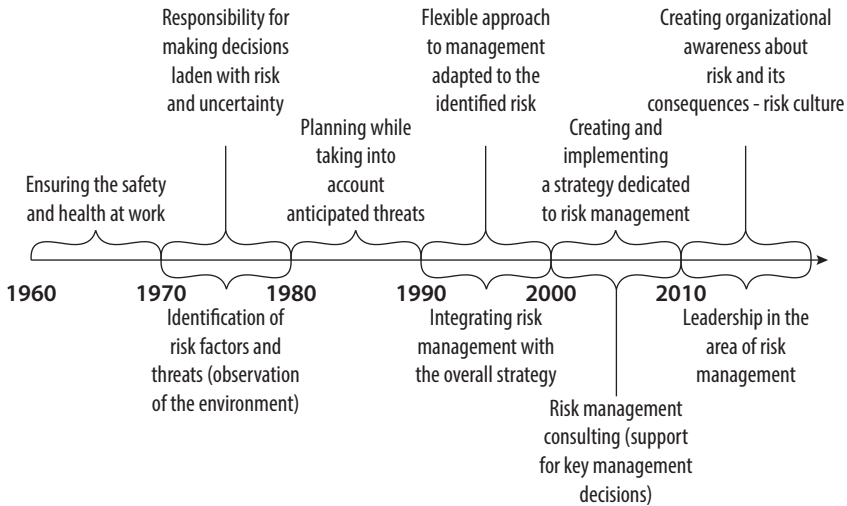


Figure 1 . Components of managerial functions in the area of risk management – the evolution

Source: own study.

As presented in Figure 1, managerial functions in the 1960s were limited to ensuring occupational health and safety⁴. Then, starting from the 1970s, i.e. the time of intensive development of management methods and concepts⁵, the need to identify risk factors and threats began to be noticed, the process of which resulted in embedding risk and uncertainty within the responsibility of managers making economic decisions⁶. In the next decade, managerial functions in the area of risk management were expanded to include planning processes that took into account anticipated threats in order to eliminate or minimize their negative consequences. At the time, these processes took place at the highest levels of the organizational structure⁷. The 1990s and the acceleration of globalization processes observed

4 B. Crew, *Risk Manager...*

5 J. Penc, *Nowe koncepcje zarządzania*, "Ekonomika i Organizacja Przedsiębiorstwa" 2002, vol. 7, pp. 3–13.

6 A. Riabacke, *Managerial Decision Making Under Risk and Uncertainty*, "IAENG International Journal of Computer Science" 2006, vol. 32, no. 4, pp. 1–7.

7 T. Aven, *Risk assessment and risk management: Review of recent advances on their foundation*, "European Journal of Operational Research" 2016, vol. 253, no. 1, pp. 1–13.

at the time and the increase in complexity⁸ caused the need for a flexible approach to management that took into account the identified risk and ensuring cohesion of actions taken against risk with the overall strategy⁹. The shape of global risk has a number of implications for management¹⁰. The beginning of the 21st century can be regarded as the moment of intensification of awareness about the role of risk management in the system of business management, which had an impact on the extension of the scope of managerial functions. This was reflected in the need to formulate separate strategies dedicated to risk management, as well as the need for risk managers to perform advisory functions in supporting key management decisions of top management¹¹. In turn, in the second decade of the 21st century managers are increasingly creating risk-oriented organizational awareness¹², sometimes called risk culture¹³, and dynamic leadership development in this management domain (risk leaders)¹⁴.

Functions of managers in the processes of making risky decisions

Uncertainty and risk are currently becoming key areas of interest for managerial staff due to the scale and intensity of the negative effects that they can cause (financial, functional, personnel). The processes of making decisions laden with uncertainty or risk are therefore embedded into the competence areas of managers and are divided into¹⁵:

- 8 D. Hossu et al., *Complex networks to model the economic globalization process*, "IFAC Proceedings Volumes" 2009, vol. 42, no. 25, pp. 62–67.
- 9 F. Schiller, G. Prpich, *Learning to organize risk management in organizations: what future for enterprise risk management?*, "Journal of Risk Research" 2012, vol. 17, no. 8, pp. 999–1017.
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- 14 S. Ertac, M.Y. Gurdal, *Deciding to decide: Gender, leadership and risk-taking in groups*, "Journal of Economic Behavior & Organization" 2012, vol. 83, no. 1, pp. 24–30.
- 15 F.L. Harrison, *Decision-making in conditions of extreme uncertainty*, "Journal of Management Studies" 1977, vol. 14, no. 2, pp. 169–178; T. Tyszka, *Decyzje. Perspektywa psychologiczna i ekonomiczna*, Wydawnictwo Naukowe Scholar, Warszawa 2010.

- making decisions under conditions of certainty (very rare in the case of economic decisions);
- making decisions under conditions of risk (the manager has information that allows forecasting of effects of available alternatives of choice, but these are uncertain effects);
- making decisions in conditions of uncertainty (the manager usually does not have information enabling him to predict the results of available selection options, and if he has them it is not possible to estimate the degree of probability of their occurrence);
- making decisions in conditions of extreme uncertainty (mainly during crises, there is no way for the manager to predict the results of their decisions).

Managers often use a risk matrix to facilitate making decisions laden with a risk or uncertainty. The basic scheme of matrix construction is presented in Figure 2.

Probability of occurrence

High	Highly probable events with positive or neutral effects (desirable)	Highly probable events that cause minor damage, must be covered	Highly probable events that cause significant damage, must be covered (the greatest threat to the enterprise)
Medium			
Low	Improbable events with positive or neutral effects	Improbable events that cause minor damage, must be covered	Improbable events that cause significant damage, must be covered by methods that reduce the extent of adverse effects
	Positive or neutral	Minor damage	Significant damage

Effects for the enterprise

Figure 2. Risk matrix

Source: own study based on A. Panasiewicz, *Zarządzanie ryzykiem jako narzędzie podnoszenia wartości firmy*, "Zeszyty Naukowe Uniwersytetu Szczecińskiego" 2013, vol. 786, no. 64, pp. 395–402.

According to the risk matrix (Figure 2), the biggest challenge for managers in the area of risk management are decisions regarding highly probable events, whose potential consequences would cause significant damage to the enterprise. However, all events identified as damaging (irrespective of the extent and likelihood of their occurrence) should be included in management decision-making processes.

Despite having managerial skills, errors can occur in decision-making processes that involve risk or uncertainty. The most common managerial errors include¹⁶:

16 H.A. Simon, *Making Management Decisions: the Role of Intuition and Emotion*, "Academy of Management Perspectives" 1987, vol. 1, no. 1, pp. 57–64; L. Coleman, *Risk and decision making by finance executives: a survey study*, "International Journal of Managerial Finance"

- errors of holistic assessment – acceptance or rejection of risky actions should not be based on perception formed on intuition;
- lack of rationality of choices made – information necessary to make decisions should not be collected selectively in a subjective way, excluding those that are contrary to personal beliefs;
- focusing solely on profits;
- focusing only on losses;
- wrong decision-making strategies – the managerial mistake is in adopting a strategy which, when assessing a decision, requires referring to the obtained result, not to the expected one.

Managerial competences in the area of risk management

In addition to making risky decisions, managerial competence is extremely pertinent in the process of risk management. In managerial decisions that involve risk, managers should have the skills to predict economic phenomena. The most commonly used ways to predict economic phenomena in risk management include¹⁷:

- assumption of immutability of a given phenomenon on the basis of data on its immutability in past periods;
- observation of changes in a given phenomenon in an upward or downward trend;
- observing cyclically repetitive phenomena, especially when the cycle is repeated several times;
- observing phenomena that constantly cause other phenomena and combining them into sequences of cause and effect;
- observing the analogy of the course of events using models that are a simplified picture of reality;
- estimating the probability of occurrence of specific events.

Another area that is important in the analysis of managerial competences pertains to preferences for taking risky or uncertain decisions that condition new initiatives and actions. Risk-taking is, therefore, a critical variable in understanding

2007, vol. 3, no. 1, pp. 108–124; T. Tysza, T. Zaleśkiewicz, *Racjonalność decyzji. Pewność i ryzyko*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2001; E. Jonas et al., *Confirmation Bias in Sequential Information Search After Preliminary Decisions*, “Journal of Personality and Social Psychology” 2001, vol. 80, pp. 557–571.

17 J. Łuczak, *Pewność, niepewność i ryzyko w decyzjach menedżerskich*, “Zarządzanie i Finanse” 2012, vol. 10, no. 1, pp. 80–89; A. Magruk, *Phenomenon of Uncertainty in the Process of Holistic Anticipation of Non-deterministic Reality*, “Procedia Engineering” 2017, vol. 182, pp. 423–442.

entrepreneurial behaviour. This variable is considered as the basis for making all economic decisions¹⁸. So, managers with a high-risk preference will be more likely to decide in favour of taking new, risky actions (which can also often bring benefits) than those who prefer low risk and express a fear of potential loss¹⁹.

Considering the basic set of managerial tasks²⁰:

- making decisions;
- human resource management;
- continuous development and
- adapting the entity to changes in the environment, it appears that the specialized risk management function is closely related to the last task mentioned, and thus the need to adapt the company to the dynamically changing conditions of doing business, which constitutes yet another area of competence for managers.

The competence areas of managers responsible for risk management processes can also be diversified based on the roles they perform in executing their functions – decision-makers, strategy makers, and implementers, planners, creators, analysts, coordinators, advisors, observers, and controllers²¹. On this basis, managers' competences in the area of risk management can be divided as follows:

- creating and implementing risk management strategy;
- planning operations against risk;
- anticipating threats;
- creating awareness of risk factors and threats at all levels of organizational culture;
- analysis of the causes and effects of risk;
- coordinating the integration of the strategy dedicated to risk management with the leading strategy;
- advising the top management;
- observation of the economic environment;

18 C. Mills, K. Pawson, *Integrating motivation, risk-taking and self-identity: a typology of ICT enterprise development narratives*, "International Small Business Journal" 2012, vol. 30, no. 5, pp. 584–606.

19 S. Barbosa, M. Gerhardt, J. Kickul, *The role of cognitive style and risk preference on entrepreneurial self-efficacy and entrepreneurial intentions*, "Journal of Leadership & Organizational Studies" 2007, vol. 13, no. 4, pp. 86–104.

20 B. Nogalski, J. Śniadecki, *Umiejętności menedżerskie w zarządzaniu przedsiębiorstwem*, Oficyna Wydawnicza Ośrodka Postępu Organizacyjnego, Bydgoszcz 2001.

21 M. Butterworth, R. Reddaway, T. Benson, *Corporate Governance – a guide for insurance and risk managers*, Association of Insurance and Risk Management, London 1996; S. Ward, *Exploring the Role of the Corporate Risk Manager*, "Risk Management: An International Journal" 2001, vol. 3, no. 1, pp. 7–25.

- constant control of the realization of the risk management strategy.

In addition, risk management is a specialized approach that requires continual updating of knowledge and skills. Therefore, the risk manager/risk specialist/risk officer should not approach the risk analysis arbitrarily but in a flexible, realistic and timely manner, regardless of the importance of the area of activity to which the risk relates²². Its main task is to increase the efficiency of the entity's functioning, to prepare it against internal or external threats²³, as well as to implement actions²⁴:

- remedial (against their negative effects);
- preventive (limiting exposure to risk and shaping resilience);
- analytical (used to define risk tolerance limits and make the right decisions).

In addition, the goals and functions of risk managers are also to some extent conditioned by the specificity of a particular business entity (its market position, set of strategic goals or risk management objectives)²⁵. Thus, the direction and scope of their work depend on²⁶:

- contextual factors;
- the influence of top management;
- external influences;
- characteristics of the enterprise;
- the level of development of the enterprise;
- sectoral risk factors.

Analysis of the availability of professional trainings in risk management

Currently, there is a whole range of specialized training offers available, concluding with obtaining certified titles: Risk Manager, Risk Management Specialist, Chief Risk Officer – CRO (the highest level of professional specialization in the area of risk management). Undergoing this type of training can be extremely helpful in performing managerial functions in the area

22 E. Finch, *Risk and the Facilities Manager*, "Facilities" 1992, vol. 10, no. 4, pp. 10–13.

23 I. Staniec, *Uwarunkowania skuteczności zarządzania ryzykiem w organizacjach*, "Zeszyty Naukowe Politechniki Łódzkiej" 2011, vol. 1099, pp. 184–195.

24 L.L. Colquitt, R.E. Hoyt, R.B. Lee, *Integrated Risk Management and the Role of the Risk Manager*, "Risk Management and Insurance Review" 2008, vol. 2, no. 3, pp. 43–61.

25 P. Jedynak, S. Bąk, *Objectives of Risk Management in the Financial Services Sector – the Perspective of Polish Enterprises Listed on the Warsaw Stock Exchange*, "Journal of Emerging Trends in Marketing and Management" 2019, vol. 1, no. 1, pp. 231–240.

26 S. Ward, *Exploring the Role...*

of risk management. The trainings are offered by international organizations and associations consociating managers responsible for risk management in enterprises, representatives of the public sector, theoreticians, researchers, and trainers. Leading organizations of this type include in the world: FERMA (Federation of European Risk Management Associations based in Brussels, POL-RISK is a member of FERMA), AIRMIC (Association of Insurance and Risk Managers in Industry and Commerce, UK), ARIMI (Asia Risk Management Institute in Singapore), GARP (Global Association of Risk Professionals), PRMIA (Professional Risk Managers' International Association), RIMS (Risk and Insurance Management Society).

The most prestigious offers of professional and certified training, enabling the acquisition of specialist knowledge and skills necessary to perform managerial functions in risk management are presented in Table 1.

Table 1. Professional trainings for managers in the area of risk management

Institution	Name of training	Main content of the training
PRMIA	PRM (Professional Risk Manager)	1. Finance theory, financial instruments, financial markets. 2. The mathematical basis of risk measurement. 3. Risk management practices. 4. Case studies and risk management standards, legal requirements, best practices, ethics, regulations.
PRMIA	ORM (Operational Risk Manager Certificate)	1. The role of risk management in the post crisis financial services industry 2. Relationships within risk management and corporate governance 3. Different roles in risk governance 4. Theory and process of risk management 5. Development of risk management with an introduction to the area of risk culture 6. Operational risk assessment program
FERMA	RIMAP (European Risk Management Professional Certification)	1. Essentials and requirements of risk management 2. Risk assessment 3. Risk treatment I (basic module) 4. Risk treatment II (advanced module)
RIMS	RIMS-CRMP (Certified Risk Management Professional)	1. Analysis of business models 2. Designing organizational strategies against risk 3. Implementation of the risk management process 4. Developing managerial competences in the area of risk 5. Risk management as support for decision-making processes

Table 1 (continued)

Institution	Name of training	Main content of the training
ARIMI	Certified Enterprise – wide Risk Manager (ARIMI-CERM)	Risk CHAMPIONS Master Class – Leading ERM Projects for Your Organization: 1. Designing: Risk Management Frameworks, Systems & Culture 2. Implementing: Systems Change & Nurturing a Risk-Aware Culture 3. Sustaining: Managing Changes, Crises & Business Sustainability 4. Risk PROFESSIONALS – Managing the ERM Function in Organizations: 5. Corporate Reputation & Stakeholders Risk Management 6. Corporate Governance & Enterprise Risk Management 7. Corporate Ethics, Fraud & Compliance Risk Management 8. Corporate Control, Internal Audit & Risk Management 9. Corporate Performance & Human Capital Risk Management
ARIMI	Certified Professional Risk Managers (ARIMI-CPRM)	Risk LEADERS Master Class – The Essentials of Risk & Value Management: 1. Risk-Taking & Value Creation Management in Organizations – Principles, Theory & Practices 2. Business Ethics, Social Responsibility & Corporate Value Sustainability 3. Innovation, Change & Project Risk Management 4. Risk EXPERTS Master Class – Mastering the Process for Managing Risk & Value: 5. Risk Assessment & Corporate/Project Value Profile Diagnostic 6. Risk Learning, Communication & Decision Making 7. Risk Control & Business Continuity Management 8. Risk Financing & Transfer Solutions 9. KRIs/KPIs Dashboard: Risk Monitoring, Reporting & Improvement
GARP	Financial Risk Manager (FRM)	1. Financial markets and products 2. Basics of risk management 3. Quantitative analysis 4. Valuation and risk models 5. Market risk, credit risk, and operational risk 6. Risk and investment management 7. Current events in financial markets

Institution	Name of training	Main content of the training
AIRMIC	Risk Leadership Programme	1. Organizational and personal leadership 2. Transformation – from risk manager to risk leader 3. Improving the leader 4. The importance and profile of risk management 5. Cyber cooperation 6. Strategic decision making 7. Corporate crises

Source: own study based on: RIMS-CRMP, *Examination, Risk and Insurance Management Society*, 2018, <https://www.rims.org/certification/rims-crpm/exam-content> (accessed: 26.07.2018); FERMA RIMAP, *European Risk Management Professional Certification*, 2018, <https://www.ferma.eu/rimap-certification/> (accessed: 26.07.2018); PRMIA PRM, *Exam Preparation Resources*, 2018, https://www.prmia.org/Public/Certificates/APRM_/Public/Certificate/What_is_the_Associate_PRM_Certificate.aspx?hkey=975a69ef-9685-4033-98b8-cf8e79582fc6 (accessed: 26.07.2018); PRMIA ORM, *Operational Risk Manager Certificate*, 2019, <https://www.prmia.org/Public/Certificates/ORM/Public/Certificate/ORM.aspx?hkey=b709c408-754f-4162-a5b1-cacbea83a592> (accessed: 7.12.2019); GARP FRM, *The global standard for financial risk*, 2019, <https://www.garp.org/#!/frm> (accessed: 7.12.2019); AIRMIC, *Risk Leadership Programme with Cass Business School*, 2019, <https://www.airmic.com/leadership> (accessed 7.12.2019); ARIMI CERM, *Certified Enterprise-wide Risk Manager*, 2019, <https://arimi.org/certified-enterprise-wide-risk-manager/> (accessed: 7.12.2019); ARIMI CPRM, *Certified Professional Risk Manager*, 2019, <https://arimi.org/certified-professional-risk-manager/> (accessed: 7.12.2019).

Based on the analysis of the content of professional training (Table 1), several main areas of requirements for positions of risk managers can be outlined²⁷:

- theoretical knowledge of risk management;
- so-called global awareness (macroeconomic knowledge);
- analytical skills;
- knowledge of the sector and the market;
- negotiation and communication skills;
- strategic thinking;
- knowledge of legal regulations;
- ethical principles;
- ability to work in cyberspace.

In addition, the review indicates that the trainings offered can be divided into: comprehensive (offering training content for risk managers, regardless of sector and business profile) and specific (dedicated e.g. to financial or operational risk management).

²⁷ A. Caldas, *10 Must Have Skills to be a Successful Risk Manager*, <https://riskmanagementguru.com/10-must-skills-successful-risk-manager.html/> (accessed: 25.07.2018).

Conclusions

Summing up the considerations that are the subject of this work, it managed to get answers to all of the research questions. Thus, becoming familiar with the evolution of managerial functions in the area of risk management, as well as developing a catalog of managerial competences in this area of management, enabled the identification of the role of managers in contemporary enterprise risk management.

The research limitation was the fact that the analyses were performed solely on the basis of literature analysis and training offers for risk managers. Therefore, future analyses should focus on empirical research in various groups of enterprises, enabling verification whether the competences required for risk managerial positions are in fact held by persons performing these functions and whether risk managers have qualifications confirmed by appropriate, professional trainings.

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Abstract

Management staff now face not so much a choice, but the necessity to implement a new management function, which is risk management. The purpose of this text is to identify the role of a manager in contemporary enterprise risk management. To achieve the intended objective, the evolution of the development of managerial functions in the area of risk management is presented, a catalogue of competences necessary to perform such functions is also presented along with a review of currently offered professional trainings which authorize the performance of the functions of risk managers, risk management specialists, and risk officers.

Keywords: manager, risk, risk management

Challenges of dairy cooperatives in the area of sales marketing

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Introduction

Enterprises' activities are mainly focused on striving to create value for customers and on capturing this value. A trade offer that takes into account the perceived need for the best customers (possible to satisfy the market) significantly increases the probability of repeatable purchases¹ and thus allows creating value for customers. Hence, companies do everything to reach different target groups. This is a challenge, however, because the expectations of various groups are different, so the other tools allow to reach their consciousness. Consequently, the actions of enterprises should be based on offering specific characteristics of the offer consistent with the preferences of the customers. Enterprises, however, in order to meet the customers' requirements should be aware of what features of the offer are most important for particular groups of customers they want to reach. Therefore, the aim of the article is to show how companies assess the importance of features of the offer in the area of sales marketing for various groups of customers. The implementation of the aim was based on the presentation and analysis of research results conducted with the help of an interview questionnaire among representatives of the management of cooperatives from two provinces: Świętokrzyskie and Małopolskie. The article endeavoured to find the answer to the following questions: 1. "Which features of the offer in the area of sales marketing are the most important for particular groups of customers?" and 2. "Is there a difference in the assessment of the validity of the features of the offer for individual groups of recipients among representatives of cooperatives from different provinces?"

1 P. Doyle, *Value-Based Marketing: Marketing Strategies for Corporate Growth and Shareholder Value*, John Wiley & Sons, Chichester 2000, p. 71.

The issue of sales marketing

Various features/elements of the offer that are valid for customers in the area of the sales marketing can be distinguished: the individualization of the offer; the price of the product; the range of pre-, peri-, and after-sales services; the price of such services; the payment terms; the crediting of purchases; the special sales conditions (discounts); the promotional prices; the novelty prices; advertisement; the loyalty programs; the consumer promotion (e.g. samples, coupons, contests, lotteries, gifts, etc.); public relations; publicity; the availability of information about the offer/product². Therefore this is a huge challenge for companies to meet these expectations. However, companies do their best to make the customer buy their products and return.

The individualization of the offer

Individualization is the process of providing and developing products and services made in accordance with the individual preferences of a given client³. The company adapts certain elements of the offer to the characteristics and preferences of individual clients (individualizes or otherwise customizes them) so as to satisfy customers on the one hand, and keep costs at an acceptable level on the other⁴.

The price of the product

The price is a very sensitive and flexible element affecting the market behaviour of buyers⁵. Market-oriented pricing decisions are aimed at acquiring and retaining customers and gaining a privileged position on the market (acquiring part of the market, competition exclusion)⁶. Understanding and including in the price definition the value perceived by the customer may also lead to both higher sales and higher profit margins⁷.

2 I. Konieczna, *Model biznesowy spółdzielni a model biznesowy przedsiębiorstw o innej formie organizacyjno-prawnej. Różnice, odrębność czynników sukcesu*, Difin, Warszawa 2015, p. 99.

3 I.H. Gordon, *Relacje z klientem. Marketing partnerski*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2001, p. 280.

4 M. Trojanowski, *Marketing bezpośredni. Koncepcja – zarządzanie – instrumenty*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2010, p. 59.

5 J. Altkorn (ed.), *Podstawy marketingu*, Instytut Marketingu, Kraków 2004, p. 54.

6 M. Sierpińska, T. Jachna, *Ocena przedsiębiorstwa według standardów światowych*, Wydawnictwo Naukowe PWN, Warszawa 2007, p. 230.

7 A. Codini, N. Saccani, A. Sicco, *The relationship between customer value and pricing strategies*, "Journal of Product & Brand Management" 2012, no. 7, p. 539.

The range and the price of pre-sales, sales-related and after-sales services

Customer value can be created at any stage of the purchasing process, i.e. in the pre-purchase phase, at the time and place of the transaction, and at the stage of customer experience after the purchase/sale transaction⁸. Pre-sales and sales-related services can be individually tailored to customer needs. Pre-sales services are those that rely on providing information to buyers about the product or the relevant advisory. The sales-related services include, among others, the ability to place orders over the phone, the Internet and favourable opening hours⁹. At this point, it is critical to hook the consumer in purchase intention and a delay period¹⁰. After-sales activities are those activities that happen after the purchase of the product and are devoted¹¹ to enable existing customers to quickly locate, contact and activate the supplier's resources that are needed in order to create satisfactory product-related services, answers to inquiries or solutions to problems¹².

The payment terms

Payment has moved from a largely functional process, which has to be endured by the customer rather than enjoyed, to a vital part of a winning customer experience¹³. Companies are trying to make payment so easy that a customer has no excuse not to complete the transaction, regardless of the channel they are in¹⁴. The company may use advance payments or prepayments, cash payments and trade credit in business contacts¹⁵.

8 A. Sagan, G. Plichta, *Podejście środków-celów w ocenie regionalnego zróżnicowania wartości dla klienta w obszarze usług okołosprzedażowych*, "Zeszyty Naukowe Uniwersytetu Szczecińskiego" 2010, no. 15, p. 88.

9 B. Pierański, *Koncepcja jakości usługi handlowej*, "Handel Wewnętrzny" 2011, no. 4, p. 4.

10 A. Sagan, G. Plichta, *Podejście środków-celów...*, p. 91.

11 P. Gaiardelli, N. Saccani, L. Songini, *Performance measurement systems in after-sales service: An integrated framework*, "International Journal of Business Performance Management" 2007, no. 9, p. 146.

12 S. Verstrepren, D. Deschoolmeester, R. Van den Berg, *Servitization in the automotive sector: Creating value and competitive advantage through service after sales*, [in:] *Global Production Management: IFIP WG5.7 International Conference on Advances in Production Management Systems*, September 6–10, Berlin 1999, p. 540.

13 *The role of payments in the customer experience. How top retailers are navigating a changing payments landscape*, Retail Week Reports, May 2017, p. 5.

14 *Ibidem*.

15 M. Sierpińska, *Terminy płatności faktur w obrocie gospodarczym w Polsce na tle innych krajów Unii Europejskiej*, "Studia Ekonomiczne" 2014, no. 198, 2nd part, p. 132.

The crediting of purchases

The terms and forms of invoice payment, generally identified as payment terms, are among the basic instruments of the trade credit policy¹⁶. With their help, the company can modify customer behaviour and, consequently, influence the level of receivables. Payment terms of invoices must be adjusted to the level of credit risk of the customers to minimize the risk of overdue and uncollectible receivables and maximize sales¹⁷. Firms manipulate the respective terms in anticipation of capturing new business, in order to attract specific customers and achieve specific marketing goals¹⁸.

The special sales conditions (discounts)

The pattern of discount ordinarily can be divided into two types: general discount and performance discount. General discount is given for a short period and available to all types of customers, e.g. packaged discount (buy one get one free), stock clearance sale etc. Performance based discount is given mostly to loyal customers. This type of discount is dependent on the intake by the customers, e.g. quantity/volume based discount, discount on promptness of payment etc.¹⁹ Some of the smartly designed discount schemes could ignite the customers' desire for a particular product or a brand which otherwise are given a pass on account of various reasons²⁰.

The promotional prices

Promotional prices are a way of differentiating the basic prices of the same products/services. Promotional prices are lower than the basic prices. Their main task is to increase sales of given products/services in a short time by creating an atmosphere of extremely favourable shopping²¹. A price promotion can be produced by the face value of a coupon or the amount of a rebate. It provides a monetary gain, an incentive to encourage consumers to purchase the product. A price promotion can help customers simplify the decision process and reduce the transaction time or effort²².

16 *Ibidem*.

17 *Ibidem*.

18 H. Soni, N.H. Shah, C.K. Jaggi, *Inventory models and trade credit: a review*, "Control and Cybernetics" 2010, no. 3, p. 867.

19 C.P. Chattopadhyay, *Discount and Treatment in Indirect Tax*, "Tax Bulletin" 2018, vol. 8, p. 7.

20 *Ibidem*, p. 6.

21 A. Czubała et al., *Marketing usług*, Oficyna Ekonomiczna, Kraków 2006, p. 191.

22 J.E. Lee, J.H. Chen Yu, *Effects of price discount on consumers' perceptions of savings, quality, and value for apparel products: mediating effect of price discount affect*, "Fashion and Textiles" 2018, no. 5, p. 4.

The novelty prices

Enterprises are aware that many customers, wanting to buy an exclusive, fashionable product, are able to pay more to feel like a customer who is up-to-date with all the news. The price is the real, hard currency promise of what the new product will mean to the customer²³. However, price-benefit analysis should begin early in the development cycle, when the market is first being probed, for it not only shows companies whether price barriers might make products unfeasible but can also guide their development by indicating which attributes customers are most willing to pay for²⁴.

Advertisement

An advertisement is an attempt at creativity which influences the consumer's motive to buy a particular product and change or make the perception of the product in the mind of the consumers. An advertisement's appeal acts as a supplier to arouse the psychological motive of the consumer for buying²⁵. The purpose of advertising is: creating needs (raising awareness of unmet needs and awakening the desire to possess), showing and reminding usability of a given product/service, shaping preferences and providing a set of arguments for choosing a given product/service, shaping a positive image of the sender of the advertisement²⁶.

The loyalty programs

The loyalty program is a set of intended actions on the part of the manufacturer, aimed at binding the consumer with the brand for a long time²⁷. Loyalty programs are not only a tool to increase the organization's loyal customers, but they are an opportunity to gather information about customer shopping habits and

23 B. Cohen, M. Neubert, *Price-Setting Strategies for Product Innovations in the Medtech Industry*, [in:] D. Vrontis, Y. Weber, E. Tsoukatos (eds), *Global and national business theories and practice: bridging the past with the future*, EuroMed Press, Rome 2017, p. 459.

24 M.V. Marn, E.V. Roegner, C.C. Zawada, *Pricing new products*, "The McKinsey Quarterly" 2003, no. 3 (July), p. 40–49, <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/pricing-new-products#> (dostęp: 6.01.2020).

25 S. Fatima, S. Lodhi, *Impact of Advertisement on Buying Behaviours of the consumers: Study of Cosmetic Industry in Karachi City*, "International Journal of Management Sciences and Business Research" 2015, vol. 4, issue 10, p. 126.

26 A. Czubała et al., *Marketing...*, p. 222.

27 H. Mruk (ed.), *Komunikowanie się w marketingu*, Polskie Towarzystwo Ekonomiczne, Warszawa 2004, p. 85.

preferences²⁸. A loyalty program may give a customer advanced access to new products, special sales coupons or free merchandise²⁹. Introduction of loyalty programs is generally aimed, at achieving several key objectives, which fall into three main categories³⁰:

- maximization of value for customers, offering value that matches customers' expectations;
- enhancement of relationships that bond a customers with a firm;
- fulfilling loyalty program's commitments and promises.

The customer promotion

Sellers use promotion as an incentive instrument to promote in order to attract new customers, reward loyal customers and increase the rate of repurchase of occasional users³¹. Activities of sales promotion may be directed at consumers and business. Some of the forms of promotional activities which are intended for final users to stimulate immediate sales are: samples, coupons, discounts, premiums³², refunds, frequent-user incentives, point-of-purchase materials and demonstrations, consumer games, contests, sweepstakes³³, and a variety of rewards for regular purchases³⁴. Trade sales promotion stimulate business to carry a producer's products and market these products more aggressively. These methods include buying allowances, buy-pack allowances, scan-back allowances, merchandise allowances, cooperative advertising, dealer listings, free merchandise, dealer loaders, premium or push money and sale contests³⁵.

28 S.G. Magatef, E.F. Tomalieh, *The Impact of Customer Loyalty Programs on Customer Retention*, "International Journal of Business and Social Science" 2015, no. 8, p. 80.

29 *Ibidem*, p. 79.

30 K. Szczepańska, P. Gawron, *Loyalty Programs Effectiveness*, "Foundations of Management" 2011, no. 2, p. 95.

31 D. Alavuk, J. Jevtić, I. Petrevska, *Sales Promotion as a Determining Factor in the Competitive Position of the Company*, "Journal of Engineering Management and Competitiveness" 2015, no. 1, p. 51.

32 *Ibidem*.

33 O.C. Ferrell et al., *Marketing Principles*, Cengage Learning Australia Pty Limited, Melbourne 2015, p. 490.

34 D. Alavuk, J. Jevtić, I. Petrevska, *Sales Promotion...*, p. 51.

35 O.C. Ferrell et al., *Marketing...*, pp. 490–491.

Public relations

Public relations is a management function of continuous and planned nature, thanks to which the organization acquires and maintains the understanding, sympathy and support of those with whom it is currently interested or may be interested in the future – by examining their opinion about the organization, in order to maximally align its goals and activities to them, to achieve through planned, wide dissemination of information better cooperation³⁶ with its environment³⁷ and to more effectively pursue its interests³⁸. Public relations tools include: sponsorship, news (information about the company), conferences, trade shows, festivals, company identification means (advertising gadgets)³⁹.

Publicity

Publicity includes activities aimed at attracting attention or making people aware of something by means of reliable and appropriate to send the means. Such activities usually include some specially planned event or other procedure intended to disrupt the continuity of everyday existence of people to whom publicity relates. Publicity can take the form of: message, comment, invitation, occasion, assurance, gesture, appeal, warning⁴⁰. Publicity can build a trust from consumers to the company. Being public implies visibility, attention, prominence, identification, understanding, and openness⁴¹.

The availability of information about the offer/product

The availability of information about the offer/product is possible thanks to the marketing communications i.e. the means by which firms attempt to inform, persuade, and remind consumers – directly or indirectly – about the products and brands they sell. In a sense, marketing communications represent the voice of the

36 A. Szymańska, *Public relations w systemie zintegrowanej komunikacji marketingowej*, Unimex, Wrocław 2004, p. 9.

37 J. Blythe, *Komunikacja marketingowa*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2002, p. 139.

38 A. Szymańska, *Public relations...*, p. 9.

39 M. Sławińska (ed.), *Kompendium wiedzy o handlu*, Wydawnictwo Naukowe PWN, Warszawa 2008, p. 150.

40 A. Davis, *Public relations*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2007, pp. 24–25.

41 A.R. Karema, *The Influence of Advertising, Publicity, and Public Relation on Consumer Preference in Manado Quality Hotel*, "Jurnal Berkala Ilmiah Efisiensi" 2016, no. 1, p. 14.

company and its brands; they are a means by which the firm can establish a dialogue and build relationships with customers⁴². Marketing communication activities contribute to brand equity and drive sales in many ways: by creating brand awareness, forging brand image in consumers' memories, eliciting positive brand judgments or feelings, and strengthening consumer loyalty⁴³.

As it was presented above, enterprises face a real challenge, because meeting and creating value for customers in the area of sales marketing is extremely difficult, because it consists of a number of elements, and customers are different and have different needs, hence enterprises can only reach them in a way that is acceptable and which appeals to the customer the most. Due to the fact that enterprises deal with various groups of customers, i.e. consumers and business, appropriate elements within sales marketing must also be adapted in order to meet customers' requirements, while maximizing value for the enterprise. Since these are different groups, other features of the offer will be suitable and will create value for the customer. Therefore, the range of elements that make up sales marketing must be wide, and the appropriate actions should be preceded by market research, so as to best tailor actions aimed at persuading customers to take advantage of the company's offer and bring benefits to both parties.

Features/elements of the offer that are valid for customers in the area of the sales marketing – research results

The research was conducted among cooperatives' executives who were asked to indicate the features of the offer in the sphere of sales marketing, which from their point of view are important for customers, and have an influence on clients' value. All dairy cooperatives from the Świętokrzyskie and Małopolskie provinces were asked to take part in the research, however, because of the tendency of the representatives of cooperatives to participate in the research, the research had been conducted on a sample of 41% of the dairy cooperatives from Świętokrzyskie and Małopolskie provinces using an interview questionnaire. As it was mentioned above, cooperatives as other enterprises face a real challenge, because meeting and creating value for customers in the area of sales marketing is extremely difficult, because it consists of a number of elements. However, to have an overview on this part of running the business the cooperatives' representatives were asked

42 P. Kotler, K.L. Keller, *Marketing Management*, Prentice Hall, New Jersey 2012, p. 476.

43 *Ibidem*, p. 478.

to indicate features of the offer that, in their opinion, have an influence on different customers while taking into account a large number of indicated features. The interview results are shown in Table 1.

Table 1. The mean of the validity of features of the offer for customers in the area of the sales marketing in the assessment of dairy cooperatives from the Świętokrzyskie and Małopolskie provinces

Features/elements of the offer		Consumers	Companies-users (gastronomy)	Wholesalers	Independent retail grocery stores	Retail chains		Intermediary agents in food trade	Other dairies	Other institutional purchasers
						Large	Local			
The individualization of the offer	SP	4.33	4.00	3.67	0	0	3.67	0	0	0
	MP	3.25	3.75	3.75	4.00	3.00	4.25	0	0	0
The price of the product	SP	3.67	4.00	4.67	0	0	4.33	0	0	0
	MP	4.25	4.00	4.25	4.00	5.00	4.25	0	0	0
The range of pre-sales, sales-related, and after- sales services	SP	4.33	4.00	3.67	0	0	4.67	0	0	0
	MP	4.25	4.50	4.00	4.00	4.00	3.50	0	0	0
The price of pre-sales, sales-related, and after- sales services	SP	4.00	4.50	4.00	0	0	4.33	0	0	0
	MP	4.50	4.50	4.25	4.00	5.00	3.75	0	0	0
The payment terms	SP	4.67	3.50	4.00	0	0	3.67	0	0	0
	MP	4.00	3.50	4.25	3.00	4.00	4.50	0	0	0
The crediting of purchases	SP	4.00	4.50	3.67	0	0	4.33	0	0	0
	MP	3.75	3.50	4.75	4.00	3.00	4.50	0	0	0
The special sales conditions (discounts)	SP	3.67	4.00	4.00	0	0	4.00	0	0	0
	MP	3.75	3.75	4.00	4.00	4.00	4.25	0	0	0
The promotional prices	SP	4.33	5.00	4.00	0	0	3.67	0	0	0
	MP	3.75	3.25	3.50	5.00	5.00	3.75	0	0	0
The novelty prices	SP	4.00	4.00	4.00	0	0	3.67	0	0	0
	MP	4.25	4.00	4.00	4.00	2.00	3.75	0	0	0
Advertisement	SP	3.67	4.00	4.00	0	0	3.67	0	0	0
	MP	3.75	3.50	3.50	4.00	3.00	4.50	0	0	0
The loyalty programs	SP	4.33	3.50	4.33	0	0	4.00	0	0	0
	MP	4.00	4.75	4.25	4.00	4.00	3.75	0	0	0
The customer promotion (e.g. samples, coupons, contests, lotteries, gifts, etc.)	SP	4.33	3.00	3.67	0	0	4.00	0	0	0
	MP	4.00	4.50	4.50	4.00	4.00	4.75	0	0	0
Public relations	SP	2.67	3.50	3.67	0	0	3.50	0	0	0
	MP	3.25	4.67	4.00	4.00	4.00	4.00	0	0	0

Table 1 (continued)

Features/elements of the offer		Consumers	Companies-users (gastronomy)	Wholesalers	Independent retail grocery stores	Retail chains		Intermediary agents in food trade	Other dairies	Other institutional purchasers
						Large	Local			
Publicity	SP	2.00	2.50	3.67	0	0	3.67	0	0	0
	MP	3.25	3.25	3.25	4.00	5.00	3.50	0	0	0
The availability of information about the offer/product	SP	3.67	4.00	4.33	0	0	4.33	0	0	0
	MP	4.00	3.75	4.00	2.00	5.00	3.75	0	0	0

SP – Świętokrzyskie Province

MP – Małopolskie Province

Scale: 1–5, where 5 – extremely important, 4 – very important, 3 – quite important, 2 – little important, 1 – completely unimportant, 0 – not applicable.

Source: compiled by author and I. Konieczna, *The Validity of the Features of the Offer for Clients in the Sphere of Sales Marketing – the Assessment of Dairy Cooperatives from Świętokrzyskie Province*, [in:] Z. Primorac, C. Bussoli, N. Recker (eds), *Economic and Social Development (Book of Proceedings)*, 16th International Scientific Conference on Economic and Social Development – Legal Challenges of Modern World, Varazdin Development and Entrepreneurship Agency, University of Split, University North, Split 2016, pp. 820–821.

Taking into account the respondents' answers shown in Table 1, it is clear that cooperatives from both provinces have such customers as consumers, companies-users (gastronomy), wholesalers and local retail chains. Additionally, among cooperatives from the Małopolskie Province are such customers as independent retail grocery stores and large retail chains. Besides, all analyzed cooperatives do not have such customers as intermediary agents in food trade, other dairies, and other institutional purchasers.

When analyzing table 1 it is clear that:

- The individualization of the offer is very important for companies – users, wholesalers and local retail chains in the opinion of cooperatives from the Świętokrzyskie and Małopolskie provinces. It is also very important for independent retail grocery stores according to cooperatives from the Małopolskie Province (MP) and for consumers of products of dairy cooperatives from the Świętokrzyskie Province (SP). As was claimed by cooperatives from MP this feature is also quite important for consumers and large retail chains.
- The price of the product is extremely important for large retail chains, and very important for local retail chains according to cooperatives from MP. It is also very important for consumers, companies – users, wholesalers, and independent retail grocery stores in the opinion of cooperatives from both analyzed provinces.

- The range of pre-sales, sales-related, and after-sales services is extremely important for local retail chains according to cooperatives from SP and for companies-users according to cooperatives from MP. This feature is very important for consumers and wholesalers in the opinion of cooperatives from both provinces. It is also important for independent retail grocery stores and large retail chains from the point of view of cooperatives from MP and for companies-users from the point of view of cooperatives from SP.
- The price of pre-sales, sales-related, and after-sales services is extremely important for large retail chains, consumers, and companies-users in the opinion of cooperatives from MP, and for companies-users in the opinion of cooperatives from SP. This feature is very important for wholesalers and local retail chains from the point of view of cooperatives from both provinces. Additionally, it is also very important for independent retail grocery stores according to cooperatives from MP, and for consumers according to cooperatives from SP.
- The payment terms are extremely important for consumers of products of dairy cooperatives from SP, and for local retail chains according to cooperatives from MP. They are very important for companies-users and wholesalers in the opinion of cooperatives from both provinces. This feature is also very important for consumers and large retail chains from the point of view of cooperatives from MP, and for local retail chains from the point of view of cooperatives from SP. According to cooperatives from MP this feature is quite important for independent retail grocery stores.
- The crediting of purchases is extremely important for wholesalers and local retail chains in the opinion of cooperatives from MP, and for companies-users in the opinion of cooperatives from SP. It is very important for consumers of products of dairy cooperatives from both provinces. This feature is very important for companies-users and independent retail grocery stores according to cooperatives from MP, and for wholesalers and local retail chains according to cooperatives from SP. From the point of view of cooperatives from MP this feature is quite important for large retail chains.
- The special sales conditions are very important for consumers, companies – users, wholesalers, and local retail chains in the opinion of cooperatives from both provinces. This feature is also very important for independent retail grocery stores and large retail chains according to cooperatives from MP.
- The promotional prices are extremely important for companies-users from the point of view of cooperatives from SP and for independent retail grocery stores and large retail chains according to cooperatives from MP. This feature is very important for consumers, wholesalers, and local retail chains

from the point of view of cooperatives from both provinces. In the same time cooperatives from MP claim that this feature is quite important for companies – users.

- The novelty prices are very important for consumers, companies – users, wholesalers, and local retail chains from the point of view of provinces from both provinces, and for independent retail grocery stores according to cooperatives from MP. In the same time cooperatives from MP claim that this feature is little important for large retail chains.
- Advertisement is very important for consumers, companies – users, and wholesalers in the opinion of cooperatives from both provinces, for independent retail grocery stores according to cooperatives from MP, and for local retail chains from the point of view of cooperatives SP. As claim cooperatives from MP this feature is quite important for large retail chains.
- The loyalty programs are extremely important for companies-users from the point of view of cooperatives from MP. It is very important for consumers, wholesalers, and local retail chains in the opinion of cooperatives from both provinces. It is also very important for independent retail grocery stores and large retail chains according to cooperatives from MP.
- The customer promotion is extremely important for companies-users and local retail chains from the point of view of cooperatives from MP. It is very important for consumers, and wholesalers in the opinion of cooperatives from both provinces. In the same time it is very important for local retail chains according to cooperatives from SP, and for independent retail grocery stores and large retail chains according to cooperatives from MP. This feature is quite important for companies-users from the point of view of cooperatives from SP.
- Public relations is extremely important for companies-users from the point of view of cooperatives from MP. This feature is very important for wholesalers and local retail chains according to cooperatives from both provinces, for independent retail grocery stores, and large retail chains according to cooperatives from MP. It is also very important for companies-users from the point of view of cooperatives from SP. According to cooperatives from both provinces this feature is quite important for consumers.
- Publicity is extremely important for large retail chains according to cooperatives from MP. This feature is very important for local retail chains from the point of view of cooperatives from both provinces, for wholesalers according to cooperatives from SP, and for independent retail grocery stores according to cooperatives from MP. It is quite important for companies-users in the opinion of cooperatives from both provinces, and for consumers and

wholesalers from the point of view of cooperatives from MP. In the same time this feature is little important according to cooperatives from SP.

- The availability of information about the offer/product is extremely important for large retail chains in the opinion of cooperatives from MP. It is very important for consumers, companies-users, wholesalers and local retail chains from the point of view of cooperatives from both provinces. This feature is also little important for independent retail grocery stores according to cooperatives from MP.

Conclusions

Enterprises face challenges including adapting sales marketing tools to the right clients so as to maximize value for both customers and themselves. Hence, companies must be aware of what element of the offer goes most to a specific group of customers. The analysis of the conducted research showed that cooperatives know what features of the offer in the area of sales marketing are important for their customers. It can also be seen that these features differ depending on the province where the cooperatives come from. Considering the average rating for all customers it occurred that, in accordance with the opinion of the cooperatives from the Małopolskie Province the highest ranked are: the price of pre-sales, sales-related, and after-sales services (average rating 4.33), the price of the product and the customer promotion (average rating 4.29), while the lowest are the individualization of the offer and the novelty prices (average rating 3.67). On the other hand, while taking into account the opinion of cooperatives from the Świętokrzyskie Province the highest ranked are the promotional prices (average rating 4.29) and the price of pre-sales, sales-related, and after-sales services (average rating 4.21), and that lowest are publicity (average rating 2.96) and public relations (average rating 3.34). At the same time, the results of the research showed that the group of customers for whom, on average, the highest importance of the features of the offer was rated are local retail chains. In this case, among the assessment of dairy cooperatives from both provinces is compliance.

A limitation of the research is the range. It results from the fact that only cooperatives from two provinces were researched here. In addition, the research results are limited to one organizational and legal form of enterprises, i.e. cooperatives. It seems reasonable that further research should be at least nationwide and cover various organizational and legal forms of enterprises.

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Abstract

The article sets itself the goal of presenting how cooperatives assess the importance of features of the offer in the area of sales marketing for various groups of customers. The implementation of the goal was based on the presentation and analysis of the results of research conducted among the management of cooperatives from two provinces: Świętokrzyskie and Małopolskie using an interview questionnaire. Research results show that cooperatives from both provinces assessed the importance of features of the offer differently, but their opinions are similar in terms of the group of customers for which the importance of the features of the offer in the area of sales marketing was rated the highest.

Keywords: sales marketing, features of the offer, cooperatives

The Vanishing Sector. A Case Study on Private Higher Education Institutions in Poland

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Introduction

The main aim of this paper is to introduce the publication of a research-based monograph on private higher education institutions in Poland. A brief summary of the results should give the reader a general idea of the current state and the future problems that this sector is exposed to. The research project in the period of 2015–2019 focused on private university leaders and their opinions about what school management will look like in the near future and what the perspectives for growth in the private sector of higher education in Poland are (if any).

The Current State of the Private Higher Education Sector

The system of higher education in Poland has undergone intensive change for almost three decades. This resulted not only from the socio-economic transformations initiated at the turn of the 1980s and 1990s, when the political and economic system of the country changed dramatically, but also from changes of a global nature and the dynamic development of science and modern technologies, which affected the availability of scientific achievements on a global scale.

The Polish higher education system is very diverse, both in terms of its quality and quantity. It consists of both public and private universities, the number of which is particularly large compared to the number of institutions of this type in other countries of the world¹.

1 M. Kwiek, *Uniwersytet w dobie przemian*, Wydawnictwo Naukowe PWN, Warszawa 2015.

To better illustrate the scale of these changes, it is worth mentioning that in the academic year of 1990–1991, only 403,800 people studied in Poland, rising to 1,926,100 in 2004–2005 and reaching a peak of 1,937,400 in 2007–2008. From that moment, the number of students has gradually dropped, and it can be assumed that the Polish higher education system has exhausted its basic possibilities of quantitative growth. The number of students, as of November 30th 2017, amounted to 1,291,870, so a decrease of more than 33 percent in the number of students was recorded (GUS)².

Demography specialists expect that the number of students reached in 2007–2008 will never be exceeded in future. The greatest drop in the number of students will be visible in the Śląskie, Małopolskie, Podkarpackie, Podlasie, Lubuskie, Wielkopolskie, Zachodniopomorskie, Dolnośląskie, Opolskie and Warmińsko-Mazurskie Voivodeships. A more promising situation will be noticed in Warsaw, Cracow and Wrocław. These cities have the strongest academic background and attract immigrants and students from other areas³.

Such a dynamic drop in the number of students is comparable to the economic bubble that is about to burst, which will lead to increasingly serious financial turmoil because of the heavy dependence of private schools on tuition fees⁴. Systems of higher education in other countries also face similar threats. For example, nearly half of American colleges and universities no longer generate enough tuition revenue that equals or exceeds the rate of inflation⁵.

The challenges that higher education is confronted with are not unique to Poland. The whole system of tertiary education in Europe is outperformed by those of the US, Canada, Japan, Korea and Australia.

The complexity of the problems involving the funding of the system are common in the whole of Europe, not only in Poland. The situation has been changing for the last two to three decades and is connected with a change from an elite

2 GUS [Polish Central Statistical Office], *Szkolnictwo wyższe w roku akademickim 2017/2018 (dane wstępne)*, <https://stat.gov.pl/obszary-tematyczne/edukacja/edukacja/szkolnictwo-wyzsze-w-roku-akademickim-20172018-dane-wstepne,8,5.html> (accessed: 30.01.2020).

3 M. Geryk, *Zmiany w systemie szkolnictwa wyższego oraz ich wpływ na zarządzanie uczelniami w Polsce. Bilans 25-lecia*, [in:] S.H. Zaręba, P. Komorowski, M. Zarzecki (eds), *25 lat samorządności w Polsce – bilans decentralizacji władzy i zmiany gospodarczej*, Kontrast, Warszawa 2016, pp. 205–224.

4 J.S. Shaw, *What Will Colleges Do When the Bubble Bursts?*, "Academic Questions" 2011, no. 24, pp. 438–448.

5 M. Toner, *The Highly Endangered Higher Education Business Model (and How to Fix It)*, American Council on Education, summer 2015.

to mass model of higher education, with easy access to higher education institutions for those who apply⁶.

The system of private education in its current state is highly dependent on the demand for the services offered. This private component of the higher education system plays only a supportive role to the mainstream one, i.e. state universities and other higher education institutions. The demographic changes in developed countries are one of the most significant factors that not only reduce the demand for educational services in the private sector but also highly influence the market and the financial situation of those institutions.

The dependence of the private sector on demographics, and its interdependence with the public sector, in the case of Poland, is clearly visible. As Kwiek writes, the system of higher education in Poland is an example of “a dual or mixed public-private system in the expansion period of 1990–2005, to a deprivatizing system in which both private and state funding are playing a decreasing role (2006–2016, and beyond)”⁷. The same author predicts that in the forthcoming years, the private sector will undergo a steady contraction, leaving the market space for public universities and other institutions with public funding. This is expected to happen after 2025.

The Sector in the Research Project

Higher education is expanding worldwide in parallel with global economic and demographic growth. With the increasing demand for education at this level, a number of new higher education institutions (HEIs) have been established. The political and economic changes in Central and Eastern Europe paved the way for this rapid growth, with more than 300 HEIs established in Poland alone.

The main conditions for the expansion included the high demand for places, which significantly exceeded the supply, together with the accompanying changes in legal regulations. The result was the creation of a completely new sector in the Polish economy: private higher education institutions, also known as “non-public high schools” focused on tertiary education.

The private HEI sector in Poland, during its peak in the mid-2000s, exceeded two million students at undergraduate and graduate levels. The explosion of the development of new schools was present in all parts of the country, but the majority

6 G. Grotkowska, *Tertiary “Education boom in EU countries: key to enhancing competitiveness or a waste of resources?”*, *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach* 2016, no. 271, pp. 66–76.

7 M. Kwiek, *Changing Public-Private Dynamics in Polish Higher Education*, *“International Higher Education”* 2016, no. 18, p. 18.

were based in Warsaw, the capital of Poland. From that moment, the sector was exposed to visible changes, caused not only by demographics, but also by new legal regulations which almost openly favoured public universities.

The paper presents a brief summary of a half-decade research project on the development of perspectives of private higher education institutions in Poland covering the years 2015–2019. The research focuses on the main problems that managers are faced with, mostly those involving the perspectives of the development of the sector, management processes and the current management in light of the legal regulations.

The research was conducted in two parts: the first in 2015, and the second later, to allow a comparison of the data collated from the respondents, i.e. school managers, rectors, deans and/or senior lecturers. The results are presented in a descriptive manner with a presentation of the background of the leading existing institutions.

The aim of the paper is to present the changes to this sector of the higher education market that, after its impressive development and existence for more than two decades, is now on the verge of collapse. The challenges that these institutions' managers are faced with are completely new. Few representatives see their future as one that brings positive challenges. The majority, recognize that the Polish private school sector is in its declining years.

The conclusion of the research has brought some interesting findings, such as the fact that an increasing number of the institutions aim to attract international students and offer classes in English as well as a commitment to monitor the placement rate of alumni as a way to provide a programme that maximizes their usefulness in the labour market.

Research. Announcement of a monograph by Marcin Geryk: *The Vanishing Sector. A Case Study on Private Higher Education Institutions from Poland*

The proposed work by Marcin Geryk PhD, professor at the Jagiellonian University and the Gdańsk Health College is an in-depth comparative analysis of non-public higher education in Poland, encompassing a wide range of components to create a complementary picture of this education sector. It is not limited to a simple compilation of data with a commentary; the idea of the publication aims to precisely present the output data in order to synthesize a comprehensive picture of two

important years for higher education in Poland in the second decade of the 21st century. The years in question are 2015 and 2018, when successive reforms were introduced within the Law on Higher Education. The reaction to the changes reflected in the objective numerical and percentage data underlies the formulation of the title thesis, i.e. “the vanishing sector” that the author refers to.

The publication was logically divided into content segments, allowing for a better overview of the individual threads of the analysis, which in turn made it possible to summarize the synthesis and draw reliable conclusions. The paper adopted the format of a classic monograph, and it consists of seven autonomous parts of the main text (an introduction, five chapters and conclusions). The book is supplemented by a summary preceding the main text, a list of figures and illustrations, and an appendix. In the latter, the universities taking part in the survey in 2015 and in 2018 were listed in a tabular system, because a different number of institutions took part in it – 103 and 52, respectively. Before discussing the contents of the individual components of the main text, it is worth focusing on the second additional element – a list of illustrations – because its reading allows a better understanding of the idea and the scope of the work undertaken. The book contains a total of 114 drawings/charts and tables illustrating over 50 individual categories/parameters, according to which the axis of the comparative statement between 2015 and 2018 was determined in the context of the current state, the recent past and the foreseeable future. In most cases, these are illustrations of the same issues or answers to the same questions asked in 2015 and 2018.

There are cases when a change of circumstances provokes different questions, even though they concern the same problem, such as the issue of provisions contained in the amendment to the Law on Higher Education from October 2014 and the so-called Act 2.0, whose individual elements have been gradually introduced since 2018. Finally, a few questions (regarding the measures taken to attract foreign students (2015), the use of investment credit and the number of majors and the year of establishment of the university (2018), for example) were only asked in 2015 or 2018. This allows one to capture the shift of an element’s weight from significant to negligible, or one which was not included in previous studies but subsequently became important, or research that captures both analysed years.

Finally, in individual cases, the discussion of a specific issue is illustrated by two descriptions for 2015 and 2018, with one of the illustrations missing (e.g., the question: “Did you implement an IT system or special software to improve university management?”). This procedure serves to reduce unnecessary information, because the description shows that the differences in percentages between the studies of 2015 and 2018 are minimal or the condition did not change at all. Undoubtedly, the inclusion of rich illustrative material and the addition to it of precise

descriptions of each visualization contributes to a better reception of all the information that can be seen in general and with respect to the smallest components differentiating (or not) the description.

The first part of the main text is the introduction, where the substrate for the overall analysis is indicated, i.e. the results of a survey of a representative group of Polish non-public universities, conducted in 2015 using the CAPI (computer assisted personal interview) technique, and in 2018 – using the CAPI and CAWI (computer assisted web interview) techniques. The issues raised during the study concerned, among others, an assessment of the operating conditions and development perspectives of non-public universities, the management process and the day-to-day operation of the university – the sources of financing and costs, and the characteristics of scientific and didactic and administrative employees. In both cases, the questionnaires consisted of five parts concerning the same issues (part four – opinions on the latest amendment to the “Law on Higher Education” Act – for obvious reasons in 2015 and 2018 related to different amendments).

The first chapter – *Characteristics of the Respondents* – contains an exhaustive description of the people and institutions represented by them. Profiles of the respondents are selected in a methodical way, among which rectors of the mentioned universities constitute the majority (68%). In terms of academic degrees and titles, nearly 50% of the respondents have doctorates and over 25% are university and titular professors. The credibility of the data on the one hand and the scale of research on the other is evidenced by the fact that the respondents represent universities which were attended by a total of 160,000 students at that time (approximately half of all students enrolled in the non-public higher education sector in Poland). The highest possible objectivity of the base materials for the analysis was of importance: the number of higher education institutions established before and after 2000 is exactly equal, i.e. those already having a generational tradition versus those regarded as “young”; the share of universities by the criterion of size is also balanced: over a third are “small” institutions (up to two faculties), about half are medium-sized (between three to four and five to ten faculties – a quarter of the total), and one in ten is a “big” facility (over ten faculties). It should be noted, however, that currently one to two-faculty universities now constitute 40% of the current total. The research revealed a clear tendency to an interdependence between the number of courses and the profile of studies: the widest offer is usually presented by medical and technical universities the narrowest by institutions with humanistic and social specializations. In the private sector, universities with a social sciences profile are invariably dominant, while those offering courses in the field of art, science and natural sciences are the least numerous. However, at the beginning of the analysis, data appeared

constituting a strong argument for the truth of the thesis of “the vanishing sector”: only 14% of those surveyed were created after 2005.

The second chapter – *Business Conditions and Development Perspectives of the Non-public University Sector* – refers to the topic of the shrinking of this area of academic activity, raising issues such as the changing number of students willing to study (as the main factor affecting the changes and related to the falling demographics); the possibility of and application for EU funds and expanding the educational offer; the possibility of applying for EU funds from the National Science Centre and the National Centre for Research and Development; and the deterioration in the profitability of higher education services. The factor significantly affecting the number of students in the private sector was the deepening competitiveness imbalance in relation to public universities (not to mention the increasingly fierce competition within this sector) and unfavourable legal regulations. In the period between 2015 and 2018, a group of respondents declaring a fall of in private higher education resulting from economic change (a double increase from 4 to 8%) became clearly visible.

The negative demographic impact, where the decreasing number of candidates is the main factor, is also confirmed by the forecast of the number of students for the next decade: four in ten respondents stated that the number of students would decrease in the next ten years. A similar percentage, 44%, said that this number would stabilize at the current level. Only 8% of the respondents predicted an increase in the number of students and the same percentage could not provide any prediction. The perception of the current condition of this sector is quite similar: 42% of the respondents pointed to its maturity, 29% said that the sector is in a development phase, while 27% of the respondents thought that the phase is in decline. This belief about the “maturity” of non-public higher education and the gradual decrease of the recruitment pool are further arguments for the title’s claim that this is a “vanishing sector”.

It is quite significant that the reasons for the upcoming breakdown of this segment of education were seen in terms of internal problems: 60% indicated the high operating costs of providing high quality education and the competition from public universities, 25% talked about the lack, or the small scale, of investment in infrastructure, and over 20% of the respondents were of the opinion that the competition from non-public universities could be a factor in the decrease in the number of universities; only a few respondents mentioned, for example, poor state policy regarding the functioning of the non-public university sector or the decisive influence of the negative demographic factor.

The third chapter – *The Current Functioning and the Management Process of a Non-public University* – focuses on the everyday life of these institutions, i.e.

the functioning and management process of a non-public university in the existing macroeconomic conditions. The opinion that the management of the a university in the existing macroeconomic conditions is difficult remained at an unchanged level (almost 90%), while in smaller institutions, a significant percentage (as high as 16%) is of a different opinion. This difficulty consists mainly of financial management and legal conditions (including lack of legal stability, the large number of regulations and the constantly changing regulations regarding the non-public university sector) as well as the decreasing number of students, bureaucratic and administrative barriers, high competition, and high number of personnel and fixed costs. These factors are also indicated as a serious threat to the further functioning of the sector in question and clearly support the thesis of the eventuality of its “demise”.

The black scenario regarding the future of non-public universities dominates despite the belief that in terms of adaptability to market conditions, accessibility to students, marketing efficiency and financial management, no over-employment and a sense of responsibility to students and others, these institutions are much better organized than public universities. Representatives of non-public universities indicated the difficulties they face in their institutions, including three basic ones: competition from public universities (70%), excess of legal regulations concerning the functioning of non-public universities (54%) and the unfavourable image of non-public universities in the eyes of the public and in the media, i.e. the lack of trust in non-public universities (40%).

As regards the development of universities, and their current status and plans, there is a summary of all current activities of the discussed universities with the prospect of development for the future. The following activities dominate: orientation towards brand building and standard marketing activities; activities aimed at attracting domestic students; creation of a new faculty or branch; systematic actions aimed at acquiring EU funds; accreditation up to the second level; capital and infrastructure investments. With regard to the implementation of the planned activities over the next five years compared to the activities that took place during the previous five years, the largest change is that more universities want to obtain international accreditation, i.e. EQUIS (European Quality Improvement System), AACSB (Association to Advance Collegiate Schools of Business), AMBA (Association of MBAs), and CEEMAN (Central and East European Management Development Association) – an increase from 10% to 31%. The next largest change is activity related to obtaining specifically environmental accreditation (an increase from 27% to 38%). Other activities declared are attempts to acquire foreign students, and monitoring the so-called placement rate, or the ratio of graduates employed (67% of universities have been monitoring this over the past five years). The outsourcing of didactic services will be run at a similar level. An antidote to the shrinking sector is to adjust educational courses to the needs

of the labour market, to introduce “practical” courses or training, to increase cooperation with employers, and to conduct research and development activities. These plans will support the training of employees, raising their qualifications and obtaining higher academic titles. Universities want to motivate employees to further develop, and plan to hire new employees, while some have mentioned the rotation or rejuvenation of staff.

As regards the legal conditions for the functioning of a university, there is an analysis of the block of questions regarding the management of private higher education in the current legislative environment, with particular emphasis on the impact of the latest amendment to the Law on Higher Education. A rather pessimistic picture emerges from the latest surveys: half of the respondents assessed university management in the current legal conditions as rather difficult, while 37% found it difficult. The rates for answers “rather easy” and “easy” were the same, i.e. 6% in each category. People who thought that university management was difficult pointed to the lack of financial support from outside sources and fierce competition, which was already evident in previous responses. The regulations restricting the possibility of employing research and teaching staff at many universities at the same time are assessed as poor. As many as 59% believe that changes in the law will affect the sector badly in the near term. The situation may be saved by changing the rules of financing the university, as well as employing staff, reducing regulatory and bureaucratic burdens, stabilizing legal regulations, having the same treatment as public universities, levelling funding, and abolishing certain mandatory practices. As many as 65% believe that Act 2.0 will not bring positive changes. Conclusions synthetically include the above arguments, adding as proof of the veracity of the conclusion that from 2015 to 2018 higher non-public schools were gradually being closed. In 2015 there were 291 non-public universities and by the end of 2018 there were 249 (42 fewer). This process will gradually increase unless a number of activities are implemented on the part of those responsible for the condition from the Ministry of Higher Education and Science.

Conclusions

This brief presentation of the data obtained during a cross-sectional study carried out in 2015–2019 shows the challenges that private universities in Poland are exposed to. The demographic turmoil is resulting in shrinking funds and a diminishing number of students and is a threat to the existence to some institutions, mostly small ones and those with a lower number of programmes and students enrolled.

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Abstract

The main aim of this paper is to introduce the publication of a research-based monograph on private higher education institutions in Poland. A brief presentation of data obtained during a cross-sectional study carried out in 2015–2019 shows the challenges that private universities in Poland face. Demographic turmoil is resulting in shrinking funds, and the diminishing number of students is a threat to the existence of some institutions, mostly those which are smaller ones or with a lower number of programmes and students enrolled.

Keywords: private higher education, students, demographic changes, university management

The Entrepreneurial University: Conceptualisation, Models and Challenges for Operationalisation of the Concept

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Introduction

Higher education is facing growing challenges in the definition of its purpose, basic and applied research, flexible organization as well as its responsibility for the development of society, the environment and the economy. The information and communication technology revolution, the emergence of the knowledge economy, significant challenges like big data, the Internet of things, artificial intelligence and the industrial development 4.0 have all shed new light and have imposed new demands on higher education systems across the world.

Audretsch¹ emphasises that the forces shaping economic growth and performance also influence the corresponding role for the university. One significant response to the challenges of the higher education system is seen in the creation and development of an Entrepreneurial University which brings together internal and external stakeholders to look for mutual cooperation mechanism to facilitate and accelerate knowledge spillover and absorption of innovative solutions in society and the economy. Part of this response is the development of academic fields and areas of research that are not just focused on “knowledge for its own sake”, but rather oriented towards knowledge for solving specific and compelling problems as well as challenges confronting society².

1 D.B. Audretsch, *From the entrepreneurial university to the university for the entrepreneurial society*, “The Journal of Technology Transfer” 2014, vol. 39, pp. 313–321.

2 *Ibidem*, p. 317.

According to Drucker³, the generation of an entrepreneurial process in public institutions requires four elements: clear definition of missions, a realistic statement of obtainable goals, failure to archive objectives and constantly strive for innovation opportunity. In the 21st century, the entrepreneurial mission appears as a result of the collapse produced by the inevitable production of research results with practical implications and the external demand of greater utility from public findings⁴. In response to the demand of different stakeholders an effective co-operation between universities, governance, and a business ecosystem is required for sustainable development.

The current changes in the surrounding environment require new competences and new ways of teaching and learning. "Creating widespread awareness amongst staff and students of the importance of developing a range of entrepreneurial abilities and skills is therefore an important function of an Entrepreneurial University"⁵. The need for skillful and multicultural competent graduates with an entrepreneurial and intrapreneurial mindset is crucial. Universities need to co-operate widely to be able to renew their curricula and practices responding to the challenges in order to foster more competitive and innovative economies. "Moreover, definitely, the need for the competence development is relevant in any field of higher education – it includes much more than business or economics: the need is multi-sectoral and multidisciplinary as the working life itself"⁶.

In addition, higher education institutions are expected to benefit the regions in many different ways, not only by educating competent graduates, but also by actively promoting regional development and competitiveness. The university is expected to fulfill its obligations related with research, teaching and entrepreneurial mission⁷ for creating and fostering new products and processes. For this reason, universities look for ways to build entrepreneurial pathways and create internationalisation opportunities for students and staff. Therefore, a lot of attention is paid to the development of student-oriented participatory teaching and sharing

3 P.F. Drucker, *Innovation and Entrepreneurship*, Harper and Row, New York 1985.

4 H. Etzkowitz, *The evolution of the entrepreneurial University*, "International Journal of Technology and Globalisation" 2004, vol. 1(1), pp. 64–77.

5 OECD, *A Guiding Framework for Entrepreneurial Universities*, 2012, p. 10, <https://www.oecd.org/site/cfecpr/EC-OECD%20Entrepreneurial%20Universities%20Framework.pdf> (accessed: 18.10.2019).

6 L. Timonen, E. Badzinska, H. Immonen, *How to build entrepreneurial pathways for students? – Reflections on development cases from Karelia University of Applied Sciences, Finland, and Poznan University of Technology, Poland*, Working Paper, International Conference CREE2019 Entrepreneurship Education, Roanne, March 2019, p. 3.

7 H. Etzkowitz, *The evolution...*

with peers⁸. In this context, the analysis of entrepreneurship within the university curricula and entrepreneurship training programmes has attracted the interest of many researchers⁹. Universities have incorporated entrepreneurial educational programmes in undergraduate, master and doctoral educational levels. There are many approaches to delivering entrepreneurial learning which can be adopted throughout a university. As internationalisation is increasingly integrated into the strategic processes of higher education institutions, it has become essential for universities to be able to enhance performance in international activities.

This explorative study aims to review the approaches of scholars to the concept of an Entrepreneurial University based on in-depth, critical analysis of the subject literature. The study attempts to adapt existing models and bring new factors together with current reflections on this phenomenon. The author's contribution consists of developing a framework of preconditions – endo- and exogenous factors within the entrepreneurial ecosystem and micro- and macroeconomic environment – necessary to transform a traditional university into the Entrepreneurial University. In this perception, the author identifies the limitations, ambiguities and difficulties with the operationalisation of significant factors, variables and their measurement.

The methods used to reach this objective are a critical review of the subject literature, defining, comparing, factors analysis, reflection, and inference. The conceptual discussion benefits (among other studies) from the works by Guerrero-Cano,

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- 8 E. Badzińska, L. Timonen, *Entrepreneurial Mindset and Multicultural Communication Skills: a Reflection on the ECMT+ Intensive Programme*, "Zeszyty Naukowe Politechniki Poznańskiej", serie "Organizacja i Zarządzanie" 2019, no. 79, pp. 5–19.
 - 9 A. Gibb, *Towards the Entrepreneurial University. Entrepreneurship Education as a lever for change*, NCGE UK Policy Paper series, 2005; J. Guzmán, F. Liñán, *Perspectives on Entrepreneurial Education: A US Europe Comparison*, Universidad Antonio de Nebrija, Madrid 2005; K. Wach, *Entrepreneurship Education in Poland*, "ERENET Profile" 2008, vol. III, no. 3(11), pp. 36–44; S. Kurek, T. Rachwał, *The Role of Business Education in the Development of Entrepreneurship in the Member States of the European Union*, "Europa XXI" 2010, vol. 19, pp. 127–142; M. Raposo, A. Paço, *Entrepreneurship Education: Relationship between Education and Entrepreneurial Activity*, "Psicothema" 2011, vol. 23(3), pp. 453–457; K. Wach, *Europeanisation of Entrepreneurship Education in Europe – Looking Back and Looking Forward*, "Horyzonty Wychowania" 2014, vol. 13(26), pp. 11–31; A. Fayolle, B. Gailly, *The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence*, "Journal of Small Business Management" 2015, vol. 53, pp. 75–93; A. Żur, *Exploring the Role of Inspiration in Entrepreneurship Education*, "Horyzonty Wychowania" 2014, vol. 13(26), pp. 179–194; T. Rachwał, S. Kurek, M. Boguś, *Entrepreneurship Education at Secondary Level in Transition Economies: A Case of Poland*, "Entrepreneurial Business and Economics Review" 2016, vol. 4(1), pp. 61–81.

Kirby, and Urbano¹⁰, Audretsch¹¹ and *A Guiding Framework for Entrepreneurial Universities*¹² that provide an understandable context of the main factors affecting the creation and development of Entrepreneurial Universities. The nature of the study is descriptive and reflective, and it provides an illustration of the concept of an *Entrepreneurial University* stressing the difficulties associated with the evaluation of the achieved state.

This paper is composed of the following four parts: (i) literature review on the concept of the Entrepreneurial University, (ii) theoretical models and a framework of factors affecting the transformation into an Entrepreneurial University, (iii) challenges for operationalisation and measurement of factors and study limitations, (iv) conclusions and future research lines.

The Entrepreneurial University – Conceptualisation

The term “Entrepreneurial University” was used by Etzkowitz¹³ to describe those universities that improved different mechanism by their scientists to contribute to the regional development and increase their incomes; they are considering new sources of funds like patents, conducting research under contracts and entry into a partnership with a private enterprise.

It was argued that, in terms of organization, Entrepreneurial Universities are managed in such a way that they become capable of responding flexibly, strategically and autonomously to opportunities and challenges in the environment. Clark¹⁴ describes this as having a strong steering core with acceptance of a model of self-made autonomy across the academic departments. Furthermore, an Entrepreneurial University seeks to develop/undertake a substantial shift in organizational character to achieve a more promising position for the future and become a significant actor in their own terms. Moreover, an Entrepreneurial University has a vision oriented towards quality, adaptation and entrepreneurial culture.

10 M. Guerrero-Cano, D. Kirby, D. Urbano, *A literature review on entrepreneurial universities: An institutional approach*, Working paper presented at the 3rd Conference of Pre-communications to Congresses, Business Economic Department, Autonomous University of Barcelona, Barcelona, June 2006.

11 D.B. Audretsch, *From the entrepreneurial university...*

12 OECD, *A Guiding Framework...*

13 H. Etzkowitz, *Entrepreneurial Scientists and Entrepreneurial Universities in American Academic Science*, “Minerva” 1983, vol. 21(2–3), pp. 198–233.

14 B.R. Clark, *Creating Entrepreneurial Universities. Organisational pathways of transformation*, Pergamon IAU Press, Oxford 1998.

In addition, Clark¹⁵ states that universities are entrepreneurial when they are unafraid to maximise the potential for commercialisation of their ideas and create value in society and do not see this as a significant threat to academic values.

In turn, Kirby¹⁶ emphasizes that Entrepreneurial Universities have the ability to innovate, recognize and create opportunities, work in teams, take risks and respond to challenges. In this context, Etzkowitz¹⁷ even considers that the Entrepreneurial University is a natural incubator providing support structures for teachers and students to initiate new ventures: intellectual, commercial and conjoint. Already before Etzkowitz and Leydesdorff¹⁸ underlined the requirement to shift towards a Triple Helix model of partnership between government, industry and higher education to strengthen the dynamics of innovation.

According to Audretsch¹⁹, the core of the university remains the basic disciplines, fields and academic traditions however, an additional academic activity has been extended to teaching and application research with the primary focus on providing solutions and implementations to major problems, interests and demands confronting society or particular aspects of society. In order to facilitate technology transfer and generate sufficient knowledge spillover from the university for commercialization, innovation and economic growth, absorptive capacity mechanism in the environment is necessary²⁰. The relevance and applicability of the knowledge created at an Entrepreneurial University has become a key value in these new, practise-oriented fields and areas of research, such as biochemistry, informatics, and bioengineering.

The new approach to the role of universities as a driving force for entrepreneurship development in the wider regional, social and community environment envisages a structural shift from their traditional missions to a third task: the commercialization of new knowledge in the form of patents, licences, and university-sanctioned start-ups for economic development²¹. In addition, to facilitate the

15 B.R. Clark, *Sustaining Change in Universities: Continuities in case studies and concepts*, Society for Research into Higher Education and Open University Press, New York 2004.

16 D.A. Kirby, *Creating Entrepreneurial Universities: A Consideration*, Working Paper, School of Management, University of Surrey, 2002.

17 H. Etzkowitz, *Research groups as 'quasi firms': the invention of the entrepreneurial university*, "Research Policy" 2003, vol. 32, pp. 109–121.

18 H. Etzkowitz, L. Leydesdorff, *The dynamics of innovation: from the National Systems and "Mode 2" to a Triple Helix of university-industry-government relations*, "Research Policy" 2000, vol. 29, pp. 109–123.

19 D.B. Audretsch, *From the entrepreneurial university...*

20 *Ibidem*, pp. 317–318.

21 H. Etzkowitz et al., *The future of the University and the University of the future: Evolution of ivory tower to entrepreneurial paradigm*, "Research Policy" 2000, vol. 29(2), pp. 313–330.

generation and commercialization of university research and help start new ventures, an Entrepreneurial University has not only to change its core activities and routines, but also combine adequate organizational environments and resources²². “Integrating a university’s mission for economic and social development urges universities towards transformation of traditional teaching and research universities towards entrepreneurial universities”²³. It is even claimed that the university should transform to the university for the entrepreneurial society. While an Entrepreneurial University is a response to generate and transfer technology and knowledge-based start-ups, “the role of the university in the entrepreneurial society has broadened to focus on enhancing entrepreneurship capital and facilitating behaviour to prosper in an entrepreneurial society”²⁴.

Great emphasis is placed on the need for high flexibility of the university in its response to the environmental requirements. In this context, Gibb, Haskins, and Robertson²⁵ propose a changing university paradigm from pure knowledge and research-based paradigm to pure value relevance, integrated and engaged embedded in high levels of uncertainty and complexity. Nowadays, a crucial challenge of the higher educational system is to create favourable preconditions to prepare students for the modern business world and practices in multicultural teams. For the above reasons, universities have to understand the value of multiple stakeholder engagement to support entrepreneurship and therefore be involved in a range of partnerships within the business ecosystem that stimulates the process of technological entrepreneurship²⁶. Thus, universities are facing difficult challenges that require them to rethink their business models and become more entrepreneurial²⁷.

The literature review does not show consensus for one common definition of an Entrepreneurial University however, several important characteristics are indicated that reveal the importance of internal and external factors that strongly influence this type of university, namely: high interdependence with the government and

22 M. Guerrero, D. Urbano, *The Creation and Development of Entrepreneurial Universities in Spain: An Institutional Approach*, Nova Publishers, New York 2011.

23 D. Arnaut, R. Dogić, *The Inevitability of University Entrepreneurial Path*, [in:] V. Babić (ed.), *Contemporary Issues in Economics Business and Management*, Faculty of Economics University of Kragujevac, Kragujevac 2018, p. 70.

24 D.B. Audretsch, *From the entrepreneurial university...*, p. 313.

25 A. Gibb, G. Haskins, I. Robertson, *Leading the Entrepreneurial University. Meeting the entrepreneurial development needs of higher education institutions*, NCGE UK, Birmingham 2009.

26 E. Badzińska, *The Concept of Technological Entrepreneurship: The Example of Business Implementation*, “Entrepreneurial Business and Economics Review” 2016, vol. 4(3), pp. 55–70.

27 M. McAdam, K. Miller, R. McAdam, *University business models in disequilibrium – engaging industry and end users within university technology transfer processes*, “R&D Management” 2017, vol. 47(13), pp. 458–472.

industry firms, different sources of funding, entrepreneurial activities of all community members (students, academic, alumni), implementation of different strategies to accelerate knowledge spillover and improve the creation of new ventures, as well as the adjustments in the organizational structure of universities. In addition, some definitions express a process that goes on inside an existing higher education institution and leads not only to new business ventures but also to other innovative activities such as the development of new products, services, technologies, strategies and competitive postures²⁸.

A framework for Entrepreneurial University – Theoretical Models

In the subject literature there are identified various theoretical models associated with the creation and development of an Entrepreneurial University or even its transformation (selected ones are synthesized below). In each one, there are conditions and prerequisites associated with formal and informal factors as well as environmental factors.

One of the first approaches to characterize an Entrepreneurial University was that proposed by Clark in 1998. Using the case study method, he examined five European universities and observed common features, which he considered characteristic for the entrepreneurial transformation of these universities. Clark²⁹ identified the five core elements/pathways of an institutional transformation to an Entrepreneurial University, namely: (i) strengthened steering core to embrace management groups and academics; (ii) an expanded developmental periphery involving a growth of units that reaches out beyond the traditional areas in the university; (iii) a diversified funding base, not only by use of government third stream funding but from a wide variety of sources; (iv) an integrated entrepreneurial culture defined in terms of common commitment to change; (v) a stimulated academic heartland with academics committed to the entrepreneurial concept.

In turn in 2000, Etzkowitz, Webster, Gebhardt and Cantisano³⁰, examined and explained the development mechanism for the university of the future, and thus into the Entrepreneurial University. According to the authors, the transformation can be obtained through a formal process that consists of: (i) internal transformation including a revision of existing tasks; (ii) trans-institutional impact

28 B. Antoncic, R. Hisrich, *Intrapreneurship: Construct refinement and cross-cultural validation*, "Journal of Business Venturing" 2001, vol. 16, pp. 495–527.

29 B.R. Clark, *Creating Entrepreneurial Universities...*

30 H. Etzkowitz et al., *The future of the University...*

with projects to achieve a stabilization; (iii) interface process of decentralization of the institution; (iv) recursive effects with the collaboration of trilateral organizations.

Afterwards, the Entrepreneurial University model was proposed by Etzkowitz in 2004³¹, which was a guideline for an institutional renovation that includes: (i) hybrid organizational forms; (ii) interdependence with industry and government; (iii) independence with other institutional spheres; (iv) capitalization of knowledge; (v) reflexivity involving continuous renewal of internal structures. In this transition, the change of governance was identified as a shift from state control to self-regulation of the universities with a supervising state as a consequence³². In other words, it is not a place for hierarchy and bureaucracy because a horizontal coordination is the better way to share intellectual, financial and physical resources³³. “The higher autonomy and cooperation with the state, the greater the positive impact into an Entrepreneurial University”³⁴.

Towards building adaptive universities, Sporn³⁵ proposed a model focused on the external adaptation of higher education and the inter-related connection between the university structure and the surrounding environment using management, governance and leadership. The designed model includes the following factors: (i) mission and goals; (ii) the university structure; (iii) management, governance and leadership; (iv) organizational culture in the adaptation process; (v) networks and strategic alliances; (vi) embedding in the environment. In consequence, an entrepreneurial culture is the principal indicator to develop a new climate for innovation, individual responsibilities, change and a win-win situation for the institution and its faculties³⁶.

Another noteworthy model is that created by Kirby³⁷, which contains five formal factors (strategic actions) related with the organization and two informal factors related with its promotion and recognition. The identified factors are as follows: (i) incorporation; (ii) implementation; (iii) communication; (iv) organization;

31 H. Etzkowitz, *The evolution...*

32 B.R. Clark, *The Higher Education System: Academic Organisation in Cross-national Perspective*, University of California Press, Berkeley 1983.

33 F. Van Vught, *Innovative Universities*, “Tertiary Education and Management” 1999, vol. 5(4), pp. 347–354.

34 M. Guerrero-Cano, D. Kirby, D. Urbano, *A literature review...*, p. 13.

35 B. Sporn, *Building Adaptive Universities: Emerging Organisational Forms Based on Experiences of European and US Universities*, “Tertiary Education and Management” 2001, vol. 7(2), pp. 121–134.

36 *Ibidem*.

37 D.A. Kirby, *Creating Entrepreneurial Universities in the UK: Applying entrepreneurship theory to practice*, “Journal of Technology Transfer” 2006, vol. 31(5), pp. 599–603.

(v) encouragement and suport; (vi) recognition and reward; (vii) endorsement; (viii) promotion.

Another interesting approach and a framework for Entrepreneurial Universities was presented by Guerrero-Cano, Urbano and Kirby in 2006³⁸. The theoretical model considering the environmental dimension contains formal and informal factors that condition the creation and development of these type of universities. The elements associated with formal factors focus especially on: (i) the organizational structure and the university government; (ii) entrepreneurship education programmes; (iii) support measures to entrepreneurial activities. In turn, the informal factors relate to: (i) entrepreneurship teaching methodology; (ii) university attitudes towards entrepreneurship; (iii) role models and academic reward systems. Furthermore, the authors conclude that this type of university generates several direct outcomes, which follow the three university missions (teaching, research and entrepreneurial) proposed by Etzkowitz³⁹.

For the present study, the endo- and exogenous factors considered as a framework for the transformation into an Entrepreneurial University are created and synthetically presented in the Table 1.

Table 1. Preconditions for the transformation into an Entrepreneurial University

Endogenous Factors	
Formal Factors	Informal Factors
Management and organizational structure of the university: • mission, vision, strategic management; • internationalisation strategy, strategic international partnerships; • organizational structures – a shift from state control to self-regulation of the university; • independence, flexibility, self-government.	Entrepreneurial community and intellectual potential of the university: • entrepreneurial mindsets and skills, expertise and experience of academics, visiting professors and inventors, students, interns, alumni, cooperating business practitioners and other enterprising university employees; • international networks, bilateral partnerships (consortia, alliances) with other international institutions.
University tangible resources and entrepreneurship support measures: • high technology infrastructure, research facilities and IT services, laboratories, R&D department, business incubators to start-up creation, technology and innovation transfer centre, science park, career counseling centre, student organizations, others.	Entrepreneurial culture at the university: • attitude of the authorities and the academic community to entrepreneurship education and creation of start-ups/ spin-offs; • for commercialization of scientific research; • knowledge and innovation management processes at the organization level.

38 M. Guerrero-Cano, D. Kirby, D. Urbano, *A literature review...*, pp. 10–19.

39 H. Etzkowitz, *The evolution...*

Table 1 (continued)

University entrepreneurship education programmes: • doctoral, master programmes and undergraduate courses in entrepreneurship and transversal competences, practice-oriented curricula; • experiential learning approach, internships in enterprises, dual education system; • international mobility of staff and students; • double degrees and international partnerships.		University image and good practices: • system of norms and values; • tradition and experience, reputation; • achievement evaluation criteria, academic reward system, promoting successes of students and graduates, academic or other university employees.
Exogenous Factors		
Entrepreneurial Ecosystem	Microeconomic Environment	Macroeconomic Environment
Favourable environments of interdependent actors and resources which enable the emergence of high growth business activities through specific policies and instruments: business environment institutions, R&D centres, innovation and business centres, consultancy, organizational, funding and infrastructure services, the public sector supporting institutions, business associations for entrepreneurship, professional bodies, local government chambers of commerce. Cooperation with selected research institutions, universities and other external stakeholders supporting network for the exchange of information, diffusion of knowledge, implementation of joint projects and dissemination of best practices. Consortia, networks and strategic alliances, external relation- and partnerships.	Regional socio-economic, financial and cultural aspects and policies; institutional and business environment; interdependence with the government and industry firms. Distinctive sector, sectoral conditions – mesoeconomic dimension. Organizational adaptation to environmental changes, spatial management. Higher education institutions and local government units.	The economic, social, political and institutional context of the country. Development of new information and communication technologies and infrastructure. Regulations of the Ministry of Higher Education, government act, higher education law, legal rules.

Source: own study (division in formal and informal factors adapted from M. Guerrero-Cano, D. Kirby, D. Urbano, *A literature review on entrepreneurial universities: An institutional approach*, Working paper presented at the 3rd Conference of Pre-communications to Congresses, Business Economic Department, Autonomous University of Barcelona, Barcelona, June 2006, p. 6.

All the above factors serve to shape changes in organization and management (governance) structures of universities which lead to the verification of mission

statements and strategies. The aim is to become aware of the existence and functioning of the entrepreneurial ecosystem and facilities for the creation of entrepreneurial study pathways and international excellence. Noteworthy is the effective collaboration with research centres and the business-related sphere towards the acceleration of the knowledge spillover from universities, the development of applied research, and the appropriate adaptation of the obtained outcomes to the needs of society, environment, and the economy. A particularly important mechanism for knowledge exchange is staff and student mobility, which includes internships and programmes for teaching and research exchange. In this perception, the transformation of decision-making and leadership roles as well as responsibilities at the organizational level requires networks, strategic alliances, and joint projects for exploiting entrepreneurial opportunities with industry, the government and other higher education institutions.

Based on findings of various authors' publications from 1998 up to 2012, more specific characteristics of an Entrepreneurial University were developed under the aegis of the European Commission's DG Education and Culture, in collaboration with the OECD LEED forum, and supported by a panel of six independent experts in this field. As a result, *A Guiding Framework for Entrepreneurial Universities* was delivered in 2012. It is designed to help interested universities assess themselves against statements which are organised under the following seven areas: (i) Leadership and Governance; (ii) Organizational Capacity, People and Incentives; (iii) Entrepreneurship development in teaching and learning; (iv) Pathways for entrepreneurs; (v) University-Business/external relationships for knowledge exchange; (vi) The Entrepreneurial University as an international institution; (vii) Measuring the impact of the Entrepreneurial University.

The OECD framework can be used as a thematic reflection model where the above-mentioned statements are factors likely to be characteristic of an Entrepreneurial University. Several activities are proposed which are established and managed by a university in order to justify the status of an Entrepreneurial University⁴⁰. The scheme is practical and visual, and it helps to organise the development actions in a logical form in accordance with the process of creating an Entrepreneurial University. As a self-assessment tool, it helps individual universities to identify and assess their own strengths and weaknesses in their current situation and plan potential improvement actions, taking into account their local, national and international environments. Unfortunately, the OECD framework cannot be considered as a benchmarking tool, because the proposed statements are individual and contextual, there is no operationalization of the terms, hence the measurement

40 OECD, *A Guiding Framework...*

methods and outcomes may have many limitations and ambiguities. Undoubted usefulness of the Guiding Framework for Entrepreneurial Universities lies in the possibility to elaborate joint discussion within and among the organization(s) that is needed to gain joint understanding from all the relevant partners.

Challenges for Operationalisation and Measurement

Due to the wide scope of Entrepreneurial University characteristics, the present research study is limited and focuses on the endo- and exogenous factors affecting the creation or rather the transformation and development into an Entrepreneurial University embedded in an entrepreneurial business ecosystem. Due to the fact that universities operate in specific socio-economic and cultural conditions, in a specific business environment, the research approaches and outcomes are ambiguous and therefore difficult to make objective comparisons and assessments.

The OECD⁴¹ Entrepreneurial University framework may well serve as a starting point to examine the level of entrepreneurship in various areas of the university's activity and compare it with the developed statements to assess the current situation. The areas where improvement is considered a priority could then be worked on. However, to get a high or low rating the associated performance indicators are crucial. Unfortunately, as mentioned before, many proposed statements/factors (especially informal ones such as traditions and reputation) are individual and contextual, hence it is difficult to assess them objectively to get reliable results (for example, the entrepreneurial agenda is usually tailor made to the individual purposes). There are many "soft" areas and invisible university resources that are difficult to be operationalized and measured by quantitative methods. For example, how to make an objective assessment of the following statements: (i) staff take an entrepreneurial approach to teaching and learning in all departments, promoting diversity; (ii) the institution uses entrepreneurial attitudes, behaviours and experience as criteria in the recruitment process; (iii) there are clear incentives and rewards for staff who actively support the university's entrepreneurial agenda.

Further measurement problems concern: (i) the extent of collaboration and knowledge exchange with universities and the external stakeholders; (ii) the scope of cooperation and contact between new entrepreneurs, universities and local governments, and their attitudes to preserving the environment; (iii) the level of staff engagement in entrepreneurial teaching and learning across the institution; (iv) generating

41 *Ibidem*.

of entrepreneurial motivation, cognition, and attitudes; (v) generating entrepreneurial competences and skills; (vi) the impact of support services on the success of the academic start-ups; (vii) and especially, comparison and contrasting the findings. For these reasons, decision makers must be very careful when making recommendations and creating policies towards an Entrepreneurial University.

The evidence reveals a tendency to use case studies to explore and build understanding on the phenomenon of the Entrepreneurial University⁴². Possible reasons are related to a large range and variety of characteristics of this issue, a lack of one universally recognized method and indicators for measuring this phenomenon, a large number of variables depending on the economic, social, governmental and business environment as well as many qualitative factors. To design policies that will stimulate the entrepreneurial activity of universities and their contribution to the development of the modern knowledge economy and sustainable environment is now a major challenge.

Conclusions

The Entrepreneurial University framework and the preconditions for its transformation developed in this study are a theoretical approximation related to the endo- and exogenous factors within the entrepreneurial ecosystem which are crucial to making the university more entrepreneurial. However, an empirical analysis and specific measurement indicators are required. Although the concept has received considerable attention over the previous years, further comparative studies and a consideration of the practical aspects of its implementation and impact are expected in order to create a measurement apparatus which is as coherent and as widely recognized conceptually as possible.

It is now generally accepted that Entrepreneurial Universities are an essential instrument in the facilitation of technology transfer, knowledge spillover and start-up creation. Furthermore, they are considered as important accelerators for regional, economic and social development. For these reasons, it is necessary to establish supporting measures to create favourable environments for entrepreneurship at the

42 B.R. Clark, *Creating Entrepreneurial Universities...*; B. Sporn, *Building Adaptive Universities...*; A. Gibb, G. Haskins, I. Robertson, *Leading the Entrepreneurial University...*; T. Aldridge, D.B. Audretsch, *The Bayh-Dole Act and Scientist Entrepreneurship*, "Research Policy" 2011, vol. 40(8), pp. 1058–1067; D.A. Kirby, M. Guerrero, D. Urbano, *Making Universities More Entrepreneurial: Development of a Model*, "Canadian Journal of Administrative Sciences" 2011, vol. 28, pp. 302–316; D. Urbano, M. Guerrero, *Entrepreneurial universities: Socio-economic impacts of academic entrepreneurship in a European region*, "Economic Development Quarterly" 2013, vol. 27(1), pp. 40–55; D. Arnaut, R. Dogić, *The Inevitability...*; L. Timonen, E. Badzinska, H. Immonen, *How to build entrepreneurial pathways...*

university level. Nowadays, a common response to the demands of stakeholders is a strategy which is oriented to promoting the entrepreneurial mindset by reforming the curricula so as to provide academic graduates with more practical skills, and to be more multi-disciplinary and social competent in order to discover entrepreneurial opportunities and to boost employability.

Universities should be active players, linked to their external environment by having a strong presence in the community. This might include for example, providing opportunities for regional start-ups or established companies, participating in regional clusters and taking an active role in determining the strategic direction of local development⁴³.

Building and sustaining business-science relationships with key partners, stakeholders and collaborators is essential in achieving the full potential of an Entrepreneurial University in research, teaching and entrepreneurship mission activities. The motivation for this commitment is to create value for the university and society. Therefore, developing university-based entrepreneurial practices are considered as a significant contribution in supporting the strategic development of education and research, bridging universities with their entrepreneurial ecosystem in a meaningful way.

To obtain a deeper insight into the research problem, the future investigation will focus on the identification of critical factors related to the transformation process to an Entrepreneurial University using multiple case studies. The process of translating the factors defined in the conceptualisation process into measurable indicators will be necessary.

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43 OECD, *A Guiding Framework...*

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Abstract

There is a growing global need for entrepreneurs from technological, social, cultural and economic backgrounds to launch new ventures and engage in innovative business activities. Significant challenges in economy and society, industrial development 4.0 and international cooperation pathways have all shed new light and made new demands on higher education systems across the world. Universities need to ensure new ways of learning and teaching, greater practical usefulness of scientific research findings and cooperate widely with the entrepreneurial ecosystem to be able to renew their curricula and practices for boosting employability and to improve career opportunities for academic graduates.

The explorative qualitative study focuses on the university-based entrepreneurial activities and the business ecosystem. The purpose of the study is to review the approaches of scholars and present a discussion on the theoretical framework concerning the Entrepreneurial University. It is an attempt to adapt existing models and bring new factors together with current reflections on this phenomenon. The contribution of the author consists of developing a framework of preconditions – endo- and exogenous factors within the entrepreneurial ecosystem and micro- and macroeconomic environment – necessary to transform a traditional university into an entrepreneurial one. Building and sustaining business-science relationships with key partners, stakeholders and collaborators seems to be essential in achieving the full potential of an Entrepreneurial University in research, teaching and entrepreneurship mission activities. The author identifies the limitations, ambiguities and difficulties with the operationalisation of significant factors, variables and their measurement.

The nature of the study is descriptive, and the methods used in this objective are a critical review of the subject literature, defining, comparing, analysis, reflection, and inference. The paper concludes with recommendations and directions for an in-depth empirical research. In order to obtain a deeper insight into the research problem the future investigation will focus on the identification of critical factors related to the transformation process into an Entrepreneurial University using multiple case studies. Although the concept has received considerable attention over the last years, further comparative studies of the practical aspects of its implementation and impact are expected to create a coherent and widely recognized conceptual and measurement apparatus.

Keywords: business-science relationships, entrepreneurial ecosystem, entrepreneurial university, entrepreneurship, higher education

The quality of inter-organizational relations and the intention of commercialization of knowledge by academic entrepreneurs – a theoretical approach and outline of research

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Introduction

Universities and their immediate surroundings are places that play a key role for contemporary societies in the field of education and generating the latest knowledge¹. Over the past decade, researchers have started to see university and its environment as a special ecosystem supporting entrepreneurs in developing their business ideas².

Academic entrepreneurship ecosystems are established by a network of different institutions and entities: universities, business incubators, technology transfer centres, financial support institutions, etc. involved in supporting academic entrepreneurship. High-quality relationships between entities engaged in this ecosystem can affect the loyalty of the partners involved in such cooperation – their behaviour,

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- 1 M. Perkmann et al., *Academic Engagement and Commercialization: A Review of the Literature on University-Industry Relations*, "Research Policy" 2003, vol. 42, no. 2, p. 423.
 - 2 D.M. Hechavaria, A. Ingram, *A Review of the Entrepreneurial Ecosystem and the Entrepreneurial Society in the US: An Exploration with the Global Entrepreneurship Monitor Dataset*, "Journal of Business & Entrepreneurship" 2014, vol. 26, no. 1, pp. 1–35; D.J. Isenberg, *How to Start an Entrepreneurial Revolution*, "Harvard Business Review" 2010, vol. 88, no. 6, pp. 2–11; A. Sherwood, *University and the Entrepreneurship Ecosystem*, [in:] S. Globberman, J. Clemens (eds), *Demographics and Entrepreneurship: Mitigating the Effects of an Aging Population*, Fraser Institute, Canada 2018, pp. 239–283.

willingness to become involved and help – and are thus an important factor conducive to achieving a better result of cooperation in terms of the commercialization of knowledge. In general, entrepreneurial ecosystems regulate the nature and quality of entrepreneurial activities and also set up the types of organizational forms that will be accepted as legitimate (e.g. the creation of a new spin-off).

The current direction of European policy is focused on the development of innovative undertakings, which causes, among others, increased interest in academic entrepreneurship, the search for new forms of technology transfer, stimulation of developing academic spin-off companies, and motivating the academic environment to take economic initiatives. The topic of the academic entrepreneurship ecosystem is already present in the literature on the subject and in recent years the meaning of the support ecosystem as a key factor in extending academic entrepreneurship has been underlined. The ecosystem is understood often as a “connector” that bridges people, ideas and resources in academia, and local communities are particularly important for early stage projects, as they facilitate access to stakeholders in the community who are in a position to offer often required critical support³.

However, there is a lack of conceptual grounds that would create a field to start empirical research in the context of research on how high quality relations between entrepreneurial scientists and their partners from the widely understood entrepreneurial ecosystem can influence the intention of commercializing research results.

The article answers the following research questions in detail:

- Q1: What institutions/entities play an important role in building an ecosystem supporting academic entrepreneurship?
- Q2: What factors shape the quality of inter-organizational relationships in supporting academic entrepreneurship?
- Q3: How can we examine the impact of high-quality inter-organizational relationships on intentions to commercialize knowledge by academic entrepreneurs (what variables can the model to explore this dependency contain)?

The article uses the desk research method, with the aim of diagnosing the main research trends in the study of the quality of inter-organizational relationships and their impact on the willingness to commercialize research results by the academic community. By analysing the available literature, the variables key to developing a construct for measuring the quality of inter-organizational relations might thus be brought into focus.

The article is organized as follows. Section 1 (above) is an introduction. Section 2 provides a review of the modest but emerging literature that explores the essence

3 C. Maia, J. Claro, *The role of a Proof of Concept Center in a university ecosystem: An exploratory study*, “Journal of Technology Transfer” 2013, vol. 38, no. 5, p. 641.

of university entrepreneurship, its ecosystem, and the importance of inter-organizational relationships that can support academic entrepreneurs. Part 3 discusses the methodological approach used in this study. Finally, conclusions, limitations and implications for future research are discussed.

Theoretical background

Academic entrepreneurship and its ecosystem

In recent years, the concept of academic entrepreneurship – also referred to as technological entrepreneurship, innovative entrepreneurship, intellectual entrepreneurship and technostarters, among other names – has developed all over the world. The term “academic entrepreneurship” was originally intended to refer to the extension of entrepreneurship to the academic community and only to distinguish between companies based on academic knowledge and those based on other knowledge. Dominant definitions in English-language literature subsequently changed the concept of establishing profit-oriented enterprises at universities and focused on the basic role of university spin-offs. Later, other authors proposed a view on academic entrepreneurship as a way of transferring knowledge from the university environment to the market. This broader interpretation of academic entrepreneurship covered any academic interaction with business entities that forms the basis for creating market value. In a simpler approach, academic entrepreneurship is defined as the synthesis and integration of scientific, academic and commercial activities. This is often characterized by formal arrangements for the commercialization of intellectual property of academic goods through knowledge (e.g. business consultancy or industry-commissioned research), technology transfer (e.g. patents or licences), and transfer of products or services through established spin-off companies⁴. Academic entrepreneurship takes place at the level of individuals or groups operating independently or within faculties or other university units that create new organizations or initiate innovation within or outside the university⁵.

While early publications on the subject of academic entrepreneurship focused mainly on measuring the frequency of knowledge transfer at universities (patents,

4 R. Radosevich, *A model for entrepreneurial spin-offs from public technology sources*, “International Journal of Technology Management” 1995, vol. 10, pp. 879–893.

5 J.W. Tijssen, *Universities and industrially relevant science: toward measurement models and indicators of entrepreneurial orientation*, “Research Policy” 2006, vol. 35, no. 10, pp. 1569–1585.

licences, spin-offs) and analysing initiatives that could affect the effectiveness of this activity⁶, attempts are increasingly being made to analyse the entities and factors that shape the ecosystem of academic entrepreneurship or show the results of effective cooperation between ecosystem participants⁷. Entrepreneurial ecosystems include numerous entities and various processes at many levels of stakeholder cooperation⁸. The idea underlying the widespread use of the term ecosystem in social sciences was developed in the 1980s and 1990s, but it only spread after the work of Moore⁹, one of the first researchers to introduce the concept of the ecosystem in the business environment. The definitions of the entrepreneurial ecosystem indicate that it is “a set of networked institutions designed to help entrepreneurs go through all stages of the development process of a new venture”¹⁰. This can be understood as a network of services in which the entrepreneur is at the centre of activities and the measure of his success is the effective commercialization of scientific knowledge¹¹.

An entrepreneurial academic support ecosystem has many dimensions. It includes entrepreneurship incubators, accelerators, grants, and business plan competitions. Such an ecosystem also has vital formal and informal rules and regulations for governing the entrepreneurial activities of academic society¹². As part of the process of supporting academic entrepreneurship, there are a number of relationships between various entities, i.e. the university itself, employees, students, doctoral students, enterprises and other units and environmental factors. The quality of relations between the entities involved in supporting academic entrepreneurship can be understood as the added value shaped by the type of bond between the subjects of exchange characterized by the degree of compatibility of organizational cultures, decision-making styles and the convergence of perceived values. A more detailed analysis of the entities involved in supporting academic entrepreneurship (in which it is important to maintain long-term relationships

6 D.S. Siegel, D. Waldman, A. Link, *Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study*, “Research Policy” 2003, vol. 32, pp. 27–48.

7 M. Perkmann et al., *Academic Engagement...*

8 D.J. Isenberg, *How to Start...*

9 J.F. Moore, *A new ecology of competition*, “Harvard Business Review” 1993, May – June, pp. 75–86.

10 *Ibidem*.

11 *The Aspen Network of Development Entrepreneurs. Entrepreneurial ecosystem diagnostic toolkit*, Aspen Institute, UK 2013.

12 D. North, *Institutions, Institutional change and economic performance*, Cambridge University Press, Cambridge 1990; E. Autio et al., *Entrepreneurial innovation: The importance of context*, “Research Policy” 2014, vol. 43, pp. 1097–1108.

with the environment) reveals three groups: entities closely related to academic entrepreneurship (AE), entities that are a potential environment for AE, and partners that can support AE (Figure 1). Properly nurtured relationships between these entities may contribute to the intensification of entrepreneurial activities of persons referred to as academic entrepreneurs.

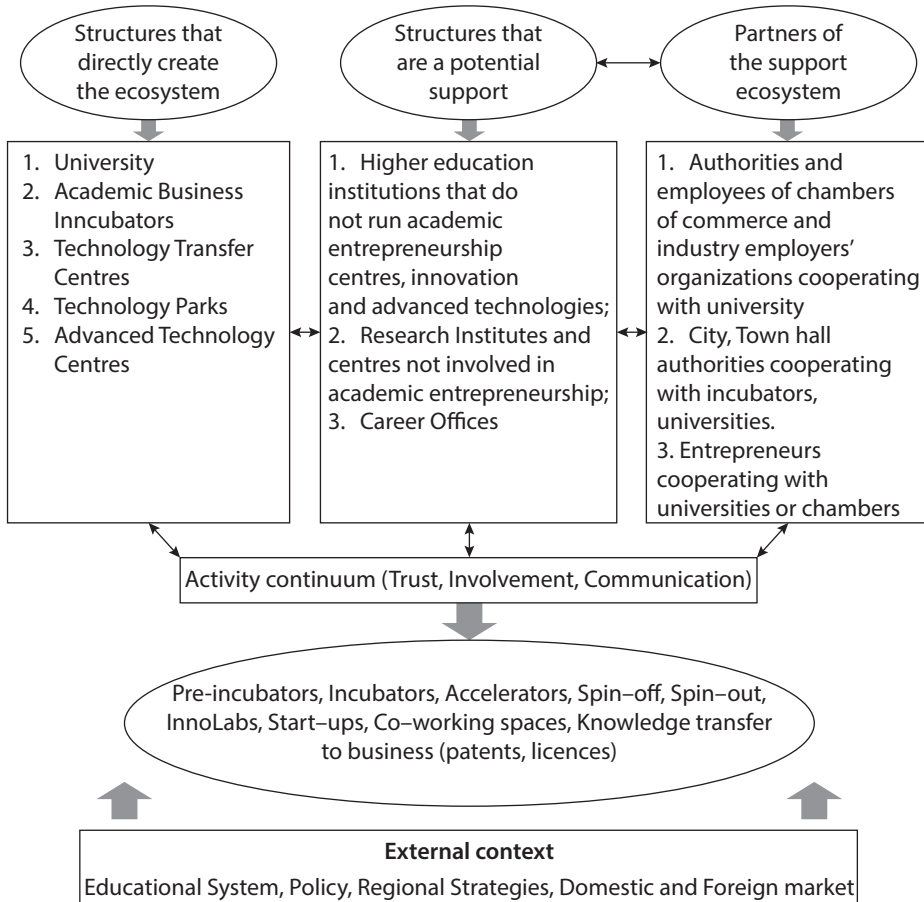


Figure 1. Ecosystem of academic entrepreneurship support

Source: own study based on a literature review.

Ecosystem entities, known as 'links' connecting people, ideas and resources in academia and local communities, are particularly important for projects at an early stage as they facilitate access to community stakeholders who are able to offer the often required critical support. The following features of an ecosystem have been identified in the relevant literature: exceptional character – which confirms why it is difficult to copy the way the Silicon Valley ecosystem works;

multidimensional and unambiguous relationships in the ecosystem, where high-quality relationships between the various entities in the ecosystem are based on trust, satisfaction and commitment.

University authorities are the natural source initiating the process of promoting academic entrepreneurship and shaping the support ecosystem, and its main recipients are scientists, students, graduates, doctoral students and lecturers. The university also has the option of separating the unit within its structure, acting to support academic entrepreneurship (e.g. an incubator, career office, entrepreneurship centre) or have its representatives in the structure of other supporting institutions (e.g. science and technology parks, technology transfer centres). The proposal to create a support structure may also emerge from outside, e.g. from another institution, i.e. a regional development foundation or entrepreneurship development agency implementing a project from external funds, e.g. from EU funds. It is the initiators creating the support structure that are expected to be most involved in coordinating the process of academic entrepreneurship.

Quality of inter-organizational relations

In order for the academic entrepreneurship support ecosystem to deliver the assumed results, i.e. to intensify the entrepreneurial attitudes of people associated with the university, there must be interaction between the academic community and support entities that is based on commitment, trust and cooperation. In other words, the relationship between support participants must be of high quality.

The quality of relations between entities involved in supporting academic entrepreneurship can be understood as added value shaped by the type of links between exchange entities, and is characterized by the degree of compliance of organizational cultures, their decision-making styles and a convergence of perceived values¹³. A properly shaped level of quality of relations between these entities may contribute to the intensification of entrepreneurial activity of persons called academic entrepreneurs. There are many previous studies discussing the concept of relationship quality¹⁴. The concept has been defined from different perspectives (re-

13 U. Kobylińska, *Barriers and Factors Influencing the Level of Cooperation of Businesses with Public Administration Institutes: Poland as a Case Study*, [in:] V. Potocan, P. Kalinic, A. Vuletic (eds), *26th International Scientific Conference on Economic and Social Development – “Building Resilient Society”: Book of Proceedings*, Varazdin Development and Entrepreneurship Agency, Zagreb 2018, pp. 222–231.

14 C.P. Lin, C.G. Ding, *Evaluating group differences in gender during the formation of relationship quality and loyalty in ISP service*, “Journal of Organizational and End User Computing” 2005, vol. 18, no. 2, pp. 38–62; P. Atthanasopoulou, *Relationship quality: a critical literature review and research agenda*, “European Journal of Marketing” 2009, vol. 43, no. 5–6, pp. 583–610;

relationship quality features, relationship strength, relationship quality scale, quality dimensions, etc.).

In the relevant literature, the quality of relationships is defined variously as:

- a general evaluation of relationship strength and the extent to which a relationship meets the needs and expectations of the parties involved based on a history of successful or unsuccessful encounters or events¹⁵;
- a higher-order construct, which includes factors such as trust, commitment, communication, an absence of conflict, satisfaction, deciding to what extent the relationship can meet the needs of a given entity¹⁶.

However, for most researchers, the quality of relationships is based on three aspects: trust, commitment and satisfaction¹⁷. Recent studies also show other variables important for the quality of relationships, i.e. communication understanding and no conflict of interest¹⁸.

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- H. Doaei, A. Rezaei, R. Khajei, *The Impact of Relationship Marketing Tactics on Customer Loyalty: The Mediation Role of Relationship Quality*, "International Journal of Business Administration" 2011, vol. 2, no. 3, pp. 83–93; M.H. De Cannie're, P. De Pelsmacker, M. Geuens, *Relationship Quality and Purchase Intention and Behavior: The Moderating Impact of Relationship Strength*, "Journal of Business Psychology" 2010, vol. 25, pp. 87–98; W. Ulaga, A. Eggert, *Relationship Value and Relationship Quality: Broadening the Nomological Network of Business-to-Business Relationships*, "European Journal of Marketing" 2006, vol. 40, pp. 311–327; J. Emami, M. Layevardi, S. Fakharmanesh, *An Integrated Model in Customer Loyalty Context: Relationship Quality and Relationship Marketing View*, "Australian Journal of Basic and Applied Sciences" 2013, vol. 7, no. 2, pp. 399–407.
- 15 C.P. Lin, C.G. Ding, *Evaluating group differences...*
- 16 L. Danik, *Wpływ kultury na jakość relacji w międzynarodowej współpracy przedsiębiorstw*, Oficyna Wydawnicza SGH, Warszawa 2017.
- 17 T.L. Baker, P.M. Simpson, J.A. Siguaw, *The impact of suppliers' perceptions of reseller market orientation on key relationship constructs*, "Journal of the Academy Marketing Science" 1999, vol. 27, p. 50; T. Hennig-Thurau, K.P. Gwinner, D.D. Gremler, *Understanding Relationship Marketing Outcomes: An Integration of Relational Benefits and Relationship Quality*, "Journal of Service Research" 2002, vol. 4, no. 3, pp. 230–247; B. Ashai et al., *Assesing relationship quality in four business-to-business markets*, "Marketing Intelligence & Planning" 2009, vol. 27, no. 1, pp. 86–102; J.M. Barry, P.M. Doney, *Cross-Cultural Examination of Relationship Quality*, "Journal of Global Marketing" 2011, vol. 24, no. 4, pp. 305–323; H.H. Huang, P. Wan-Ping, *Effects of promotion on relationship quality and customer loyalty in the airline industry: The relationship marketing approach*, "African Journal of Business Management" 2011, vol. 5, no. 11, pp. 4403–4414.
- 18 K. Ghzaief, F. Akrouf, *Dimensions and Antecedents of Relationship Quality in a Business-to-Business Context: An Exploratory Study*, "Journal of Supply Chain and Customer Relationship Management" 2012, vol. 2012, pp. 1–17; J.J. Hoppner, D.A. Griffith, R.C. White, *Reciprocity in Relationship Marketing: A Cross-Cultural Examination of the Effects of Equivalence and immediacy on Relationship Quality and Satisfaction with Performance*, "Journal of International Marketing" 2015, vol. 23, no. 4, pp. 64–83; L.C. Leonidou, D. Paliawadana, M. Theodosiou, *An integrated model of the behavioural dimensions of industrial buyer-seller relationship*, "European Journal of Marketing" 2006, vol. 40, no. 1–2, pp. 145–174.

The literature on the subject shows the positive effects of high-quality inter-organisational relations, i.e. the results of cooperation¹⁹, the expected length of cooperation²⁰; willingness to recommend²¹, rarer opportunistic behaviour²², and the impact on future intentions to maintain relationships²³. Such positive effects of high-quality relationships can also be seen in the context of cooperation between academic entrepreneurs and institutions supporting them. Also, insights have been published regarding the importance of good relationships and support from ecosystem entities:

- good relations of scientists with special units at their universities, such as research centres, have a positive impact on their involvement in entrepreneurship²⁴;
- the importance of supporting academic entrepreneurs from universities and faculties²⁵ as well as technology transfer centres in commercializing research results²⁶;
- the presence of a formal relationship in technology transfer mechanisms is generally positively related to commercialization²⁷;
- there may be a temporal relationship between involvement and commercialization, in the sense that earlier involvement of scientists in cooperation with industry can subsequently lead to commercial production²⁸.

19 B. Ramaseshan et al., *Power, satisfaction and relationship commitment in Chinese store – tenant relationship and their impact on performance*, "Journal of Retailing" 2006, vol. 82, no. 1, pp. 63–70.

20 L. Crosby, K. Evans, D. Cowles, *Relationship quality in services selling: An interpersonal influence perspective*, "Journal of Marketing" 1990, vol. 54, pp. 68–81.

21 J.K. Huntley, *Conceptualization and measurement of relationship quality: Linking relationship quality to actual sales and recommendation intention*, "Industrial Marketing Management" 2006, vol. 35, no. 6, pp. 703–714.

22 J.T. Bowen, S. Shoemaker, *Loyalty: A Strategic Commitment*. Cornell Hotel and Restaurant, "Administration Quarterly" 1998, vol. 39, no. 1, pp. 12–25.

23 M. Perkmann et al., *Academic Engagement...*

24 B. Bozeman, M. Gaughan, *Impacts of grants and contracts on academic researchers' interactions with industry*, "Research Policy" 2007, vol. 33, no. 5, pp. 694–707.

25 J. Owen-Smith, W.W. Powell, *To Patent or Not: Faculty Decisions and Institutional Success at Technology Transfer*, "The Journal of Technology Transfer" 2001, vol. 26, p. 99.

26 A. Lockett et al., *The creation of spin-off firms at public research institutions: Managerial and policy implications*, "Research Policy" 2005, vol. 34, no. 7, pp. 918–933; D.S. Siegel, D. Waldman, A. Link, *Assessing the impact of organizational practices...*

27 D. Siegel, P. Phan, *Analyzing the Effectiveness of University Technology Transfer: Implications for Entrepreneurship Education*, [in:] G. Libecap (ed.), *University Entrepreneurship and Technology Transfer*, "Advances in the Study of Entrepreneurship, Innovation and Economic Growth" 2005, vol. 16, Emerald Group Publishing Limited, Bingley, pp. 1–38.

28 M. Perkmann et al., *Academic Engagement...*

Given the broader spectrum of modern university activities, is perceived as having the largest role in creating the right quality of relationships between entities directly or indirectly related to academic entrepreneurship, activating entrepreneurship and ensuring lasting, appropriate quality of relationships between various stakeholders. To a large extent, the position of local and regional technology parks, incubators, and university technology transfer offices depends on strong, trust-based and committed relationships between the university, local government and business. Social psychologists say that commitment and trust play a key role in shaping motivation and behaviour in relationships²⁹. All these institutions are responsible for creating a climate favourable to entrepreneurship, promoting and disseminating knowledge about entrepreneurship in the form of training, promotional campaigns, organization of advisory points, etc. These activities should become a priority in the process of overcoming one of the most serious barriers to the development of good relations between entities involved in promotion of academic entrepreneurship, namely mental barriers, lack of awareness of the benefits of commercializing science and fear of the risks associated with running your own business.

Methodology and conceptual model

The article uses the desk research method, which aimed to:

- identify factors shaping the quality of relationships maintained in supporting academic entrepreneurship;
- identify the relationship between the quality of relationships in the area of supporting academic entrepreneurship and the intention to commercialize knowledge.

An analysis of the relevant literature was intended in particular to bring into focus the variables important in the development of a construct for measuring the quality of inter-organizational relations. As a result of this literature review, a theoretical model was proposed to examine the quality of inter-organizational relations and their impact on the intention of commercialization of knowledge by academic entrepreneurs.

The construct for testing the quality of inter-organizational relations proposed in this article contains criteria described and discussed in the literature. These include such variables as trust, commitment, communication, satisfaction, no conflict of interest, and expected benefits. After considering the review of the literature on the study of the quality of inter-organizational relations, a construct was

29 J. Wieselquist et al., *Commitment, pro-relationship behaviour, and trust in close relationships*, "Journal of Personality and Social Psychology" 1999, vol. 77, no. 5, p. 942.

proposed explaining the variables shaping the quality of relationships (RQ) and its impact on entrepreneurship attitudes of the academic community (IC) (Figure 2). Six variables were recognized as predecessors of the variable “relationship quality” – trust (T), communication (C), engagement (E), satisfaction (S), no conflict of interest (NC), and expected benefits (EB). Each of the variables in the model has its justification in literature or previous empirical studies.

Items proposed by Leonidou et al.³⁰, Danik³¹, Ulaga and Eggert³² can be used to measure the variable “trust”. Items proposed by Tung and Carlson³³ and Hoppner et al. 2015³⁴ can be used to measure variable “engagement”. Items proposed by Leonidou et al.³⁵, Lages³⁶ and Hennig-Thurau et al.³⁷ can be used to measure the variable “communication”. Items proposed by Leonidou et al.³⁸, Lages³⁹ and Hennig-Thurau et al.⁴⁰ can be used to measure “satisfaction”. Items proposed by Hoppner et al.⁴¹ and Danik⁴², can be used to measure the variable “no interest conflict”. Items proposed by Danik⁴³ and Whipple et al.⁴⁴ can be used to measure the variable “expected benefits”. It was assumed that all the indicated variables have a positive impact on the quality of relationships in supporting academic entrepreneurs.

In connection to the above, Appendix 1 gives examples of specific items that explain the main variables of the model and can be included in the survey questionnaire.

30 L. Leonidou, D. Palihawadana, M. Theodoiou, *An integrated model...*

31 L. Danik, *Wpływ kultury...*

32 W. Ulaga, A. Eggert, *Relationship Value...*

33 B. Tung, J. Carlson, *Modeling a Formative Measure of Relationship Quality and Its Effects: Evidence From the Hong Kong Retail Banking Industry*, “Services Marketing Quarterly” 2013, vol. 34, no. 2, pp. 139–158.

34 J.J. Hoppner, D.A. Griffith, R.C. White, *Reciprocity in Relationship Marketing...*

35 L. Leonidou, D. Palihawadana, M. Theodoiou, *An integrated model...*

36 C. Lages, C.R. Lages, L.F. Lages, *The RELQUAL scale: a measure of relationship quality in export market ventures*, “Journal of Business Research” 2005, vol. 58, no. 8, pp. 1040–1048.

37 T. Hennig-Thurau, K.P. Gwinner, D.D. Gremler, *Understanding Relationship Marketing Outcomes...*

38 L. Leonidou, D. Palihawadana, M. Theodoiou, *An integrated model...*

39 C. Lages, C.R. Lages, L.F. Lages, *The RELQUAL scale...*

40 T. Hennig-Thurau, K.P. Gwinner, D.D. Gremler, *Understanding Relationship Marketing Outcomes...*

41 J.J. Hoppner, D.A. Griffith, R.C. White, *Reciprocity in Relationship Marketing...*

42 L. Danik, *Wpływ kultury...*

43 *Ibidem*.

44 G.N. Nyaga, J.M. Whipple, D.F. Lynch, *Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ?*, “Journal of Operational Management” 2010, vol. 28, no. 2, pp. 101–114.

In addition, based on the literature review, an assumption was made regarding the positive impact of the quality of relations between academic entrepreneurs and their supporting institutions on the intention of commercialization of knowledge by academic entrepreneurs (Figure 2).

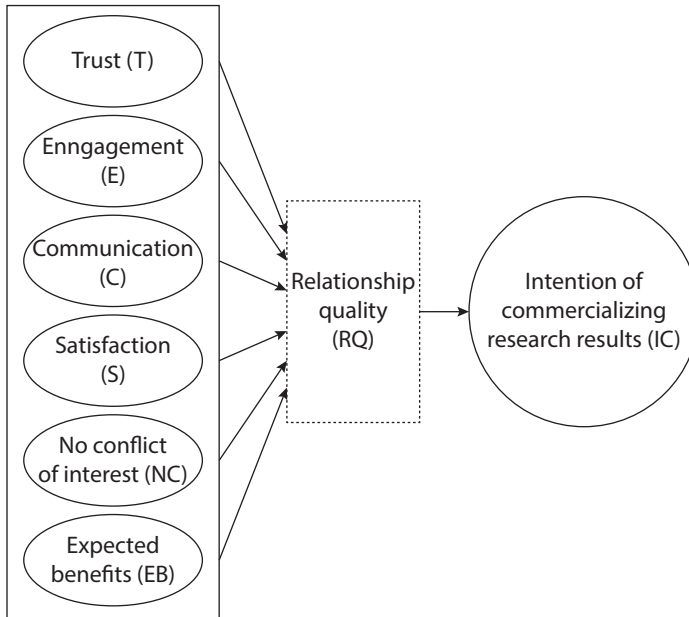


Figure 2. Theoretical model of intention to commercialize research results by academic entrepreneurs and the impact of relationship quality

Source: own elaboration.

Modelling using structural models can be proposed as the main method for model verification. Modelling helps fill the scientific cognitive gap in key variables shaping the quality of relationships in the environment of the academic entrepreneurship support ecosystem and its impact on intentions to commercialize research results. The study plans to use statistical techniques such as descriptive statistics, discriminant analyses for many groups.

A pilot study using a questionnaire can be carried out among research workers involved in research and/or teaching at a selected technical or medical university, where there is a greater likelihood of commercializing research results than at other types of universities. After testing the research tool and eliminating unnecessary or incomprehensible questions, such research can be carried out on a larger scale or as part of an international comparison.

Discussion and conclusions

This study is an early preparatory phase for a broader study of the impact of high-quality inter-organizational relationships on the intentions of commercialization of knowledge by the academic community. In particular, attempts were made to answer the research questions contained in the introduction to the study. To the question of what institutions/entities play an important role in building the ecosystem supporting academic entrepreneurship, the literature indicates that the university is the natural place initiating the process of promoting academic entrepreneurship. The university also has the option of separating the unit within its structure, acting to support academic entrepreneurship (e.g. incubators, career offices, entrepreneurship centres) or may have representatives in the structure of other institutions supporting the ecosystem (e.g. science and technology parks, technology transfer centres). Taking into account its broader spectrum of activity, a modern university is perceived as having the greatest role in creating the right quality of relations between entities directly or indirectly connected with academic entrepreneurship, activating entrepreneurship and ensuring lasting, appropriate quality of relations between various stakeholders. To a large extent, the position of local and regional technology parks, incubators, as well as university technology transfer offices depends on strong trust and commitment-based relations between the university, local government and business.

Answering the question about the factors that shape the quality of inter-organizational relationships, for most researchers, the quality of relationships is based on three dimensions: trust, commitment and satisfaction. Recent studies also show other variables important for the quality of relationships, i.e. communication or involvement in the relationship and no conflict of interest. These variables can be taken into account in preparing a questionnaire for testing the level of relationship quality in support of academic entrepreneurship among the academic community.

Regarding the last research question as to how we can examine the impact of high-quality inter-organizational relationships on the intention of commercialization of knowledge by academic entrepreneurs, after literature analyses and the results of available empirical research, a research tool was proposed to examine the impact of specific factors of relationship quality and their impact on the intention of commercialization of knowledge among academic entrepreneurs (Appendix 1).

The model developed in the article explaining predictors of the quality of relationships and its impact on the intention of commercialization of knowledge by academic entrepreneurs (Figure 2) may significantly enrich the literature related to the entrepreneurial intentions of academic teachers with such aspects as:

- the role of high quality inter-organizational relations in supporting academic entrepreneurship;
- factors shaping high quality inter-organizational relations in supporting academic entrepreneurship;
- the impact of high-quality inter-organizational relationships on intentions to commercialize knowledge.

The planned study is innovative due to the context of its implementation. There are no national studies available on the identification of factors affecting the quality of relationships that support academic entrepreneurship and its impact on the intention of commercialization of knowledge. The concept has also important implications for practitioners. First, for policy makers who, in addition to incorporating the results of commercialization into many of their assessment processes, should also promote entrepreneurial culture at universities based on high quality inter-organizational relations and shaping high-quality relationships across the entire academic entrepreneurial support system. Therefore, the author believes that it is worth comprehensively identifying the main determinants of the intention to commercialize knowledge, related to high quality relations with partners of supporting ecosystem. Secondly, the model suggests that managers of universities must be aware that the best way to promote entrepreneurship in their institutions is to create the conditions necessary to increase the entrepreneurial attitudes of their employees through various projects (training, study, cultural) aimed at strengthening creativity and shaping entrepreneurial values.

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Appendix 1. Main predictors of relationship quality and intentions to commercialize research results, based on literature

No.	Construct/Items
I. TRUST	
1	Trust is key to my relationships with partners in the field of implemented projects
2	The partner I work with is trustworthy
3	The partner's behaviour during cooperation is predictable
4	I don't want to disappoint my partner and my partner doesn't want to disappoint me
II. ENGAGEMENT	
5	The partner fulfils his obligations when I work with him
6	The partner desires good relations with me in developing my projects
7	I am very involved in relationships with my partner during cooperation
8	The partner understands my needs
9	The partner does not want to disappoint me during the cooperation
III. EXPECTED BENEFITS FROM COOPERATION	
10	Cooperation with a partner gives me more benefits than if I had carried out the project myself
11	It is not possible to carry out my projects without a partner
12	Cooperation with a partner reduces the risk of my project's failure
13	A partner's support is key to commercializing my research results
IV. COMMUNICATION	
14	The flow of information is correct between me and the partner
15	Together with the partner, we have developed a way of providing information
16	I don't hide any information from my partner
17	The partner does not hide any information from me
V. SATISFACTION FROM COOPERATION	
18	I am pleased with the cooperation with a partner in supporting me in the implementation of projects
19	Cooperation between me and my partner is going well
20	I sense a good rapport while working with a partner
21	Satisfaction is greater when I implement a project with the support of a partner
VI. NO CONFLICT OF INTEREST	
22	Any conflict with the partner is resolved through negotiation and compromise
23	There are often conflicts in cooperation with a partner
24	The conflict with the partner is calculated in the risk of the project being undertaken
VII. INTENTION TO COMMERCIALIZE KNOWLEDGE AND TECHNOLOGY TRANSFER	
25	I intend to work with the future partner(s) in the field of commercialization of my research results/involvement in business activities/technology sales and transfer/commercialization of knowledge in the form of patents, licences, utility models, consultations, commissioned works, reports
26	I will certainly cooperate with support institutions in the field of knowledge commercialization
27	If I had to choose whether to act alone as an entrepreneur or in cooperation with a partner, I would choose cooperation
28	I definitely plan to commercialize the results of my research
29	I intend to maintain good relations with my partner(s) in the area of knowledge commercialization in the future

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Abstract

The main purpose of this article is to develop a framework to study the impact of high-quality inter-organizational relationships (between scientists and supporting institutions) on academic entrepreneurs' willingness to commercialize research results. The concept of the theoretical model was developed on the basis of a literature review and available empirical research results. The specific objectives of the article include the identification of key institutions supporting academic entrepreneurs, and the identification of factors building the quality of inter-organizational relations. The developed model is only a preliminary and partial proposal to measure the intent of commercializing research results by academic entrepreneurs, taking into account one of the important aspects of this process, namely the quality of relationships.

Keywords: academic entrepreneurship, inter-organizational relations, quality of relationships

Contemporary organizations operate in an increasingly turbulent environment that generates not only predictable changes, but also “black swans”. Winning organisations must be agile, flexible and constantly learning. Changes in the management system cover each of its components, from strategy, through systems, processes, structure, staff, organisational culture and other elements. The management science follow changes both in business environment and in management of organisations. The most important trends are described and new theories emerge.

The monograph includes 29 articles written by 50 authors presenting different theoretical and empirical studies. In five parts of that book the most important challenges and trends concerning strategic management; modern approaches, methods and measures in management; sustainability and CSR; HR Management; and other were indicated. We believe that content of that book leads us to better understanding challenges and trends of contemporary organisations and management.

The book is also available
as an e-book



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