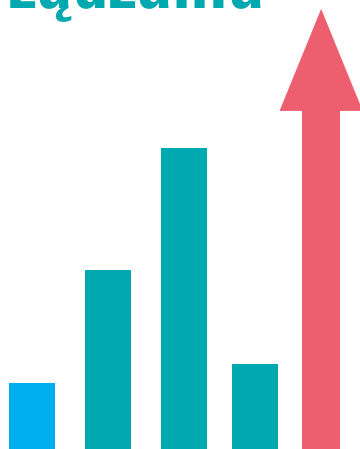


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**Stefan Lachiewicz i Sylwia Flaszewska**

# **Wybrane problemy zarządzania rozwojem organizacji w przemyśle 4.0**



**Monografie Politechniki Łódzkiej**  
**Łódź 2019**

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Redakcja naukowa

*Stefan Lachiewicz i Sylwia Flaszewska*

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## WPROWADZENIE

Rozwój organizacji gospodarczych oraz o charakterze publicznym i typu non-profit posiada różnorodne cechy, formy i uwarunkowania. Jego źródła tkwią zarówno w dalszym i sektorowym oraz bezpośrednim otoczeniu organizacji, jak i w ich potencjale wewnętrznym. W związku z tym przebieg procesów rozwojowych może charakteryzować się pewną ciągłością, ale też dokonywać się w formie skokowej z uwzględnieniem sytuacji kryzysowych. Procesy rozwoju przybierają szczególną postać w warunkach współczesnej gospodarki, która cechuje się znaczącym postępem technologicznym i jest określana często mianem przemysłu czy rewolucji 4.0.

Różnym aspektom tak pojmowanych procesów rozwojowych jest poświęcona niniejsza monografia. Jej **celem** jest identyfikacja, analiza i ocena wybranych wyzwań rozwojowych, jakie stoją przed pracownikami, organizacjami i innymi podmiotami w warunkach współczesnej gospodarki.

Opracowanie składa się z **11 rozdziałów** przygotowanych przez różnych autorów. **Michał Comporek** zwrócił uwagę na finansowy aspekt rozwoju przedsiębiorstw giełdowych. Wskazał na występowanie w praktyce gospodarczej zjawiska znacznego sektorowego zróżnicowania wielkości i technik intencjonalnego kształtowania zysku (straty) netto w przedsiębiorstwach publicznych.

Z kolei **Wojciech Głód** poruszył problem przemian w jednostkach ochrony zdrowia i wykazał w jakim stopniu styl przywództwa w tych jednostkach może przyczyniać się do poprawy efektywności ich funkcjonowania.

Zagadnienie barier w procesie zmian w zarządzaniu systemem emerytalnym z perspektywy interesariuszy stało się przedmiotem analiz **Małgorzaty Gumoli**. Autorka wskazuje, że zmiany demograficzno-zawodowe we współczesnych społeczeństwach i ewolucja rynku pracy wpływają istotnie na potrzebę reformy systemów emerytalnych. Dużo takich reform przeprowadzono już wiele lat temu i stąd istnieje konieczność dalszych zmian. Należy tu uwzględnić doświadczenia z prywatnego sektora biznesowego, a zwłaszcza rolę różnych grup interesariuszy systemów emerytalnych. W tym kontekście została przeprowadzona identyfikacja barier w zarządzaniu zmianami w systemach emerytalnych.

Na istotną rolę kreatywności w biznesie wskazuje **Antonina Litinska**. Autorka przedstawia problem ścisłego związku zjawiska kreatywności z kulturą

organizacyjną firmy. W rozdziale tym zwrócono też uwagę na wyzwania współczesnego biznesu, które zostały zaprezentowane w formie pięciu rodzajów zmian.

Kolejne opracowanie, **Edyty Marcinkiewicz**, traktuje o wykorzystaniu pracowniczych programów emerytalnych w zarządzaniu zasobami ludzkimi. Autorka wskazuje, że obniżeniu wysokości emerytur z systemów publicznych (obowiązkowych) powinno towarzyszyć zwiększenie rangi oszczędności indywidualnych oraz oszczędności gromadzonych w ramach pracowniczych programów emerytalnych. W oparciu o analizę literatury przedmiotu i wyników badań z różnych państw można postrzegać pracownicze programy emerytalne z perspektywy ZZL jako składnik wynagrodzenia z odroczoną płatnością, element systemu motywacyjnego lub też instrument zwiększający konkurencyjność przedsiębiorstwa na rynku pracy.

Pewną kontynuację tych zagadnień zawiera tekst **Aleksandry Polak-Sopińskiej**. Autorka koncentruje się w nim na roli ergonomii w procesie zarządzania wiekiem w okresie czwartej rewolucji przemysłowej. Zmiany demograficzne i o innym charakterze zachodzące we współczesnych społeczeństwach, wpływają na wzrost liczebności ludzi z niepełnosprawnościami oraz na spadek populacji osób pracujących. Stąd też należy w przedsiębiorstwach wprowadzać strategie i rozwiązania racjonalizujące systemy organizacji pracy i zastępujące człowieka w procesach produkcyjnych. W artykule wskazano na duże znaczenie metod i narzędzi ergonomicznych, które mogą wspierać procesy decyzyjne w sferze zarządzania wiekiem.

**Pavel Pavlov, Elena Zashchitina i Sebastian Bakalarczyk** zajęli się w opracowaniu pt. *Successes and failures of modern companies in the Industry 4.0* ważnym problemem interakcji pomiędzy uczelniami a przedsiębiorstwami we współczesnych czasach. Szczególną uwagę zwrócili na rolę tych relacji w kształtowaniu zasobów ludzkich. W oparciu o analizy o charakterze ilościowym i jakościowym Autorzy zaproponowali model współpracy pomiędzy szkołami wyższymi a organizacjami biznesowymi. Pozwala on zapewnić odpowiednie wsparcie edukacyjne w przygotowaniu profesjonalnej kadry pracowniczej.

Kolejny rozdział monografii, napisany przez **Jarosława Ropęę**, dotyczy fundamentalnego dla rozwoju gospodarki i poszczególnych sektorów oraz firm zagadnienia motywacji przedsiębiorców i źródeł zachowań przedsiębiorczych. Motywacja przedsiębiorców posiada bardzo duży wpływ na tworzenie i kontynuację działalności gospodarczej. Autor rozróżnia dwie kategorie przedsiębiorców: tych, którzy zakładają biznes po raz pierwszy oraz przedsiębiorców doświadczonych (notorycznych), którzy kontynuują działalność założoną przez wcześniejsze pokolenia lub prowadzą kilka firm czy też ponieśli wcześniej porażkę w biznesie i zakładają kolejne przedsiębiorstwa.

Szczególną uwagę poświęca Autor tym, którzy zdobyli już doświadczenie w biznesach nieudanych i podejmują nową szansę, wykorzystując lekcję z błędów i porażek z prób wcześniejszych. Ich podejście i sposób zachowania przedsiębiorczego jest odmienny i bardziej dojrzały, na co wskazują przykłady badań podanych w tym opracowaniu. W Polsce jest to obszar jeszcze słabo zbadany i stąd też wynika potrzeba głębszej eksploracji tej sfery przedsiębiorczości.

**Alicja Smolbik-Jęczmień** wraz z zespołem **trzech Autorów** z Uniwersytetu Ekonomicznego we Wrocławiu analizują kwestię żywotności zespołów pracowniczych w świetle wyzwań dla współczesnych przedsiębiorstw. W teoretycznej części opracowania pokazano różne koncepcje żywotności zespołu. Natomiast w części empirycznej zostały zaprezentowane obszary i uwarunkowania żywotności zespołów pracowniczych we współczesnym środowisku pracy.

Specjalną uwagę zwrócono na aspekty takie jak np. przywództwo, wielokulturowość, zmiany na rynku pracy, zróżnicowanie generacyjne zespołu, zaangażowanie i motywacja pracowników. Menedżerowie znając te determinanty mogą kreatywnie kształtować i wspierać zespoły pracownicze w osiąganiu sukcesów biznesowych.

**Hanna Soroka-Potrzebna** rozpatruje w kolejnym rozdziale wpływ czwartej rewolucji przemysłowej na dobór metod i technik zarządzania ryzykiem w projektach. Jest to słabo rozpoznany obszar – zdaniem Autorki – i stąd też istnieje potrzeba identyfikacji wyzwań stojących przed kierownikami projektów w ramach przemysłu 4.0. Szczególnie chodzi tu o opracowanie odpowiedniej metodyki zarządzania projektami w warunkach tego przemysłu.

Ostatni rozdział monografii został opracowany przez **Anetę Zelek i Grażynę Maniak**. Nosi on tytuł *Zwiastuny nadchodzącego kryzysu gospodarczego a zagrożenia dla polskich firm*. Rozwój przedsiębiorstw i innych organizacji wiąże się nierozłącznie ze zjawiskami kryzysowymi. Kryzysy w naukach o zarządzaniu i ekonomii traktuje się jako sygnały wskazujące na potrzebę zmian i rozwoju danej organizacji a umiejętność wychodzenia z sytuacji kryzysowych jest jedną z ważniejszych kompetencji współczesnych menedżerów.

Autorki zastanawiają się w tym rozdziale nad tym, czy w gospodarce polskiej pojawiają się zagrożenia kryzysowe i czy nasze przedsiębiorstwa są przygotowane na radzenie sobie z takimi zagrożeniami. Z ich analiz wynikają raczej sceptyczne wnioski odnośnie antycypacji zagrożeń kryzysowych.

Wyrażamy nadzieję, że przedstawione wyżej krótkie zapowiedzi wywołają zainteresowanie problemami rozwoju współczesnych organizacji i że monografia spełni oczekiwania Czytelników.

*Stefan Lachiewicz, Sylwia Flaszewska*





# EARNINGS MANAGEMENT IN ENTERPRISE – METHODOLOGICAL MEASUREMENT PROPOSAL

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## 1. Introduction

The company's financial result is a very complex economic and social category. It has various types, it is shaped by the diversified objectives of its creation and redistribution, multifarious conditions for the implementation of these objectives and inconclusive competences of the management. Its size is reflected in many documents of the company's financial statements – the value of net profit (loss) is therefore shown in the form of a specified increase in the value of total assets of an enterprise included in the balance sheet or as a separate category presented in the profit and loss account, cash flow statement and comprehensive income statement. All the financial result categories listed in mentioned documents have a different character, due to the manner of their presentation, usefulness and purpose.

Since the entering into contracts between an economic entity and its stakeholders is largely based on the analysis of economic data contained in the entity's financial statements, among managers there may be a special temptation to intentional “retouching” of the company's performance<sup>2</sup>. As the literature on the subject indicates, the area particularly exposed to this type of practice is the sphere of net financial result. It can be assumed that the indicated phenomenon, known as earnings management consists of two processes, namely: accrual-based earnings management and real earnings management. The first of them, with a strictly reporting dimension, can be equated with all accounting measures and activities aimed at achieving various goals of selected groups of company's stakeholders [see *inter alia*: Piosik 2016, pp. 22-40; Shi, Zhang 2011, pp. 814-815; Roonen, Yaari 2008]. In turn, the second one, more substantive in nature, can be attributed to the operational effects of the company's

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<sup>2</sup> These issues are described in more detail in the chapter 2.

business activity e.g. in the sphere of manipulation of the volume of sales of products and services, costs of goods sold or discretionary expenses [Roychowdhury 2006, pp. 335-370].

The main goal of this section is to examine the scale and differentiation of earnings management methods implemented by listed industrial enterprises listed on the Warsaw Stock Exchange, computed by a different total earnings management indicator (*TOTAL\_EM*). This is a relatively innovative approach, as numerous empirical studies referring to the subject matter relate either to the assessment accrual-based earnings management, or to estimation real earnings management in public companies. Despite the fact, that the attempts to empirically use the indicator of overall earnings management are indeed illustrated in selected articles on the subject matter, researchers present different views as to the ways to distinguish them, methods of calculation, etc. In some approaches total earnings management phenomenon is calculated as a dummy captures the combined effects of accrual-based and real earnings management, which occurs only when the level of both sub-categories of earnings management is above the industry average [Braam et al. 2015, p. 15; Jang, Lee 2017, pp. 6-47]. Whereas other theorists criticize this method claiming, that total earnings management may not be as significant as researchers would expect, because managers may use real activities manipulation in the opposite direction than accrual-based earnings management [Chen 2009, p.6]. Therefore, the secondary objective of the chapter is to examine the relations between the two mentioned sub-categories of intentional shaping of the financial result in Polish listed companies.

## **2. Earnings management – outline of the problem**

### Definition, dimensions and premises for earnings management

In economics and management sciences, a broad spectrum of theoretical conditions relating to the issue of earnings management is emphasized. Probably the theory most often quoted in the subject literature as the basis for the analysis of potential reasons for the implementation of activities in the field of earnings management is the agency theory. According to its assumptions, numerous business conflicts related to the separation of ownership and management may appear in the business entity. It is underlined that managers (agents) have a broader knowledge of enterprises they manage than their owners and can use it in pursuit of their own goals, often contrary to the interests of their principals [Jensen, Mechling 1976, pp. 305-360]. The problem of the determinants of intentional shaping of the company's financial result can also be found in the analyzes concerning, among others: the issue of moral hazard or the phenomenon of adverse selection. It is also considered from the perspective of the theory of property rights, which focuses on the need to delegate shareholders' rights to managers in the company, which in practice reduces its

shareholders to the position of specific capital donors (despite the fact that they have a real impact on the choice of managers) [Mirrlees 1999, pp. 2-3; Dąbrowski, Stanek 2015, pp. 70-83].

In general meaning, earnings management concerns the ability to use accounting procedures (or real operations) that allow to make distortion in company's profitability. Thus, one of the basic principles of accounting, postulating compliance with a faithful and reliable picture of the data presented in the company's financial statements, is broken. However, this is a multidimensional phenomenon and difficult to clearly explain. This can be proved by the fact that over the years researchers have evolved several definitions of earnings management, reflecting different points of view and explaining this phenomenon in distinct paths. A closer description of earnings management requires a separate look at its two main components, namely: accrual-based earnings management and real earnings management.

As has already been mentioned, accrual-earnings management is “the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings” [Davidson et al. 1987, by: Schipper 1989, pp. 91-92]. While the presented definition of the analyzed phenomenon takes on a neutral character, many researchers in the subject present a rather restrictive approach in characterizing accrual-based earnings management. For example, Beattie et. al. [1994, p. 793] consider it to be “artificial earnings management, which encompasses both changes in accounting methods and classificatory choice”. In turn, according to Healy and Wahlen [1999, pp. 365-383] accrual-earnings management “occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”. These authors emphasize pernicious (harmful) character and perceive earnings management in relatively negative way. On the other hand, Ronen and Yaari [2008, pp. 25-28] notice that earnings management can enhance the transparency of reports and takes the shape of taking advantage of the flexibility in the choice of accounting treatment to signal the manager's private information on future cash flows. Similarly, Sankar and Subramanyam [2001, pp. 365-386] note that it involves the use of discretion in financial reporting and (in the case of having more detailed information than other stakeholders) with the transfer of information relevant to the value of the enterprise and future cash flows. Generally, beneficial or neutral approach from the perspective of intentional shaping of the entity's financial result assumes the use of activities referred to as creative accounting. The applied “innovations” in the methods of calculating the amounts presented in the financial statements will be within the limits set by the accounting standards, and therefore they will be (consistent with the law) creative use of specific accounting techniques that will allow to measure in

accordance with the interest of the “information producer”. On the other hand, adherents of the pernicious earnings management concept believe that these actions stand on the side of aggressive accounting that is against the law and aimed at deliberately misleading users of the balance sheet, profits and losses statements etc. The presented terminological approach clearly indicates that accrual-based earnings management can be interpreted in various perspectives.

The situation is slightly different from the point of view of real earnings management. This phenomenon is referred as deviating from normal business practices to manipulate reported income. Additionally, Zhang [2012, pp. 675-703] indicates that “real activities manipulation is a purposeful action to alter reported earnings in a particular direction, which is achieved by changing the timing or structuring of an operation, investment, or financing transaction, and which as suboptimal business consequences”. In fact, from the perspective of real earnings management to “classic” techniques of manipulation of the company’s net financial result can be included [Gunny 2005, pp. 5-10; Roychowdhury 2006, pp. 335-370]: unusual (unprecedented in previous reference periods) reduction of the SG&A expenses or expenditure on research and development; intensification of sales of non-current assets at the moment when the level of operating profit is below the forecasted value (even at less favorable prices); increase in sales at the end of the period resulting either from offering abnormal price discounts on manufactured goods, or from the adoption of non-standard (usually very liberal) policies for granting trade credit; overproduction and the use of defensive stock management strategies; limiting any investments in the components of the company's fixed assets and striving to minimize the amortization and depreciation costs.

Eventually, it should be pointed out that activities that fall under the real earnings management concept are clearly differentiated from earnings management practices based on solutions that use flexibility in the selection of accounting policies. Their characteristic feature is more difficult and more cost-intensive implementation (in relation to accrual-based earnings management practices based on accounting estimates and creative accounting) and more frequent negative consequences of realizing these practices (interference in the adopted sales policy and change in the management strategy of property components not directly related to the market conditions of these transformations, regardless of the effect achieved, directly affects the entity in subsequent periods).

### **Models used for measurement of earnings management**

The most commonly used tools for estimating the phenomenon of earnings management are econometric models. They are successfully used in analytical procedures, thanks to which it becomes possible to confirm the rationality of the amounts included in the financial report of an examined enterprise. These models

differ in their nature depending on the variant of earnings management whose scope they estimate.

The interpretation and assessment of the scale of the accrual-based earnings management significantly depend on the ability to accurately separate the accrual adjustments of net profit, taking into account both operating (non-discretionary) and intentional (discretionary) accruals [Dechow, Skinner 2000, pp. 235-250; Comporek 2017, pp. 17-31]. In the assumption, non-discretionary accruals (*NDACC*) refer to the economic operations actually occurring in an enterprise in given financial year, which from the point of view of accounting principles can be included as one of the following items: amortization and depreciation, exchange gains (losses), interest and profit sharing, profit (loss) on investment activities or changes in provisions, inventories, receivables, short-term liabilities excluding credits and loans, prepayments etc. In turn, the value of discretionary accruals (*DACC*) do not depend on the nature of pre-economic operations, presenting a summary entirety of subjective accounting choices aimed at lowering the transparency of financial statements.

To implement the research objective of this study, in order to assess the degree of accrual-based earnings management was used the original version of the Jones model, which is also the basis for modern analyzes of the described phenomenon. The Jones model assumes that the value of operational accruals is determined by two variables: change in sales revenues ( $\Delta REV$ ) and average value of property, plant and equipment (*PPE*) [Jones 1991, pp. 193-228]. Whereas, the value of intentional accruals is based on the difference between the empirical and theoretical value of total accruals (*TACC*)<sup>3</sup> as the explained variable. For the sake of comparability of data, the model should be standardized using the value of lagged total assets. Consequently, formula of the Jones Model takes the final form as below:

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \varepsilon_{i,t}$$

where:  $\Delta REV_{i,t}$  indicates a change in sales revenues of company *i* in year *t*;  $PPE_{i,t}$  points out gross property, plant and equipment of company *i* in year *t*;  $\alpha_i, i = 0, 1, \dots, k$  are specific regression parameters while  $\varepsilon_{i,t}$  denotes error term in regression model.

And at the same time the value of  $\varepsilon_{i,t}$  forms the essential basis for the assessment of direction and range of accrual-based earnings management ( $\varepsilon_{i,t} = DACC = ACC\_EM$ ) in analyzed company:

---

<sup>3</sup> The amount of total accruals *TACC* is the difference between the net income in a given year computed by using an accrual-based accounting system and the surplus in cash from operating activities.

$$ACC\_EM = \frac{TACC_{i,t}}{TA_{i,t-1}} - \left[ \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{PPE_{i,t}}{TA_{i,t-1}} \right) \right]$$

It is worth mentioning that over the years there have appeared further transformations of the Jones Model. In their analytical formulas, these models take into account other variables that explain the value of total accruals ( $TACC$ ), while their use in the scope of earnings management predictions remains unchanged [Table 1].

**Table 1.** Models for extracting individual categories of accrual-based earnings management

Reference to the literature	Calculation formulas based on regression models
Dechow, Sloan, Sweeney (1995).	$\frac{TACC_t}{TA_{t-1}} = \alpha_1 \left( \frac{1}{TA_{t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_t - \Delta REC_t}{TA_{t-1}} \right) + \alpha_3 \left( \frac{PPE_t}{TA_{t-1}} \right) + \varepsilon_t$
Kothari, Leone, Wasley (2005)	$\frac{TACC_t}{TA_{t-1}} = \alpha_0 + \alpha_1 \left( \frac{1}{TA_{t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_t}{TA_{t-1}} \right) + \alpha_3 \left( \frac{PPE_t}{TA_{t-1}} \right) + \alpha_4 ROA_t + \varepsilon_t$
Kasznik (1999)	$\frac{TACC_t}{TA_{t-1}} = \alpha_1 \left( \frac{1}{TA_{t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_t}{TA_{t-1}} \right) + \alpha_3 \left( \frac{PPE_t}{TA_{t-1}} \right) + \alpha_4 \left( \frac{\Delta OCF_t}{TA_{t-1}} \right) + \varepsilon_t$
Yoon, Miller, Jiraporn (2006)	$\frac{TACC_t}{REV_t} = \alpha_1 \left( \frac{\Delta REV_t - \Delta REC_t}{REV_t} \right) + \alpha_2 \left( \frac{\Delta EXP_t - \Delta PAY_t}{REV_t} \right) + \alpha_3 \left( \frac{\Delta DEP_t - \Delta RET_t}{TA_{t-1}} \right) + \varepsilon_t$
<p>where:</p> <ul style="list-style-type: none"> <li><math>\Delta REC_t</math> – increase in short-term receivables in the year <math>t</math>;</li> <li><math>ROA_t</math> – Return On Assets coefficient in the year <math>t</math>;</li> <li><math>EXP_t</math> – sum of cost of goods sold and selling and general administrative expenses excluding non-cash expenses in the year <math>t</math>;</li> <li><math>\Delta OCF_t</math> – increase in cash flow from operations in the year <math>t</math>;</li> <li><math>\Delta DEP_t</math> – increase in depreciation and amortization in the year <math>t</math>;</li> <li><math>\Delta PAY_t</math> – increase in short-term payables in the year <math>t</math>;</li> <li>other designations – as above.</li> </ul>	

Source: own study based on: Dechow et al. 1995; Kothari et al. 2005; Kasznik 1999; Yoon et al. 2006.

Diagnostic imaging of the size and extent of abnormal deviations from the normal economic events of enterprise (which may indicate the potential implementation of practices related to real profit management) was carried out using three econometric models, more widely exposed, among others in the works: Dechow et al. 1998, pp. 133-168; Braam et al. 2015, pp. 111-141; Cohen et al. 2008, pp. 757-787; Roychowdhury 2006, pp. 335-370]. These models allowed to distinguish the following economic measures describing the scale of intentional shaping of the financial result of an economic entity through real earnings management:

- abnormal level of cash flow from operations ( $OCF\_EM$ ), whose value represents the residual component of the model describing the shaping of operational cash flows using such exogenous variables as: sales revenues and change in sales revenues. It can be represented by the equation:

$$\frac{OCF_{i,t}}{TA_{i,t-1}} = \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \varepsilon_{i,t}$$

where:  $OCF_{i,t}$  – operating cash flows of company  $i$  in year  $t$ ; other designations – as above.

Considering the fact, that  $\varepsilon_{i,t}$  sets the value of earnings management (in this case  $\varepsilon_{i,t} = OCF\_EM$ ), it is noticeable that:

$$OCF\_EM_{i,t} = \frac{OCF_{i,t}}{TA_{i,t-1}} - \left[ \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) \right]$$

- abnormal level of production cost ( $PROD\_EM$ ), estimating by using the following regression model:

$$\frac{PROD_{i,t}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_4 \left( \frac{\Delta REV_{i,t-1}}{TA_{i,t-1}} \right) + \varepsilon_{i,t}$$

where:  $PROD_{i,t}$  – production costs (including: cost of goods sold and value of goods and materials sold at purchase prices increased by a change in inventories) of company  $i$  in year  $t$ ; other designations – as above.

Similarly as in the case of the  $ACC\_EM$  or  $OCF\_EM$  indicators, the value of abnormal levels of production cost ( $PROD\_EM$ ) reflects the value of the residual component of the analyzed regression model. It can therefore be seen that:

$$PROD\_EM_{i,t} = \frac{PROD_{i,t}}{TA_{i,t-1}} - \left[ \alpha_0 + \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_4 \left( \frac{\Delta REV_{i,t-1}}{TA_{i,t-1}} \right) \right]$$

- abnormal level of discretionary expenses ( $DISC\_EM$ ), calculated as the difference between the forecasted value and the actual value of discretionary costs of the enterprise scaled with the average value of total assets from the previous period:



$$\frac{DISC_{i,t}}{TA_{i,t-1}} = \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) + \varepsilon_{i,t}$$

where:  $DISC_{i,t}$  – discretionary expenses (equated with: sales costs, general and administrative expenses and research and development expenditures) of company  $i$  in year  $t$ ; other designations – as above.

At the same time:

$$DISC\_EM_{i,t} = \frac{DISC_{i,t}}{TA_{i,t-1}} - \left[ \alpha_1 \left( \frac{1}{TA_{i,t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left( \frac{REV_{i,t}}{TA_{i,t-1}} \right) \right]$$

Because, according to the theoretical assumptions, the real earnings management is evaluated in three dimensions, for the final prediction of activities that deviate from normal business practices can be used the total real earnings management indicator ( $REAL\_EM$ ). Its value is the sum of: abnormal level of cash flow from operations ( $OCF\_EM$ ), abnormal level of production cost ( $PROD\_EM$ ) and abnormal level of discretionary expenses ( $DISC\_EM$ ), as shown below:

$$REAL\_EM = OCF\_EM + PROD\_EM + DISC\_EM$$

Going further, it is also possible to distinguish the total earnings management indicator ( $TOTAL\_EM$ ). Its value will be shaped by the value of the discretionary accruals ( $DACC = ACC\_EM$ ) (reference to accrual-based earnings management) and the total real earnings management indicator ( $REAL\_EM$ ) described above. In conclusion, the following equation can be obtained that can be the reference for the estimation of intentional shaping of the financial result in the enterprise:

$$\begin{aligned} TOTAL\_EM &= ACC\_EM + REAL\_EM \\ &= ACC\_EM + (OCF\_EM + PROD\_EM + DISC\_EM) \end{aligned}$$

From an interpretative point of view, the scale of the implemented phenomenon of earnings management in company will be demonstrated by the deviations in plus or in minus the values of analyzed indicators from zero. This note applies to both the  $TOTAL\_EM$  indicator and its individual sub-components.

### 3. Research methodology

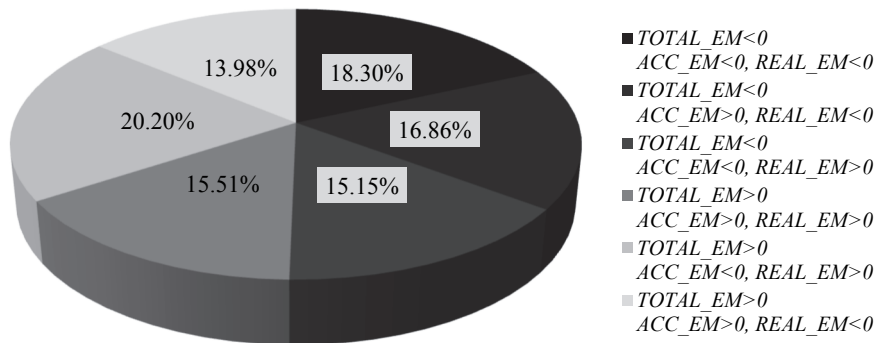
Empirical research has been carried out among industrial public companies listed in the Warsaw Stock Exchange that shares have been traded for at least thirteen years with the 2003-2017 reference horizon. Additionally, sample selection was based on the criteria as following:

- the fiscal year of firm should be end up to 31 December;
- examined companies do not conduct business activity in the finance and insurance sectors;
- all of financial required data must be available.

Consequently, the study was investigated within 78 listed companies that provided precisely a sample of 1109 observations. Empirical research based on financial information taken from the Notoria Service database.

#### 4. Empirical results

The first step of evaluation of research aptitude of selected econometric models used for prediction of earnings management was associated with assessment the structure of industrial companies listed on the Warsaw Stock Exchange from the perspective of implemented strategies of intentional shaping of net profit (loss) in the period 2003-2017. The analysis of empirical studies shows that in the reference horizon, the percentage of enterprises exhibiting positive and negative values of *TOTAL\_EM* indicator was very similar (Figure 1). The majority of the surveyed population was dominated by those economic entities that showed positive values of the real earnings management (*REAL\_EM*) with simultaneous negative values of the accrual-based earnings management (*ACC\_EM*) (these entities accounted for over 20 percent of the total examined population).



**Fig. 1.** The structure of industrial listed companies based on the achieved annual values of the total earnings management indicator (*TOTAL\_EM*) in the period 2003-2017  
*Source: own study based on financial information from the Notoria Service database.*

Subsequently, empirical examinations have been focused around the values of correlations calculated by Pearson correlation coefficient. This measure was used to compute the intensity and direction of relationships between: total earnings management (*TOTAL\_EM*), accrual-bases earnings management (*ACC\_EM*) and real earnings management (*REAL\_EM*) indicators. The results of the correlation analysis carried out for all analyzed listed companies indicate that the relations between *TOTAL\_EM* indicator and its two mains subcomponents (*ACC\_EM* and *REAL\_EM*)

have similar strength<sup>4</sup> (see Table 2). However, in the first case there was reported clear linear correlations (the strength of the relationship between *TOTAL\_EM* and *ACC\_EM*, measured by the Pearson's linear correlation coefficient, was 37.8 percent), while in the case of the second of relationship (*TOTAL\_EM* and *REAL\_EM*) there was noticed moderate correlation with a strength of 42.7 percent. Also noteworthy is moderate, but negative correlation between accounting earnings management and real earnings management measures.

**Table 2.** Relationship between individual categories of earnings management in industrial listed companies by using Pearson linear correlation coefficient

Category of earnings management	<i>TOTAL_EM</i>	<i>ACC_EM</i>	<i>REAL_EM</i>
<i>TOTAL_EM</i>	1.000		
<i>ACC_EM</i>	<b>0.378**</b>	1.000	
<i>REAL_EM</i>	<b>0.427**</b>	<b>-0.410**</b>	1

\*\* significant correlation at p-value = 0.01

Source: own study based on financial information from the Notoria Service database.

The presented results of empirical research on the mean values of the total earnings management indicator (*TACC\_EM*) in industrial enterprises listed on the Warsaw Stock Exchange for the period of fifteen consecutive years (2003-2017) indicate the existence of very diversified in terms of directions and value of changes in this coefficient (Table 3 and Table 4). In general terms, it is difficult to observe some trend from the point of view of shaping the mean values of the analyzed measure *TACC\_EM*. However, high values of standard deviation show that the values of the *TOTAL\_EM* variable are strongly dispersed around the average (and therefore they are characterized by high diversity). In the six analyzed periods, the TOTAL-EM index in most statistical units was lower than the arithmetic mean, which confirms the right-sided distribution asymmetry. At the same time, left-sided asymmetrical distribution could be observed.

<sup>4</sup> In this section the following interpretation of calculated correlation coefficients should be adopted, namely:

- $r = 0$  – no correlation,
- $0 < |r| < 0.2$  – practically no linear correlation between the examined variables,
- $0.2 \leq |r| < 0.4$  – linear correlation clear, but low,
- $0.4 \leq |r| < 0.7$  – moderate correlation,
- $0.7 \leq |r| < 0.9$  – significant correlation,
- $|r| \geq 0.9$  – correlation very strong,
- $|r| = 1$  – full correlation [Ostasiewicz et al. 2001, p. 311].

**Table 3.** Descriptive statistics of the total earnings management indicator (*TOTAL\_EM*) in industrial listed companies in individual years of the period 2003-2017

Year	Statistical measure				
	<i>mean value</i>	<i>median</i>	<i>min</i>	<i>max</i>	<i>standard deviation</i>
2003	-0.0022	-0.0192	-0.1783	0.4474	0.1034
2004	0.0138	-0.0067	-0.2151	0.7497	0.1383
2005	-0.0036	0.0053	-0.5801	0.4640	0.1352
2006	0.0073	-0.0013	-0.4196	0.5849	0.1197
2007	0.0188	0.0071	-0.3056	0.5056	0.1046
2008	0.0323	0.0247	-0.2183	0.3817	0.0974
2009	-0.0147	-0.0115	-0.3031	0.3613	0.1036
2010	-0.0023	0.0007	-0.4452	0.4488	0.1174
2011	-0.0189	-0.0013	-0.5209	0.2300	0.1142
2012	-0.0168	-0.0101	-0.3907	0.2183	0.1006
2013	0.0082	0.0180	-0.3241	0.3689	0.0982
2014	0.0074	0.0164	-0.3061	0.1677	0.0773
2015	0.0010	-0.0064	-0.3548	0.7269	0.1314
2016	-0.0209	-0.0101	-0.6937	0.3483	0.1283
2017	-0.0279	-0.0152	-0.9304	0.4829	0.1613

Source: own study based on financial information from the Notoria Service database.

**Table 4.** Mean values of selected indicators used for examining the earnings management phenomenon in industrial listed companies from the perspective of individual years of the period 2003-2017

Year	Category of earnings management					
	<i>TOTAL_EM</i>	<i>ACC_EM</i>	<i>REAL_EM</i>	<i>Subcomponents of real earnings management</i>		
				<i>OCF_EM</i>	<i>PROD_EM</i>	<i>DISC_EM</i>
2003	-0.0022	-0.0369	0.0361	0.0162	-0.0110	0.0309
2004	0.0138	-0.0097	0.0241	0.0090	-0.0094	0.0245
2005	-0.0036	0.0242	-0.0268	-0.0156	0.0018	-0.0130
2006	0.0073	-0.0037	0.0107	0.0013	0.0103	-0.0009
2007	0.0188	0.0286	-0.0101	-0.0161	0.0098	-0.0038
2008	0.0323	0.0293	0.0038	-0.0023	0.0092	-0.0032
2009	-0.0147	-0.0033	-0.0122	-0.0055	-0.0071	0.0003
2010	-0.0023	-0.0153	0.0130	0.0142	-0.0053	0.0042
2011	-0.0189	-0.0037	-0.0151	-0.0176	-0.0021	0.0046
2012	-0.0168	-0.0136	-0.0038	-0.0033	0.0041	-0.0046
2013	0.0082	-0.0027	0.0106	-0.0095	0.0237	-0.0036
2014	0.0074	-0.0036	0.0101	0.0094	0.0098	-0.0091
2015	0.0010	-0.0161	0.0170	0.0152	0.0066	-0.0048
2016	-0.0209	-0.0229	0.0005	0.0128	-0.0104	-0.0019
2017	-0.0279	-0.0089	-0.0199	0.0124	-0.0364	0.0041

Source: own study based on financial information from the Notoria Service database.

However, similar reference should be given to the results of the analysis of the average values of individual components shaping the final value of the *TACC\_EM* indicator. From the perspective of accrual-based earnings management (*ACC\_EM* measure) as well as real earnings management (*REAL\_EM* indicator and its individual components: *OCF\_EM*, *PROD\_EM* and *DISC\_EM* measures) very different average values of all six economic measures illustrating the scale and directions of earnings management in business entities have been observed. This may indicate a high flexibility of enterprises in the selection of diversified tools for the purposeful and deliberate influencing of the reported net profit (loss).

The results of research obtained and illustrated in Figure 5 and Table 6 underline that the estimated average values of total earnings management indicator (*TOTAL\_EM*) vary considerably depending on the sector in which the economic activity is carried out. Based on the analysis of the mean 15-year values of the *TOTAL\_EM* measure, it can be concluded that in the: building materials, electro-mechanical and metal industries positive average 15-year values of this measure were recorded. On the other hand, negative 15-year average values of the analyzed indicator were characteristic for enterprises operating in the following branches of industry, namely: automotive, chemistry, food, fuel, light, pharmaceutical, plastics, raw materials and wood industries. Particularly noteworthy are the very high deviations from zero of the 15-year average values of the *TOTAL\_EM* variable, calculated for the enterprises of the fuel (-0.039) and pharmaceutical (-0.024) industries. From the point of view of the general surveyed companies, the average 15-year value of *TOTAL\_EM* indicator was slightly negative (-0.001).

**Table 5.** Descriptive statistics of 15-years sectoral values of the total earnings management indicator (*TOTAL\_EM*) computed for industrial listed companies in the period 2003-2017

Branch of industry	Statistical measure				
	mean value	median	min	max	standard deviation
automotive	-0.0053	-0.0037	-0.3548	0.1998	0.0733
building materials	0.0100	0.0053	-0.4452	0.7497	0.1198
chemistry	-0.0017	-0.0050	-0.3907	0.7269	0.1648
electromechanical	0.0005	0.0050	-0.4196	0.3483	0.0996
food	-0.0030	-0.0040	-0.6937	0.5056	0.1303
fuel	-0.0386	-0.0474	-0.5209	0.5320	0.2078
light	-0.0044	-0.0031	-0.3241	0.2691	0.0831
metal	0.0067	0.0051	-0.2381	0.2775	0.0879
pharmaceutical	-0.0243	0.0096	-0.9304	0.3051	0.1877
plastics	-0.0009	-0.0122	-0.5801	0.5849	0.1360
raw materials	-0.0015	-0.0008	-0.2091	0.2183	0.1169
wood	-0.0057	-0.0162	-0.3056	0.2588	0.0782
total industrial companies	-0.0011	-0.0008	-0.9304	0.7497	0.1180

Source: own study based on financial information from the Notoria Service database.

Proportionally to the changes of the mean 15-year values of the total earnings management indicator *TOTAL\_EM* in examined population there are noticeable some sector deviations from the values of: accrual-based earnings management (*ACC\_EM*) and real earnings management (*REAL\_EM*) indicators (Table 6). Again, they are characteristic of companies belonging to the group of pharmaceutical industry (very low average value of *ACC\_EM* measure on the level of -0.31) and fuel industry (very low mean value of *REAL\_EM* indicator equals to -0.39, explained by significant deviations of *DISC\_EM* value from zero). In general, taking into account the shaping of the average 15-year values of the *REAL\_EM* subcomponents, it should be underlined that industrial enterprises in a much lesser extent have shaped the level of net profit (loss) through overproduction (*PROD\_EM*), and in a larger one through sales manipulation (*OCF\_EM*) and reducing of research and development expenditure, advertising expenses, maintenance cost etc. (*DISC\_EM*). Especially in the area of *TOTAL\_EM*, *ACC\_EM* and *REAL\_EM* indicators, significant sectoral fluctuations in these measures are noticeable, which leads to the presumption that the scope and specifics of intentional shaping of the financial result through earnings management phenomenon take on diverse character in particular industries.

**Table 6.** Mean sectoral 15-years values of selected indicators used for examining of earnings management phenomenon in industrial listed companies in the period 2003-2017

Branch of industry	Category of earnings management					
	<i>TOTAL_EM</i>	<i>ACC_EM</i>	<i>REAL_EM</i>	<i>Subcomponents of real earnings management</i>		
				<i>OCF_EM</i>	<i>PROD_EM</i>	<i>DISC_EM</i>
automotive	-0.0053	-0.0061	0.0009	-0.0003	0.0000	0.0012
building materials	0.0100	-0.0003	0.0103	-0.0003	0.0093	0.0013
chemistry	-0.0017	-0.0059	0.0036	0.0111	-0.0074	-0.0001
elektromechanical	0.0005	0.0063	-0.0057	0.0031	0.0015	0.0017
food	-0.0030	-0.0061	0.0031	0.0009	-0.0033	0.0055
fuel	-0.0386	-0.0022	-0.0364	-0.0002	0.0000	-0.0362
light	-0.0044	-0.0025	-0.0019	-0.0024	0.0000	0.0005
metal	0.0067	0.0052	0.0013	-0.0005	0.0000	0.0019
pharmaceutical	-0.0243	-0.0308	0.0065	0.0061	0.0000	0.0004
plastics	-0.0009	-0.0024	0.0015	0.0010	-0.0007	0.0012
raw materials	-0.0015	0.0030	-0.0045	-0.0058	0.0000	0.0013
wood	-0.0057	-0.0025	-0.0032	-0.0030	0.0000	-0.0002
<b>total industrial companies</b>	<b>-0.0011</b>	<b>-0.0034</b>	<b>0.0021</b>	<b>0.0010</b>	<b>0.0004</b>	<b>0.0008</b>

Source: own study based on financial information from the Notoria Service database.

## 5. Limitations of the study

The fundamental limitations in the unambiguous analysis of the results of empirical research are based on the fact that researchers present different views to the possibility of harmonizing (with accounting standards) what should be measured and how it should be measured in the specific circumstances of the country and/or enterprise. Nowadays, the phenomenon of earnings management can be treated as an accounting category, and yet the measurement made within the scope of business accounting is not uniquely objective [Neal 2001, p. 4]. It is not possible to develop a narrow set of rules that are good enough to ensure the comparability of financial statements of enterprises from different parts of the world [Kutera et al. 2006, p. 27]. For example, discretionary expenses used to assess one of the indicators of real earnings management (namely: *DISC\_EM*) have no equivalent in the guidelines of the Polish Accounting Act or IAS; To their group are usually classified: sales costs, general administrative expenses (referred to as costs of the period) as well as expenditures on research and development. Because in the case of Polish legislative conditions, information on the costs of the last mentioned group is possibly shown in Notes<sup>5</sup> (differently than in the financial statements prepared in accordance with the US GAAP assumptions in which R & D expenditures are one of main items of the profit and loss account), their designation may become problematic. A similar example can be considered in the field of accrual-based earnings management. In numerous studies devoted to the issue under discussion, the category of total accruals (*TACC*) is determined in a variety of ways, i.e. using differentiated models, taking into account both the balance sheet categories and the items taken directly from the cash flow statement [see: Sloan 1996, pp. 289-315; Hribar, Collins 2002, pp. 107-109; Richardson et al. 2005, pp. 437-485]. The mentioned discrepancy in the recognition of absolute values of the total accruals may lead to fundamental disproportions within the estimated values of discretionary accruals (*DACC*), and thus – in an erroneous estimation of the size of earnings management in the enterprise.

Another discussion area seems to be the excessive dependence of models used to assess the scale of earnings management from the category of sales revenues. Of course, the analysis of techniques used by business units within accounting earnings management allows to distinguish a wide group of activities that allow manipulation of the value of reported sales revenues. However, the importance of “embellishing” financial statements by manipulating the value of costs (e.g. by: improper costs, creation of fictitious provisions/reserves, impairment allowances for assets) has been slightly marginalized. From the perspective of real earnings management, basing the analytical formulas of econometric models on the sales revenue category can be

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<sup>5</sup> The part of financial statements containing additional information and explanations for financial statements.

explained by the fact that production can be considered only as a means of achieving the financial objectives of business entities and should be subordinated to the sales opportunities, while the financial standing of the company is largely shaped by the degree of adjustment of the production program to the market demand.

It is worth noting that the assessment of the real earnings management seems to be accompanied by a lower risk of detecting the “intentionality” of the harmful operations undertaken within company’s environment. Accounting practices used in the process of accrual-based earnings management are described in domestic and international regulations regarding financial reporting of business entities, and their implementation may be subject to more explicit control and verification. Assuming, in turn, that the changes in the field of production and sales are the result of the ability of enterprise to respond quickly and adequately to the changing economic reality, requirements of the labor market and the needs of stakeholders of the business unit, the question arises: does the *REAL\_EM* coefficient uniquely highlight abnormal deviations from typical business activities motivated by the private benefits of the management staff? Or it can be understood as a specific expression of the elasticity of the production to the nature of the demand shown, the specificity of technical and processes, competition on the market, financial standing of the enterprise etc.?

It should also be pointed out that the regression models used to determine both the scale of accrual-based earnings management and real earnings management are characterized by a variable goodness-of-fit to empirical data in hand in relation to individual enterprises. However, this is a characteristic feature of the majority of studies using econometric models in their analyzes.

## 6. Conclusions

Among the wide range of information used by investors, the most important are those that are contained in the financial statements of the company. They are the final product of business accounting, while their quality strictly depends to a large extent on the credibility of the data exposed.

As economic practice confirms, companies decide to implement earnings management practices for a variety of reasons, such as: persuading business partners about their credibility, avoiding the effects of shareholder control, subduing the achievements of the managerial staff, gaining access to additional sources of capital, etc. However, it is also noticed that using selected econometric models it may be possible to estimate the scale and scope of these operations carried out by managerial staff in host entities.

The results of empirical research presented in the chapter confirmed the main assumption that in industrial companies listed on the Warsaw Stock Exchange there is significant diversification in the scope and characteristics of operations aimed at



intentional shaping of the financial result through earnings management. The cross-sectoral analysis of the average values of discretionary accruals (*DACC*) extracting by the Jones Model or individual subcomponents of real earnings management (*OCF\_EM*, *PROD\_EM*, *DISC\_EM*) have shown that in individual branches of industry the spectrum of implemented earnings management operations was clearly divergent, potentially reaching the largest range in public enterprises conducting their manufacturing activity in fuel sector (clear deviations from the sectoral average values of *REAL\_EM* and *DISC\_EM* indexes) and pharmaceutical industry (significantly more extensive impact of accounting earnings management than in other sectors). At the same time, on the basis of the conducted research, it can be stated that in surveyed companies, the smallest influence on the estimated practices in the field of real earnings management had manipulation of production costs (described by the *PROD\_EM* indicator).

It should be also clearly emphasized that the presented research results do not aspire to generalize the assessment of earnings management processes in industrial joint-stock companies. First of all, they contain partial results, which in the longer term should be extended to a wider group of examined enterprises. Secondly, it should be noted that earnings management processes (especially the real type) are difficult to unequivocally assess, not only of a quantitative nature.

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# THE IMPACT OF TRANSFORMATIONAL LEADERSHIP AND TAKING CHARGE BY SUPERIORS ON EMPLOYEE COMMITMENT IN HEALTH CARE UNITS

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## 1. Introduction

The leadership style in the organization, especially in such organizations as health care units, is an important antecedent of change. Effective leadership is today a key success factor in any institution at the strategic and operational level. The style of leadership adopted by management has a direct impact on employee commitment, which is an important variable that helps understand employee behavior in the organization and affects employee attitudes towards work, such as willingness to stay in the organization, absenteeism, job satisfaction and staff turnover. It is assumed that the implementation of desirable changes in the organization, often requiring both great employee involvement and acceptance, is not possible without leadership, at all the levels of the organizational structure, in particular, however, at the level of the organization as a whole. Leadership in health care units and other variables that it affects are currently the subject of numerous theoretical and empirical studies [Overall, 2015; Thakur, Hsu, Fontenot, 2012; Nusair, Ababneh, Bae, 2012; Al-Abbrow, 2014]. The chapter aims to present the relationship between transformational leadership, taking charge by superiors and employee commitment. The survey was conducted on 525 employees in 4 randomly selected health care facilities based in the Śląskie Voivodeship.

## 2. Theoretical background

### **Transformational leadership**

Management science offers a variety of leadership concepts. Following the review of literature on leadership in health care, two distinct approaches can be identified – transactional leadership and transformational style [Overall J., 2015;

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Al-Abbrow H., 2014]. The studies on transformational leadership primarily focus on its four attributes: idealized influence or charisma, inspirational motivation, intellectual stimulation, and the individualized approach to people. A particularly important component of transformational leadership is the ability to create the vision of an organization's future [Bass B.M., 1985]. It is manifested in the ability to create a realistic, credible and attractive vision of the future of an organization and organizational unit, rooted in and improving the present. The vision embraces the clear and attractive symbolism of the innovative way forward towards improvement, respecting and drawing on tradition, engaging people in activities that can lead to change. In transformational leadership, the leader transforms the awareness of the people that he leads, while they transform his awareness through their responsive actions. Each side unleashes the potential locked in the other one and causes that dreams and aspirations that have been latent come to the surface [Trompenaars F., Hampden-Turner Ch., 2005]. Transformational leadership differs from transactional leadership, based on rewards and management processes focusing on the unique qualities of subordinates and constant attempts to improve and adjust their behavior. According to Bass, transformational leadership reinforces transactional leadership, but it does not replace it [Bass B.M., 1996]. Another quality that distinguished the transformational leader is the vision that he can share with other workers, using the adequate symbols, inspire his subordinates to strive for perfection in what they do and motivate them to reach higher goals together.

### **Taking charge by superiors**

Taking charge has become an important component of desirable organizational behavior [Crant J.M., 2000]. Taking charge by both superiors and subordinates plays an important role in an organization as it promotes innovation and stimulates sustainable organizational growth [Moon H. et al., 2008]. Accordingly, researchers focus on understanding the factors that foster taking charge. These factors fall under two major categories. The first category embraces contextual factors, such as the perception of top management openness, the principles/norms of employee teams [Morrison E.W., Phelps C.C, 1999] and organizational justice [Moon H., 2008], as well as the factors at an individual level, such as self-efficacy and felt responsibility a sense of duty, achievement striving [Moon H., 2008], role perception, instrumentality, role discretion, role efficacy [McAllister D., 2007] and a proactive personality [Fuller B., Marler L.E., 2009]. It is worthwhile to quote the study conducted by McAllister, who stated that the relationship between procedural justice and taking charge was more positive for employees with a higher level of a perceived organizational role [McAllister D., 2007, p. 1201].

## **Employee commitment**

Employee commitment is an effective response to the entire organization and community that determines the degree of employee loyalty towards the organization. In reality, this is manifested through the affective, continuous and normative involvement of psychological states that determine whether or not an employee remains in the organization. Employee commitment is widely discussed in management literature as a key factor in the relationships between individuals and organizations [Kumari, Priya, 2017]. Meyer and Allen define employee commitment as a psychological antecedent that characterizes individual relationships with an organization and influences the employee's decision to stay with the organization. Meyer and Allen's initial theoretical proposition involved distinguishing two components of commitment: affective and continuance. Then the model was extended to embrace the third component: normative commitment. According to Meyer and Allen (1997), the main process that leads to the development of affective commitment is probably an individual's personal satisfaction, which originates in having one's personal needs and expectations fulfilled as well as achieving one's goals as a member of an organization. This experience of satisfaction may also be related to a sense of being supported, a sense of organizational fairness, a sense of doing meaningful work and making a contribution to an organization [Meyer J.P., Allen H.J., 1997]. Therefore, the work environment that supports employees, treats them well, and at the same time positively evaluates their performance, contributes to increased employee self-esteem [Kumari P., Priya B., 2017]. In turn, Robbins defines organizational commitment as the employee attachment to the organization and as the situation when employees wish to stay in the organization, undertake efforts that will benefit the organization, and approve of the organizational values and goals [Robbins S.P., 2009]. Employee commitment also refers to the employee's faith in the goals and values of the organization, the desire to remain a member of the organization, and loyalty to the organization. The speed and scale of changes in today's organizations force managers to constantly search for ways to boost employee commitment, which translates into better work attitudes, such as job satisfaction, productivity and absenteeism [Lok P., Crawford J., 2001]. Luthans defined employee commitment in terms of "an attitude reflecting the loyalty of employees towards their organization as a continuous process through which members of the organization express their interest in the organization and its sustainable success and prosperity" [Luthans F., 2007]. Henkin and Marchiori defined employee commitment as a feeling that compels employees to be part of their organization and recognize the organization's goals, values, norms and standards [Henkin A., Marchiori D., 2003]. This construct can be defined as a state in which

employees can identify with the organization and its goals and desires in order to maintain membership in the organization [Robbins S.P., 2005]. Furthermore, Ghorbanhosseini argued that employee commitment increases profitability, the quality of services and management efficiency, while at the same time reducing employee inefficacy [Ghorbanhosseini M., 2013]. Similarly, Rashid, Sambasivan and Johari (2003) stated that employees who are committed are those who – at any time – are loyal and quick at work, protect the interests of the organization, exert energy and achieve organizational goals [Rashid M., Sambasivan M., Johari J., 2003].

### **Relationships between transformational leadership, taking charge by superiors and employee commitment**

Vincent-Höper, Muser and Janneck [2012] explain that transformational leaders can boost employee commitment by helping employees to unleash their potential and, thus, satisfying their higher needs. Kopperud, Martisen and Humborstad [2014] add that transformational leaders can also influence commitment to work through emotional support. These leaders express positive emotions that can be transferred to employees. Employees can then become more emotionally involved in their interactions with colleagues and customers (Bono J., Foldes H., Vinson G., Muros J., 2007). A number of studies directly and positively link transformational leadership with organizational commitment [Hoon Song, Kolb, Hee Lee and Kyoung Kim, 2012]. Empirical studies also confirm statistically significant relationships between the transformational and transactional style of leadership and organizational commitment. Other studies, in turn, focus on the assumption that transformational leadership contributes to the increased emotional involvement among employees [Gardner W.L., 2005, Walumbwa F.A., 2008]. Organizations that embrace transformational leadership are more likely to be effective and increase the motivation of employees, who, as a result, become more innovative, satisfied and willing to work in teams [Fitzgerald S., Schutte N.S., 2010]. A variety of studies confirm that transformational leaders are capable of stimulating organizational commitment among employees in the field of education, particularly in terms of their organizational commitment (Saeed S.A., 2013). In their study, Limsili and Ogunlana confirm that transformational leadership is a better style of leadership, while employee productivity and organizational commitment are positively reinforced by transformational leadership [Limsili K., and Ogunlana S.O., 2008].

**Table 1.** Empirical studies on the relationships between transformational leadership and employee commitment

Author(s) and publication year	Level of analysis	Nature of the study	Description of the respondent population	Empirical data collection methods	Conclusions
Khan, Din, Khan (2017)	member of the organization	Empirical	195 questionnaires	Survey	The study examines the importance of the leadership style and employee commitment through the statistical relationship between the two constructs. It identifies a positive and direct link between transformational leadership and employee commitment. The analysis shows that transformational leadership has a significant impact on employee commitment as opposed to transactional leadership.
Al.-Daibat (2017)	Member of the organization	Empirical	390 questionnaires	Survey	A significant impact of transactional and transformational leadership on organizational commitment.
Delic, Slatten (2017)	Member of the organization	Empirical	500 questionnaires	Survey	The study on the impact of authentic leadership and affective commitment on the learning organization in the specific context of transitional market conditions. At the managerial and employee level, the hypothesis was confirmed that authentic leadership and employee affective commitment directly and indirectly favor the learning organization as a result variable.
Gyensare, Kumedzro, Sanda, Boso (2017)	Member of the organization	Empirical	336 questionnaires	Survey	Transformational leadership has an impact on affective organizational commitment, which in turn has an impact on employee commitment.
Dahie, Mohamed (2017)	Member of the organization	Empirical	95 questionnaires	Survey	Transformational leadership has a stronger impact on organizational commitment than transactional leadership.
Ayranci, Ayranci (2017)	Level of the organization	Empirical	133 questionnaires	Survey	A positive impact of transformational leadership on organizational commitment.
Yiing, Bin Ahmad (2008)	Member of the organization	Empirical	238 questionnaires	Survey	The study did not confirm statistically significant relationships between the style of leadership and organizational commitment.



Table 1. (continued)

Buda, Ling (2017)	Member of the organization	Empirical	165 questionnaires	Survey	A statistically significant impact of transformational leadership on organizational commitment.
Bushra, Usman, Naveed (2011)	Member of the organization	Empirical	133 questionnaires	Survey	Managers adopting the behaviors of a transformational leader can build stronger employee satisfaction and commitment.
Ozdemir (2017)	Member of the organization	Empirical	112 questionnaires	Survey	Commitment to the organization is partly related to leadership. Although leadership has a significant impact on organizational commitment, the impact of leadership on financial performance (sales) is weaker.
Pochazka, Gliova, Vaculik (2017)	Members of the organization	Empirical	307 questionnaires	Survey	The relationship between transformational leadership and commitment is shaped by the employee's perception of her/his own efficacy.
Bushra, Usman, Naveed (2011)	Members of the organization	Empirical	133 questionnaires	Survey	The study shows a positive relationship between transformational leadership and employee organizational commitment. Statistical findings imply that transformational leadership positively relates the organizational commitment of the respondent employees. Transformational leadership accounts for 16% of change in organizational commitment, which shows a positive and moderate relationship between the transactional style and organizational commitment.
Malik, Javed, Hassan (2017)	Members of the organization	Empirical	319 questionnaires	Survey	Positive relationships between transformational leadership and organizational commitment were identified. According to the authors, further research in this area should be related to the job performance of both individual employees and the entire organization.
Abouraia, Othman (2017)	Members of the organization	Empirical	181 questionnaires	Survey	Transformational leadership accounts for 42% of change in organizational commitment. Employees are satisfied with this kind of leadership, because it stimulates them, creates vision, promotes trust, helps to create innovative, individual solutions and strengthens interaction, which ultimately increases job satisfaction and organizational commitment.

Source: own elaboration.

Ismail and Yusuf (2009), in turn, studied the impact of transformational leadership on the commitment of observers and found that there is a significant positive relationship between the two variables. Transformational leadership is the most effective style of leadership in determining employee organizational commitment [Ismail A., Yusuf M.H., 2009]. The examples of the results of empirical studies on the relationships between transformational leadership and employee commitment are presented in the table below.

Despite the expected benefits resulting from assuming responsibility that have an impact on organizational and individual performance [Fuller J.B., Marler L.E., Hester K., 2012]. Researchers have only conducted a limited number of empirical studies on these relationships in the context of taking charge by superiors. Morrison and Phelps [1999] assumed that taking charge aims to improve the ways in which work is performed, so that it benefits the whole team. This means that employees who take charge are prepared to undertake additional constructive efforts to improve the efficacy of their work. Taking charge is positively related to employee job satisfaction and organizational commitment for several reasons. First, as empirical evidence implies, people have the inherent need for cohesion. Therefore, they try to maintain the cohesion of their attitudes and behaviors. Although attitude generally affect behavior can also influence attitude [Souchet L., Girandola F., 2013]. In addition, assuming responsibility is an arbitrary and spontaneous form of committed behavior based on one's own choice and it is not imposed. Taking charge can also be positively associated with the employee's work performance. Actions taken by the employee aim at improving working methods that increase the quality of work and job performance, thus ultimately benefiting the entire organization [Morrison, Phelps, 1999]. Furthermore, employees who take charge tend to put additional effort into implementing functional changes in their workplaces and organizations [McAllister, 2007, Moon, 2008].

Based on the literature review, the following research hypotheses were formulated:

Hypothesis H1: Transformational leadership has a positive influence on employee commitment.

Hypothesis H2: Taking charge by superiors has a positive influence on employee commitment.

Hypothesis H3: Taking charge by superiors is a mediator in the relationship between transformational leadership and organizational commitment.

### 3. Research results

#### The description of the sample

The study was conducted in 4 different healthcare organizations based in southern Poland in May-July 2018. Data were collected in two hospitals and two care and treatment institutions, out of which two were publicly owned and two were private enterprises. The selection of respondents was determined by the author's cooperation with the units, which significantly contributed to high responsiveness. Table 1 presents the units whose employees participated in the study.

**Table 2.** Sample characteristics

Healthcare unit	Public/private	Type of activity	Number of employees in the unit	Number of participants	Share % of respondents
				Employees (managers)	
A	Public	Hospital	582	331(33)	56.87%
B	Private	Hospital	202	80(11)	39.60%
C	Public	Care and treatment institution	63	49 (1)	77.77%
D	Private	Care and treatment institution	155	65(6)	41.93%
Total	-	-	1002	525(51)	52.4%

Source: own elaboration.

The data collection process was performed using the pen-and-pencil technique – each employee was given the printed version of the questionnaire with an individual number and the number of a manager and was asked to return it to the sealed box. Every employee assessed the leadership style of their manager/supervisor and their own task complexity. Additionally, they provided information on their satisfaction and commitment. In total, we collected 525 responses from 1002 employees of the healthcare units under study. The main fields of responsibility for employees of those units were diversified, from serving and taking care of patients to carrying out medical procedures (86.10%), as well as performing administrative work (13.90%). The majority of respondents were women – 479 employees, which accounted for 91.24%, and 46 men – 8.76%. Nearly 50% of the respondents had higher education, 49% of employees had secondary education, and only 1% (7 respondents) had primary education only. Most respondents were either 41-50 years of age (38.1%) or above 50 years of age (42.29%). Nearly 15% of respondents were between 31 and 40 years old, and just below 5% (4.95%) were younger than 30 years old, hence, the sample structure. Respondents had extensive experience in the field of responsibility – most

respondents had worked in the field for over 20 years (64.95%), over 16% of respondents (86 employees) had worked in the profession for 11 to 20 years, and 18% of respondents had less than 10 years' experience in the healthcare profession.

## The description of the research tools

### *Transformational leadership*

The transformational leadership style was measured with the tool developed by Carles, Wearin and Mann [2000]. In order to verify the reliability of the adopted scale, Cronbach's alpha analysis was conducted as a first step. The alpha coefficient of 0.842 for the whole scale indicated the high reliability of the selected measurement tool. Then factor analysis was carried out using the principal component method with Varimax rotation and Kaiser normalization. The KMO coefficient was 0.886, while Bartlett's test of sphericity was statistically significant (approximate chi-squared = 1234.88), which allowed for the performance of factor analysis. The factor structure accounts for more than 57.32% of the variability of the entire construct.

**Table 3.** The matrix of rotational components, the values of arithmetic means and standard deviation for questions – Transformational leadership

	Arithmetic mean	Standard deviation	Component Matrix <sup>a</sup>
The leader communicates a clear and positive vision of the future.	5.51	1.53	0.732
The leader treats employees as individuals, supports them and encourages their self-development.	5.10	1.23	0.583
The leader appreciates and encourages employees.	5.43	1.66	0.810
The leader fosters trust, commitment and cooperation between team members.	5.16	1.85	0.754
The leader encourages thinking about problems from different perspectives and questioning assumptions.	5.17	1.77	0.739
The leader clearly expresses her/his values and the methods adopted.	5.75	1.62	0.727
The leader fosters pride and respect in others and inspires me to become more competent.	5.20	1.85	0.689

Source: own elaboration.

Based on the responses received, it can be inferred that the respondents most appreciate the clear expression of values and methods adopted by a superior as well

as the communication of a clear and positive vision of the future. In order to conduct further analysis, metavariabes were calculated as the mean values of the particular issues constituting the dimension – transformational leadership.

### ***Taking charge by superiors***

In order to measure the aspect of taking charge by superiors, the tool developed by E.W. Morrison and C.C. Phelps [1999] was used. The assessment of taking charge by superiors was conducted based on the selected statements on a 7-item Likert scale. In order to check the reliability of the adopted scale, Cronbach's alpha analysis was carried out. The alpha coefficient for the entire scale reached the value of 0.964, which indicates the high reliability of the selected measurement tool. Then, factor analysis was performed using the principal component method with Varimax rotation and Kaiser normalization. The KMO coefficient was 0.947, while Bartlett's test of sphericity was statistically significant (approximate chi-squared = 5.917.72), which allowed for the performance of factor analysis. The factor structure explains more than 76.29% of the variability of the entire construct.

**Table 4.** The matrix of rotational components, the values of arithmetic means and standard deviation for questions – Taking charge by superiors

	Component matrix	Arithmetic mean	Standard deviation
This person often tries to adopt improved procedures for doing his or her job.	.905	5.78	1.43
This person often tries to change how his or her job is executed in order to be more effective.	.900	5.94	1.41
This person often tries to bring about improved procedures for the work unit or department.	.898	5.69	1.46
This person often tries to institute new work methods that are more effective for the company	.897	5.84	1.36
This person often tries to change organizational rules or policies that are nonproductive or counterproductive	.895	5.84	1.42
This person often makes constructive suggestions for improving how things operate within the organization.	.886	5.81	1.36
This person often tries to correct a faulty procedure or practice	.863	5.71	1.46
This person often tries to eliminate redundant or unnecessary procedures	.858	5.62	1.42
This person often tries to implement solutions to pressing organizational problems	.846	5.51	1.53
This person often tries to introduce new structures, technologies, or approaches to improve efficiency	.779	5.46	1.58

Source: own elaboration.

Based on the responses received, it can be seen that, in the opinion of the respondents, superiors actively take charge. On the adopted 7-item scale, the highest score was given to the implementation of new solutions with the aim of solving current problems and the implementation of new structures, technologies and approaches in order to improve work efficiency. The attempt to eliminate duplicate or redundant procedures also ranked high.

In order to conduct further analysis, metavariabes were calculated as the mean values of the particular issues constituting the dimension – taking charge by superiors.

### Employee commitment

The measurement of the level of employee commitment was conducted with the tool developed by Mardsen, Kalleberg and Cook [1999]. In order to check the reliability of the adopted scale, Cronbach's alpha analysis was carried out. The analysis resulted in the removal of one statement from the adopted scale for further statistical examination. The alpha coefficient for the whole scale was 0.726, which indicated the high reliability of the selected measurement tool. Then, factor analysis was carried out using the principal component method with Varimax rotation and Kaiser normalization. The KMO coefficient was 0.718, while Bartlett's test of sphericity was statistically significant (approximate chi-square = 612.44). The factor structure accounts for more than 49.1% of the variability of the entire construct.

**Table 5.** The matrix of rotational components, the values of arithmetic means and standard deviation for questions – Employee commitment

	Airthmetic mean	Standard deviation	Component Matrix <sup>a</sup>
I am proud to work in this organization.	5.12	1.67	.815
My values are consistent with the values of my organization.	4.97	1.81	.792
I would accept any job only to be able to work in this organization.	3.38	1.99	.689
I would reject a better paid job only to able to work in this organization.	3.13	1.98	.592
I am willing to work harder than necessary in order to achieve success in my organization.	4.88	1.90	.581

Source: own elaboration.

According to the respondents, the consistency of the values of the employees with the values of the organization was assessed relatively high. As a result, employees are willing to work harder to achieve success in the organization. Neutral opinions were, on the other hand, expressed on being able to work in a given organization at “any cost”. As in the case of the previous variables, metavariables were calculated as the mean values of particular issues constituting the dimension – employee commitment.

### The analysis of relationships

The first step involved Pearson’s linear correlation analysis performed to determine whether the constructs under study are interrelated. Table 2 shows the correlations between metavariables of transformational leadership, taking charge by superiors and organizational commitment.

**Table 6.** Pearson’s linear correlation coefficients between transformational leadership, taking charge by superiors and organizational commitment

		Transformational leadership	Taking Charge	Organizational Commitment
Transformational leadership	Pearson Correlation	1	.666**	.349**
	P		.000	.000
Taking Charge	Pearson Correlation	.666**	1	.230**
	P	.000		.000
Organizational Commitment	Pearson Correlation	.349**	.230**	1
	P	.000	.000	

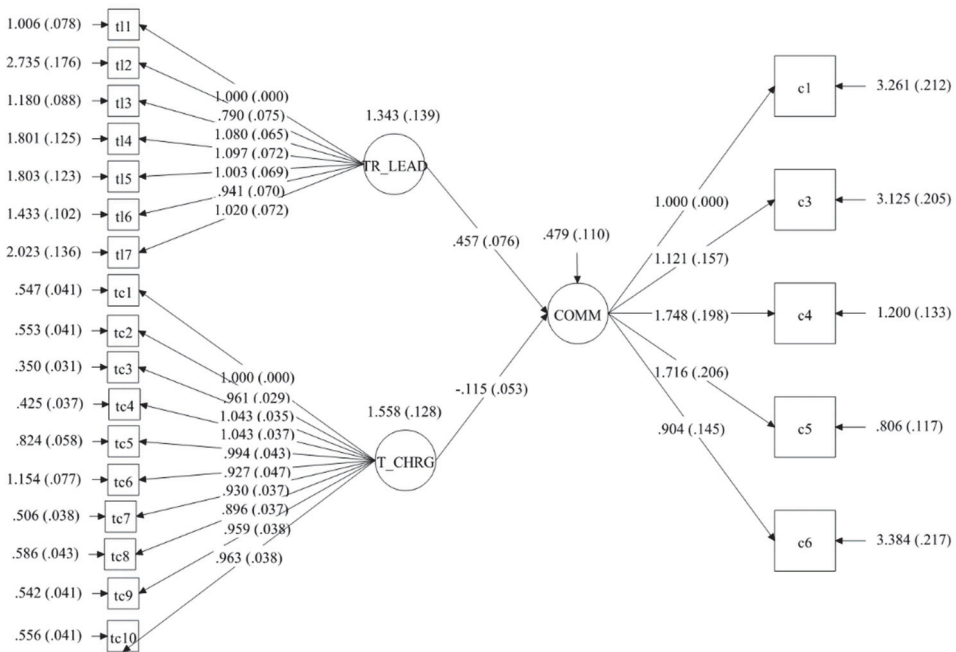
Source: own elaboration.

Based on the analysis of Pearson’s linear correlation, it can be concluded that statistically significant relationships exist between the constructs adopted for analysis. Transformational leadership and taking charge by superiors have a significant statistical impact on organizational commitment (Pearson’s linear correlation coefficients of 0.349 and 0.230).

### The in-depth analysis of relationships

In the next step of the statistical analysis, the modeling of structural equations was conducted. Transformational leadership and taking charge by superiors were treated as independent variables, while organizational commitment as a dependent variable. The analyses were carried out with the use of MPlus 8.1 for Mac software. They led to the conclusion that the fit of the relationship model was moderate (RMSEA = 0.052, with an acceptable level higher than 0.05; CFI = 0.955, with an acceptable level exceeding 0.9; TLI = 0.943, with an acceptable level exceeding 0.9). Figure 1 shows that both transformational leadership and taking charge by superiors influence organizational commitment. The level of R2 for the explained dependent variable

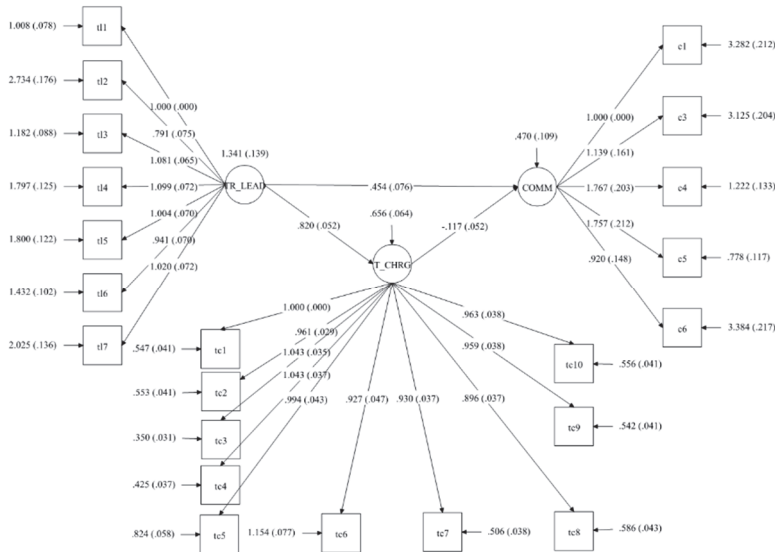
(commitment) is 28.6%. The results indicate that there are no grounds to reject the hypothesis H1, which assumes a relationship between the transformational leadership style and employee commitment, or the hypothesis H2, which assumes a relationship between taking charge by superiors and organizational commitment. At the same time, increased taking charge by superiors contributes to lowering employee commitment.



**Fig. 1.** SEM Model – The effect of the transformational leadership style and taking charge by superiors on organizational commitment  
*Source: own elaboration.*

In the next step of the statistical analysis, the modeling of structural equations was carried out, with transformational leadership being treated as an independent variable, taking charge by superiors as a mediator and employee commitment as a dependent variable. The analyses were conducted with the use of MPlus 8.1 for Mac software. They led to the conclusion that the fit of the relationship model was high (RMSEA = 0.053; CFI = 0.966; TLI = 0.959). The fit was higher than in the case of the model presented in Figure 1, which validates the treatment of taking charge as a mediator of the relationship between the transformational leadership style and employee commitment. The level of R<sup>2</sup> for the explained dependent variable (commitment) was 28.6%.





**Fig. 2.** SEM model – The mediation of taking charge in the relationship between transformational leadership and organizational commitment  
*Source: own elaboration.*

**Table 7.** Relationships between transformational leadership, taking charge and commitment – the overall presentation of the results

	Model 1 (p-value)	Model 2 (p-value)	Model 3 (SE)	Model 4 (SE)
<b>Dependent variable: commitment</b>				
Constant	0.479 (0.000)	0.723(0.000)		
Transformational leadership	0.457(0.000)	0.454 (0.000)		
Taking charge	-0.115 (0.031)	0.117 (0.025)		
<b>Dependent variable: taking charge</b>				
Transformational leadership	-	0.820 (0.000)		
<b>Mediation effects</b>				
Total indirect and specific indirect effects of transformational leadership on commitment mediated by taking charge				
Transformational leadership → taking charge → commit- ment	-	-0.096 (0.027)		
<b>R SQUARE</b>				
Commitment	0.286	0.277		
Taking charge	-	0.579		

<b>Model fit indices</b>		
Root Mean Square Error of Approximation (RMSEA) (the lower the better)	0.052	0.053
Compound Fit Index (CFI) (the higher the better)	0.950	0.966
Tucker-Lewis Index (TLI) (the higher the better)	0.943	0.959

*Source: own elaboration.*

## **Discussion**

The analyses of correlations and structural equations indicate that taking charge by superiors is perceived positively by employees and translates into their increased organizational commitment. It is particularly important to focus on improving procedures so that employees can perform their work better, implementing changes in work organization aimed at increased efficiency, proposing new solutions by supervisors for the team, launching new work organization methods, eliminating or changing unproductive policies and rules, providing constructive comments to improve the functioning of the organization, improving day-to-day operations, eliminating redundant regulations and procedures, and implementing new solutions, structures, technologies aimed at increased work efficiency. Employee commitment is particularly strongly stimulated when managers adopt behaviors characteristic of the leaders introducing changes. Another crucial issue involves managers being present at work – their presence is crucial from the employees' perspective. They should also express interest in what employees do and have the ability to organize their own work, as managers give an example to other employees. Managers should also demonstrate confidence in their behavior, assign tasks effectively and give clear instructions. They should behave consistently and act according to their declared values. It is worthwhile to stress that taking charge by superiors reduces the relative impact of transformational leadership on employee commitment. This means that superiors should not take over work or problems from their employees but allow them to perform their job. The results indicate that transformational leadership has a significant influence on employee organizational commitment. They are consistent with previous studies carried out, for example, by Herold [2008], Chou [2013], and Shin [2015]. The study also shows that a change in perceived self-efficacy has a significant impact on a sense of commitment to change, which also corresponds with previous studies [Herold, Fedor and Caldwell, 2007]. It also reveals that a change in perceived self-efficacy serves as a significant predictor of commitment to change, compared to transformational leadership. Therefore, the conviction of employees that they are capable of effective change management contributes to their proven ability to manage change.

### **Limitations and future directions of research**

The study revealed that the perceived style of leadership has a positive impact on employee commitment. In consequence, it was proven that leadership practices that support learning and participation in decision making through the creation of a learning environment are of utmost importance to employee commitment. The study was restricted to two constructs affecting the level of employee commitment – transformational leadership and taking charge by superiors. An important limitation of the study was a research sample. Therefore, further research in the area should embrace other constructs that also affect employee commitment. Additionally, it should account for differences between employees, which ought to be investigated through comparative analysis of work experience, age, or position. It seems of crucial importance that future studies embrace a performance- related variable that is linked to employee commitment, for example, work efficiency or organizational efficiency.

### **4. Conclusion**

In conclusion, it is possible to recommend actions that should be taken by managers in the area of work organization to stimulate employee organizational commitment. They include:

- management training in the field of leadership skills and practical skills,
- regular employee appraisals which recognize and appreciate employee involvement in the organization,
- rewarding employees for taking initiative,
- regular meetings with management and the encouragement of the active involvement of managers in particular departments or wards,
- building mutual trust through informal relationships within particular departments and wards and also outside them,
- raising the awareness of the goals of the health care unit and enabling the exchange of views and experiences.

Based on the research results, it can be concluded that these activities should lead to an increase in both employee commitment and job satisfaction. It should be pointed out that the actions taken will affect employee commitment and long-term effort should result in increased employee pro-active behavior. The results of the study are also corroborated by the research, conducted in the world, assuming that transformational leadership may be the right way to increase employee commitment [Abrell, Rowold, Weibler i Moeninghoff, 2011; Kelloway, Barling i Helleur, 2000; Gumusluoglu i Ilsev, 2009; Jung i Sosik, 2002]. Further research directions in the field should embrace the analysis of other factors affecting – directly and indirectly – employee commitment, which in turn will translate into increased organizational efficiency.

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# CHANGE MANAGEMENT PROCESS BARRIERS IN THE PENSION SYSTEM FROM THE STAKEHOLDERS' PERSPECTIVE

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## 1. Introduction

One of the well-known anecdotes about Albert Einstein says that during the exam, when one of his students pointed out that the questions are exactly the same as in the previous years, he confirmed, however, he remarked that the answers are different this year. Although this situation, if true, took place at the turn of the 19th and 20th centuries, it still remains actual and relates to the problem of changes which surround us. This is a well-known phenomenon, which occurs in both private and professional life. Although people, organizations or institutions still keep asking themselves the same questions, the changing environment puts a pressure on finding new answers. Sticking to an old reality means actually moving backwards, and consequently makes it impossible to develop and survive in today's turbulent world. Thus, changes became an inevitable part of human life, which can be treated by the recipient either as a problem or as a challenge. They have always accompanied people, but their pace of introduction has never been as fast as it is today. This makes this problem, or a challenge, even greater and more complex.

Similar situation concerns pension systems, which are subject to constant changes. Decreasing fertility rates, increasing life expectancy and changes on the labor market influence negatively pension finances. To realize pension system's goals in these changing circumstances, the implementation of both paradigmatic/structural changes (concerning general principles of the pension system) as well as parametric changes (concerning individual system parameters) was necessary [Kalina-Prasznica, 2016]. Unfortunately, most of reforms carried out a few decades ago, has not achieved the expected results or has turned out to be insufficient. Thus, the question arises if

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the changes were managed effectively and if not, what was the reason. To answer these questions, it is necessary to draw from private sector's experience, as the concept of change management was born there. Nevertheless, it is worth mentioning that despite the public nature of the pension system, modern pension systems are evolving towards partial privatization, as a result of which private organization, employers and employees play a growing role in their functioning. Thus, the change process in the pension system depends not only on numerous conditions but also on growing number of stakeholders. This makes this process even more complex and exposed to different problems.

Therefore, the main goal of this paper is to identify the barriers in the change management process from the perspective of different pension system's stakeholders. The paper has a theoretical nature and can constitute a base for further research in the field of change management in the pension system. The paper consists of three sections and conclusions. First, the theoretical framework for the change management process is described. Then, pension system stakeholders are defined. Afterwards, change management process barriers in the pension system are identified with a division on particular change participants. Finally, considerations are summarized and conclusions are drawn.

## **2. Change management process**

The change can be defined in many different ways. According to Griffin [2005] change is any significant modification of a part within the specified entirety. Kotarbiński [1961], on the other hand, regards that the change takes place if a particular thing is different at the beginning and in the end of the period. In addition, it should be performed for a particular feature and at a clearly defined time [Pszczółowski, 1978]. Change can be understood also as a transformation, which is perceived (identifiable among its surrounding), empiric (feasible and possible to prove) and planned in advance [Masłyk-Musiał, 2003].

As the change is a complex and often a multidimensional phenomenon, it requires a good management. Only then, the change has a chance to become a challenge and a chance for an entity instead of being a problem and a threat. Managing a change is a process, which enables the implementation of the change in a most effective way. However, it is a multistage process, which should not be finished just after the implementation of the change. It is one of the main reasons for the fall of most change initiatives. Therefore, special change management models have been created, which are supposed to help to manage this process and provide some kind of a guidance for change managers. One of the best-known, and regarded as a fundamental, change management model defines three main steps of this process, which are unfreezing, changing and refreezing [Lewin, 1947]. The first of them is the preparation for



a change, which cannot take place without forgetting the past as well as understanding the need for a change, its motivation and justification. The second one is the implementation and modification of up to now patterns in accordance with a new plan. Finally, the last step is about rooting of a change (new reality) as well as assessing the results and providing a necessary feedback for a future. Defining the change management process one should refer to the management concept which is described as a set of activities, which include planning, organizing, leading and controlling, performed with the aim of achieving the planned goals [Griffin, 2005]. It should adjust the organization's strategy to the changing environment and available resources with the aim of ensuring a long-term harmony [Zarębska, 2002]. Thus, the goal of the change management process is to minimize the negative and to maximize the positive impact of the internal and external environment on the change process [Tien, 2012].

As the change management is a multidimensional and multistage process, it should involve many agents. The first of them, which allows initiating the process is the originator of the change. It is a person who gives an idea for a new direction basing on self-analysis or using analyzes carried out by third parties. The role of the change originator is often played by a change leader, who is responsible for envisaging, creating a vision, initiating and sponsoring the change initiative. A complementary role is played by the change manager, who is responsible for translating the leader's vision into action and building support for change within the organization [Caldwell, 2003]. Next important entity in the change management process is the change consultant. It is the person responsible for providing some consultancy services during the implementation of the change based on the knowledge related to different methods and techniques as well as own previous experience in this field. Change consultants should know and understand exactly not only the conditions of the change management process but also the organizational culture and the organization's background (even if they are the external consultants). With no doubt, a key role in the change process is also played by its recipients, which are usually the most numerous group of change participants. Their motivation, enthusiasm or resistance towards change can lead to its success or its failure.

Change management concept has its origins in a private sector. Nevertheless, along with the development of the concept, the idea and need of its use also in the public sector has been observed. Special definitions and models have been created, however, they are not significantly different from those taken from the private sector [Carol Rusaw, 2007; Melchor, 2008]. Change management in the public sector is understood as the ability to shape human attitudes and influence their actions so as to make them adapted to a new environment at the same time reducing unwanted side effects. One has to be aware that the change in the public sector is often equated with a reform, while these two concepts differ quite significantly. A change is a transformation, which can occur naturally and spontaneously, while a reform

is more intentional and it requires some effort to be designed [Caiden, 1968; Kuipers et al., 2014; Pollitt & Bouckaert, 2004]. Furthermore, it has an operational character, which means that it has to be at least partially implemented, to say about its occurrence [Guthrie & Koppich, 1993]. According to Melchor [2008], a reform is a manner of changes' implementation, which means that the change can be treated as the result of the reform. Thus, the change management can contribute to the success (or failure) of the particular reform. Following this line of reasoning, it seems that managing change in the public sector is even more challenging task than in the private one, because the reform consists of number of change processes which have to be managed simultaneously. Thus, to make the reform more manageable, it should be characterized with simplicity, consistency, political and technical viability and it should focus on the future [Melchor, 2008].

### **3. Pension system stakeholders**

The pension system is one of the tools for old age management, which is supposed to provide people, who are unable to work due to their age, with a fair financial security for the rest of their life. It can be perceived from both social and economic perspective. In the former one, it can be understood as a tool for ensuring the people in post-production age with a decent standard of life. In the latter one, it can be analyzed in micro and macro scale. In the micro scale, so from the unit perspective, it can be defined as a tool used to smooth the consumption in the life cycle. In the macro scale, which means the society perspective, it can be understood as a tool for dividing the current gross domestic product (GDP) between the generation in the production age and the generation in the post-production age [Barr & Diamond, 2006; Góra, 2003]. Thus, the pension system is supposed to realize two types of goals: social and economic one. The former can be achieved by providing necessary financial resources to people at post-production age, who are covered by the system. The latter can be realized by smoothing consumption in the unit's life cycle and by distributing GDP fairly between generations. Despite the fact, that the social purpose of the pension system is the fundamental one, the incurred costs and other economic issues related to its functioning should not be disregarded neither.

Nowadays, in a great majority of developed countries the pension system takes an institutionalized structure. Therefore, it can be also understood as an institutional structure consisting of all institutionalized sources and solutions enabling gathering monetary income for the old age period [Góra, 2008; Szumlicz, 2004; Żukowski, 1997]. Such a transition from a natural pension system (based on family ties and solidarity) to an institutionalized one, caused a significant increase in number of institutions (understood both as organizations and sets of norms within which such organizations operate) involved in the system. Furthermore, once, the pension system

was functioning mainly within the scope of the public sector, as the responsibility for providing pension security to society was on the side of the state, or some public institutions. Nevertheless, due to the influence of the World Bank, which has promoted the transition from the unfunded to the funded system, the engagement of private entities as well as the dissemination of additional voluntary saving, multi pillar solutions have been implemented. They are based on the cooperation of both sectors, public and private one. The responsibility for pension security has been divided between the state, public and private organizations and institutions as well as the individuals. The share of this liability differs depending on some national arrangements and pension system's construction. Therefore, it is not possible to unambiguously define the key players in the pension system in details, but it is possible to distinguish some social and business groups involved in such a system.

Starting from the society, we can divide it on three main groups taking their age into account – the youth, who has not entered the labor market yet but long-term changes in the pension system may influence them in the future, the working age population, who is currently on the labor market and pay pension contributions, and the old age population, who has already left the labor market and currently receive the pension benefits. All these age groups constitute the group of change recipients. When it comes to organizations and institutions operating within the pension system, insurance companies, banks, pension fund management companies or brokerage houses can be distinguished. An increasingly important role in the pension system is also played by enterprises, trade unions and employers offering more and more popular occupational pension schemes to their employees. They can be defined as change agents in the pension system. Next key player is the legislator, who is responsible for the construction of the pension system and its reforms. Most often, this role is played by the government currently holding power in a given country. In the European Union, the European Commission can be defined as the additional key player in the pensions system due to the Open Method of Coordination implemented in the field of pensions. This last group of stakeholders constitutes in the pension system the group of change leaders.

#### **4. Change management barriers in the pension system**

Recently, pension systems operating throughout the world have undergone numerous reforms. Their main cause was unfavorable changes in the demographic structure of society, namely the aging of the population, resulting from two phenomena: decreasing fertility and increasing life expectancy. The growing population at post-production age and the decreasing population at pre-production and production age influences unfavorably the age structure of the society, having a negative impact on pension finances. Unfortunately, reforms, which were

implemented a few decades ago, have not achieved the expected results and therefore, the pension systems are currently subjected to further changes aimed at increasing the declining replacement rates. Despite the fact that more and more new ideas are being introduced, little is said about why previous solutions did not bring the expected results. Therefore, it seems that the process of change management in the pension system ends already at the stage of introducing a change, which with no doubt can bring lots of negative consequences. Thus, the question arises, why implemented changes are not managed properly. One of the reasons may be the fact that the reference of the change management concept to the pension system is an innovative approach that has not been subjected to a wider study neither in the theory nor in the practice. Furthermore, the change management process is exposed to different barriers, which in case of the pension system can be even more numerous and complex. In the literature one can find some studies discussing the subject of barriers in the change management process in the organization], however, the identification of change management process barriers in the pension system is an unexplored issue. Thus, the identification of such barriers, with a division on pension system's stakeholders (change recipients, agents and leaders), constitutes the main purpose of this paper.

### **Change recipients**

One of the main barriers identified in the change management process from the change recipients perspective is their resistance to change [D'Ortenzio, 2012; Hiatt & Creasey, 2012; Kuipers et al., 2014; Melchor, 2008]. This applies also to changes and reforms implemented in the pension system. Such a resistance can be caused by lack of understanding the need for change, which means that people are not aware of consequences of maintaining the current state. This relates also to another barrier in the change management process, which is lack of knowledge. Pension knowledge, directly related to pension economics, is unfortunately quite low in society [Holzmann, Orenstein, & Rutkowski, 2003]. It is caused not only by insufficient education of the society in this area in the education process, but also by the lack of proper communication between change recipients (society) and change leaders (government) or by the lack of easily accessible information about the change. Consequently, this can lead to the phenomenon of inertia, which takes place when the individuals supposed to make some pension decisions abandon themselves to current situation, at the same time forgetting that the lack of decision is also the decision.

Another barrier in the change management process in the pension system is related to the fact that usually changes in the pension system are imposed on the society. Thus, people can have a feeling that they do not have any impact on final vision of a change and they do not have a chance to adjust to it before its implementation. Next barrier is an inadequate preparation of the change, which

can take place if the obstacles that impede the vision of a change are not removed before the change implementation. This can relate to some technical obstacles (discussed in section **Change recipients**) but also to the regulation of current solutions applied in the system. Such a situation took place in Poland and related to maintaining (in a limited extent) the open pension funds (“old” pension product) and at the same time implementing the occupational capital plans (“new” pension product). If people do not know what will happen with their funds collected so far, they will not be obviously eager to participate in subsequent change initiatives.

Next barrier in the change management process in the pension system is limited understanding of a particular change due to its complexity. People, who do not understand what will be the consequences of implementing the change, will not engage in the change process. Such a complexity of pension changes may lead to the attitude of passivity or herd instinct taking place in the decision process, when the individuals are influenced by the behavior of others. As a consequence they will make the same decisions as others, regardless of whether they are well adjusted for them or not.

Furthermore, the change management process in the pension system can be hampered by the past experience on failed change initiatives. Such situations influence negatively the level of public trust to change agents (pension institutions) and change leaders (government). Such a situation took place in Poland, when the government decided to make fundamental changes concerning open pension funds in 2014, which questioned the credibility of the state and undermined the trust of the society towards pension institutions.

### **Change agents**

Next barrier in the change management process in the pension system is associated with the multiplicity of actors involved, so that both the activities and the results can be interpreted in many different ways and from very different perspectives. The interests of individual entities can be quite opposite, what can lead even to some conflicts. Even more so because some of change agents come from the public sector and some of them from the private one. There exist some fundamental differences between these sectors, which can influence greatly the change management process and thus, they should not be neglected. Public sector should strive to act for a common good, while the private one has the right to take care of its own interests. Moreover, public sector should offer goods, which are free of charge and available for everyone, while private sector offers payable goods for particular individuals. Last but not least, public sector operates according to constitutional and administrative law, while private sector functions in accordance with civil and commercial law [Nacewicz, 2013]. Therefore,

the institutions operating within the private sector can neglect their impact on the common good of the society.

Furthermore, the pension system in the face of demographic, social or economic changes is characterized by a large number of changes. Too many changes may adversely affect various entities operating within the pension system as well as the pension system itself, as it should be characterized by relative legal and organizational stability. This relativity lets a certain flexibility, as the pension system must be systematically adjusted to the changing conditions, however, too many changes constitutes a barrier to effective change management.

Next barrier, which is worth mentioning, are inadequate resources (both tangible and intangible) of change agents in the pension system. The former ones include primarily money and IT infrastructure, while the latter relate mainly to time. Limited time can lead to a pressure, which combined with limited budgetary possibilities, can force change agents to take steps that are unfavorable from the viewpoint of the change recipients.

Next barrier in change management in the pension system from the perspective of change agents is related to the problem of division of responsibility and functions in the change management process. This is due to the fact that there is no unambiguous answer to the question who should manage the change process in the pension system. Therefore, it is difficult to determine whether change agents, who are the entities operating under the pension system, should perform only executive or also managerial functions. Sometimes, the role and the range of activities of change agents is also limited by change leaders, who due to some legal regulations, block their actions and consequently, also their development. Such a situation took place in Polish pension system, when the acquisition ban was imposed on the institutions running open pension funds.

### **Change leaders**

Looking at the change management process from the perspective of change leaders, one of the main barriers is certainly the long-term character of implemented reforms or changes. The effects of such changes are usually visible not until a dozen or even several dozen of years. On the other hand, there exists a high rotation among change leaders in the pension system (due to political rotation) and in the majority of cases, the successors do not show the will to continue the activities of their predecessors. High turnover among leaders contributes also to the lack of their involvement (or at least its reduction) or to the phenomenon of myopia (short-sightedness). Change leaders take steps to maintain their positions, so they are focused more on achieving short-term goals as quick as possible rather than on waiting for the effects of long-term actions. Furthermore, such an attitude of change leaders can cause the problem of proper

definition of priorities. Units responsible for changes in the pension system, struggling to maintain power, may be tempted to put their good above the good of society.

Next barrier in the change management process in the pension system is the change leaders' focus on results. They know well what the effect of the change should look like and they strive to achieve it, thus omitting some stages of the change management process. They tend to shorten the process of change preparation or marginalize the importance of the society adaptation process. Sometimes they also try to implement changes which turned out to be effective in other countries, not taking social and economic conditions of a particular country into account. Furthermore, they are focused on achieving the same results without paying enough attention to learn how the change management process looked like somewhere else. Consequently, their decisions and actions may turn out to be ineffective against the expectations.

Furthermore, the goals of changes in the pension system can be difficult to define, which can also constitute a barrier in the change management process. The pension system has to realize different goals at the same time and despite major social and economic goal (discussed earlier in section 3), it is supposed to meet also other goals such as poverty relief, redistribution or economic development [Barr & Diamond, 2014]. Taking all above-mentioned goals of the pension system into account, it can be extremely difficult to design a change, which will meet them. On the other hand, without a clearly defined goal, it is not possible to plan and manage the change process appropriately. Finally, it is also worth mentioning the change management barrier resulting from the risk to which the change leaders are exposed, which is connected with the uncertainty of the actions and decisions taken.

## **5. Conclusions**

Change management, due to its multidimensionality, is a process associated with numerous barriers. In the pension system, the problem is even more complex due to the fact that it engages many stakeholders with different priorities. Furthermore, the change process in the pension system is a long-term one and it depends on numerous conditions, some of which are exogenous. Undoubtedly, units responsible for managing the process of changes in the pension system should be aware of these difficulties and barriers and try to eliminate them, or at least reduce their strength.

One of the solutions to do that, is to pursue change management models, which have evolved and developed over the years and can be a valuable hint for those responsible for managing this process [see e.g. models proposed by ]. Furthermore, with no doubt, each change management process in the pension

system should be characterized with high involvement of stakeholders and their cooperation, as they all constitute the group of change participants (with different roles). Nevertheless, the entities have to remember that each change is different and the conditions for its implementation are never the same, so each transformation should be individually considered, thoroughly planned and effectively managed. Only in such a way, the changes can bring the expected results with a limited number of side effects.

One should be aware that change management barriers in the pension system identified in this paper can make this process difficult to a different extent and each of them may have a different impact on the final result. Thus, the above considerations can be the basis for further research in the field of change management in the pension system.

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# CREATIVITY AND ITS IMPORTANCE IN BUSINESS

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## 1. Introduction

Creativity in the organization can be defined as a creation of useful and valuable products, services, ideas, procedures or processes by cooperating units [Woodman et al., 1993, pp. 293-321]. According to the theory of R. Galvin, creativity consists of anticipation meaning that a given person is the first one to develop a vision which will gain an enormous significance in the future, and from individual involvement in the implementation of the idea which others doubt and do not feel like being involved in [Csikszentmihalyi, 2001, p. 116].

Creative thinking is an essential feature of all aspects of decision-making in business. It is a phenomenon of stimulating new thoughts, reviewing the present knowledge and assumptions in order to formulate new theories and paradigms or the awareness of supplementing knowledge and stimulating awareness. It is a process, which involves revealing, selecting, exchanging and connecting facts, ideas and skills [Proctor, 2002, p. 46]. Especially with the end of the life cycle of products employees must abandon the existing strategies and learn new ones [Williams, Yang, 1999, pp. 373-391], and these cycles are shorter and shorter nowadays. The progress in achievement of the next levels of maturity of economy based on knowledge affects the increase of demand for knowledge, innovation and creativity [Dubina et al., 2012, pp. 1-24].

There is a direct relationship between creative thinking and effectiveness and efficiency of the organization. The creative approach helps in effective resolution of the constantly emerging organizational problems and encourages, at least some groups of employees, to conduct innovative solutions, motivates to act, develop skills, as well as favours a better team work. The creative approach is particularly important

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in marketing and formulating the global strategy of the enterprise's operation. The continuous flow of ideas concerning new products and services and the concepts for facilitating the functioning of processes in the organization strengthens the competitive advantage of the enterprise [Proctor, 2002, p. 3].

Creativity plays a significant and important role in the entrepreneurship processes. Combined with knowledge and social competences, it leads to the creation of associations or bisociations resulting in the formation of new products [Ko, Butler, 2007, pp. 365-372]. Creativity should be used in reference to all aspects of the entrepreneurship's operation, as each of them can affect its effectiveness. New or modified technology, change in delivery or lowering costs can be equally attractive like, e.g., organizational solutions or increased motivation of employees [Jerzyk, Leszczyński, Mruk, 2004, p. 67].

Creativity should not be perceived as a domain of people of a specific category or a particular trade. Creative behaviours can be revealed in any place in the economic and social life. The economic growth stimulates the creative and innovative actions, and their effects propel the further increase – feedback is formed. On the other hand, “over-production of innovation” may lead to crisis, and bad innovative policy may even deepen the effects of crisis. Therefore, diversification of investments in innovations is essential to prevent or mitigate the crisis. It is very significant that the year 2009, in which the peak of the economic crisis took place, was announced the year of creativity and innovation in Europe [Dubina et al., 2012, pp. 1-24].

## **2. The impact of the organizational culture on creativity in business**

Creativity in business depends on the cultural context. Some cultures promote creative approaches, while others conformism [Lubart, 1999, pp. 339-350]. Creativity in economy affects the implementation of innovations. Culture has a clear effect on economic creativity. Different intensity of implementing innovations explains some differences in the affluence of countries. The studies confirm that the conditions of local culture strongly shape the nature of innovations on the national level, therefore affecting its prosperity [Williams, McGuire, 2010, pp. 391-412].

The American and Japanese enterprises are a clear example of cultural differences that determine the changes of the enterprises' functioning. Japanese managers point to the maintenance of employment and improvement of living conditions of employees as the top priority. In their culture, expecting creativity, one should provide the appropriate conditions of employment. Therefore, in Japanese enterprises the profit is not in the first place among the organization's

goals. While American managers usually attribute the top priority to income for shareholders and the profit achieved in the current year. The satisfaction of shareholders is the condition for the managers to maintain their positions.

Akio Morita describes a situation which he found when visiting the American TV plant in the Middle West. He told its director that he should buy modern devices to increase effectiveness. He was surprised to hear the response, “that remuneration of the director depends on the financial outcomes of the enterprise and he will not make any decisions regarding the expenditure for the investment purposes, which would cause the reduction of his earnings, and would bring benefits to the next director, who will take the position in a year” [Morita, Reingold, Shimomura, 1996, p. 156]. In the United States, there is a completely different relation of the management board to the workforce or the managers of the lower level than in Japan. It is strongly subordinated to the rule of hierarchy. Morita describes that when visiting the plants of Motorola TV assembly in Illinois, one of the first things he noticed was that the offices were air-conditioned, but there was an unbearable heat in the production hall. It was obvious that the employees feel bad. The reverse situation was in the Sony company, where air-conditioning was first installed in the production halls, and only later in the offices. Morita made a very significant observation: “How can you obtain a high work quality from people in such conditions? What loyalty can be expected from them by big bosses sitting in their cool offices?” [Morita, Reingold, Shimomura, 1996, p. 157].

### **3. The influence of work environment on the creative attitudes**

Creativity requires an environment that is directed at the innovative development [Drozdowski et al., 2010, p. 76-83]. Therefore, an innovative organization should focus on several basic elements, thanks to which it is possible to free the individual’s creativity. The broadly understood communication is a significant element of the foundations of the individual’s creativity development in the organization [Wong, Pang, 2003, pp. 551-559]. A creative employee should have an environment that will support his actions and will lead to the implementation of the rationalization idea (to the organization, or more broadly – to the economy). According to the studies of Drozdowski, the frequent reason for creative individuals to retain their ideas is the lack of appreciation by the management of their initiatives or a kind of theft of these ideas by superiors involving an unauthorised signature of the original idea of the subordinate. If you combine the skills of employees with an atmosphere friendly for creativity in the enterprise, the effects of such solutions can be greater (based on the synergy rule) [Jerzyk, Leszczyński, Mruk, 2004, p. 69].

The working atmosphere is another factor determining the creative attitudes in the organization. Contact between employees and open discussion contribute to the formation of creative ideas. It is conditioned by the elimination of barriers between individual levels of the organization. Sometimes, this requires the change of the hierarchical structure into a flattened structure, which prefers team work [Williams, Yang, 1999, pp. 373-391].

The centralized management systems are less friendly for the development of creativity than the decentralized ones. For example, the rules of the economic system in the United States are simpler than in the European Union, in which the developed bureaucratic mechanisms more often inhibit creativity of entrepreneurs. One of the myths related with the structures and systems of management is the belief that the isolation of cells responsible for creativity is the best solution. The study results prove that such solutions can even limit creativity, since they are related to schemes, convenient life (assurance of regular post, permanent working time) and difficulties in measuring working effectiveness. The leadership style determines the development of creativity in the enterprise. The autocratic leader inhibits independence and individuality of employees. In his shadow, employees are not stimulated to creative thinking, because they believe that the leader will solve all problems. Leadership based on tasks and communication is a style that is more conducive to the development of creativity [Jerzyk, Leszczyński, Mruk, 2004, p. 68].

The selection of appropriate people for the right positions is another significant factor conducive to the atmosphere of creativity. No theory, plan or policy of the country ensure success to the entrepreneurship. Only people can do this. For example, what provides success to the best Japanese companies. The fact that the most important mission of the Japanese manager is to establish healthy relationships with employees, creation of a family atmosphere. Entrepreneurs that are the most successful in Japan are those that have led to the feeling of community among all employees, both those defined by the Americans as workforce, and managers and shareholders [Morita, Reingold, Shimomura, 1996, p. 115]. The management of Toyota, most successful in this respect, states that people must devote some time to realize what unique skills they have to offer to their organization [Liker, Meier, 2008, pp. 54-64]. The future employees of Toyota are carefully selected in terms of their potential skills. The management also assesses the employees in terms of their adaptation to specific positions and to the company's culture. Most of all, employees must have general skills for solving problems and a desire to work in a team. They will gain specific skills after commencing work in the company.

There is a positive relation between creative environment of the team of employees and the results of this team [Gilson et al., 2005]. In particular, trust

plays a crucial role in stimulating creativity [Wang et al., 2008, pp. 109-118] and leads to the increase in creativity in the organization [Brattström et al., 2012, pp. 743-755]. Bidault and Castello examined the relationship between trust of business partners and creativity of their joint actions. This relationship resembles a parable with its arms reversed down. The creativity of joint actions grows to a certain level along with the increase of trust. After reaching a certain level of trust, creativity of joint actions starts decreasing [Bidault, Castello, 2009, pp. 259-270].

While the ambiguity of the role of employees has a negative impact on creativity because it has an unfavourable effect on the internal motivation [Coelho et al., 2011, pp. 31-45]. In order to work efficiently, employees must know what is expected of them [Niedzielski, Rychlik, pp. 193-194]. It is particularly important to explain the obligations and tasks to the regular employees. At the same time, some conflicts of roles may have a positive impact on creativity. The role conflict cannot be avoided, for example, when employees must cope with divergent demands of people with whom they have contact, such as carers, customers and colleagues. A situation of this type requires creativity from them in order to meet expectations of the superiors and customers. Managers should focus on matching the employees' skills, their interests and types of personality to the proper tasks, so that each employee can use his experience best. Managers should also provide employees with guidelines regarding the expectations of behaviour, corresponding to the assumed implementation of the organization's goals. Lack of openness, involving the lack of discussion and constructive criticism in a team, has a negative effect on the creative attitudes and the speed of action and the potential of skilful people [Welch, 2005, p. 41]. Clear communication is an important factor affecting the creative attitudes in the organization.

#### **4. Adherence to the procedures and creative thinking**

Time management is an important factor that determines the creative attitudes. Study results suggest that planning everyday activities, long-term planning, time control and persistence have a positive effect on creativity. While disorganization is the demobilizing factor [Zampetakis, Bouranta, Moustakis, 2010, pp. 23-32]. The construction industry is a typical example, which requires creativity towards the systematic emergence of problems of a varied degree of complexity and urgency. Because fundamentally nobody can predict problems occurring in a specific project, the control list and the communication plan are a useful tool, which in detail describes who should talk to whom and about which detailed problem related to the project. The list contains guidelines who should present the specified information to whom and in what form [reports, documents, etc.) before the implementation of the next stage of work can be commenced [Gawande, 2012,

p. 88, 223, 229]. Although the majority of decision-makers is aware of the effectiveness of the control lists, still they are not used, because they require the workload, regularity and meticulousness. However, there are people who claim that the control list hinders, and its following is associated with the lack of flexibility and lack of reflection. However, the use of a well-prepared control list allows not to think about simple and boring procedures. You just need to remember to perform them. Thanks to them one can focus on more difficult things requiring creative thinking. Control lists help avoid failures in situations combining simplicity and complicated complexity. They are applied in such fields as: construction, medicine or business. Contrary to appearances, the control list contributes to the release of creativity, because it allows to focus on the most important issues. This does not mean ignoring the complexity, and allows to focus on key elements responsible for the success of the undertaking, composing material resources or the creation of teams consisting of people who – combining their knowledge, skills and abilities – lead to the effect of synergy. For example, Steve Jobs – co-founder of the Apple company, had the ability to focus on key problems and eliminate unnecessary elements. His search for simplicity did not involve ignoring the complexity. The first marketing brochure of the Apple company said: “Simplicity is the ultimate sophistication”. Steve Jobs in his actions tried to combine humanistic sciences, creativity in terms of technology, art and engineering. He did this with a great sense of the business strategy [Walter, 2012, pp. 92-102].

The creative process requires both ordering, involving the observance of the developed procedures, as well as getting rid of stereotypes. For example, success of the BMW 3-series car model in the combi version shows that creativity requires moving away from the conventional and stereotypical thinking. The company management has long resisted the idea of introducing this model, claiming that this is not the right niche for this brand. Meanwhile, the car provided to be a great market success.

Projects undertaken under the influence of a creative impulse, detached from common schemes, can lead to success. However, sometimes they may end in failure, which should also be allowed. Because the freedom to develop own ideas in the organization is a significant factor of success [Andrew, Sirkin, Butman, 2008, p. 189]. While the rationality should be distinguished from proceedings in accordance with the principles of logic. Because logic is an enemy of creativity. It is expressed in such an approach to problems, which is in line with the ways of thinking adopted in the society [Niedzielski, Rychlik, p. 195]. On the one hand, bias and stereotypes lead to making bad assumptions, but basing on logic inhibits imagination [Neil, 2009, p. 16].

## 5. Changes of the contemporaneity and the need of creativity

Understanding the usefulness of techniques and ways of creative development of problems for the purposes of making business decisions is easier, if we become aware of the changes that take place in the environment of the enterprise. These changes are referred to as the challenges of the contemporaneity. They include the thematic areas listed below [Jerzyk, Leszczyński, Mruk, 2004, pp. 63-64].

- Changes related to the buyer. Changes should be followed in the so-called macro trends related to the customer. The contemporary buyer has an easy access to information, is characterized by the growing degree of awareness, in a varied scope reacts to individual promotional instruments. In many countries there are significant demographic changes taking place, which also affect the behaviour of the buyers. The enterprises find it more and more difficult to interest the customer with their offer.

- Globalization of actions of some companies and their growing diversification, when it comes to size, scope of action, etc. Global companies are aware of the fact that the offer needs to be diversified on individual markets, which creates demand for new ideas. Smaller companies need original ways of competing with global companies, so they are searching for market niches. In this case, creative thinking is valuable.

- Development of technologies allows a quick flow of information, and at the same time new media emerge in the communication. In consequence, new possibilities in the functioning of companies emerge. It is important to discover them and respond to them.

- Intensification of competition, resulting from the maturity of many industries and markets. The decreasing pace of the GDP growth in many countries leads to the exacerbation of the fight for the customer. Companies plan to increase the turnover above the value of the GDP growth pace. The fact that customers have an increase freedom of choice is a kind of a paradox, however they are not inclined to spend money easily. In order to clearly stand out from the competition, companies should use the techniques of creative problem solving.

- Creating networks of associations between enterprises, building partnership and increasing the scope of the services provided also requires the use of creative thinking.

Creativity of actions – means that the functioning of a company is based on thinking about the future, development and expansion. Because the goal of the company is not a simple “survival”, but the development and increasing of its market value [Strużycki, 2004, p. 222]. It is extremely substantial to observe the surroundings, because the changes in it, for example new legal regulations, lead to the formation of conditions that are related to new business capabilities. In turn,



some of the present occasions for earnings disappear. The company's management must make the right decisions, choosing between sticking to the current strategy and the market needs that require departing from the original assumptions. Processes abundant in creativity are characterized by a high level of uncertainty in relation to the result, the structure of actions and the required resources [Seidel, 2011, pp. 407-446]. The Ames company, established in the USA by the Gilman brothers, is a classic example of the wrong decision concerning the departure from the current business concept. At the end of the fifties of the last century, the brothers, Milton and Irwing Gilman, had the idea to establish a new store. They came out with assumptions that the residents of the rural areas, who have done shopping in small multi-branch stores so far, would be willing to do shipping in bigger and better supplied stores. Moreover, if the clients were willing to commute from a sufficiently extensive area, such stores could offer clearly lower prices than those offered by the competition. In 1958 they opened a store, which was spectacularly successful. The clients liked the brand clothes, offered in an arranged manner and exhibited in a well-lit store. The Ames company has thus created the third or fourth discount store chain in terms of size [Carroll, Mui, 2010, p. 246]. The Gilman brothers offered their products at significantly lower prices than other stores. Over time, they enriched the assortment with electric tools and home appliances, thus changing the store into a department store. While they did not invest in the appearance of their store that they did not even remove the old signboard of the textile factory Ames – the prototype of the company. The company made a huge expansion, opening new stores in the next states. The practical rule at that time said that none chain should have stores at a distance closer than 50 km from each other, as otherwise they will compete with each other. However, the brothers decided to locate the stores much closer and stated that they mutually strengthened their presence on the market. In addition, such a solution allowed to save money on advertising and other costs. The Gilman brothers also saw that their stores can be profitable in bigger cities – however, in order to meet the clients' expectation there, they had to invest more in the decoration of the store. In 1970 they had 24 stores which generated annual income at the level of 50 million dollars. When a certain discount store got into hot water, they took it over and included into the Ames chain. The company has continually generated profits and developed fast [Carroll, Mui, 2010, p. 247]. In 1985 Ames made the biggest takeover in its history, buying the chain of discount stores of G.C. Murphy Company. Thanks to this transaction, Ames doubled its size, expanding its activities into another 14 states. However, the takeover operation did not run as smooth as planned. The key element of the organizational culture has always been the trade activity, most of all, while the administrative issues (such as accounting) were moved to a background. When the company has expanded two-fold, its systems stopped working. The problems with a punctual supply delivery emerged. In addition, the accounting system stopped

working properly, because it was not prepared for such a development of the company in such a short time [Carroll, Mui, 2010, pp. 246-249]. The management of the Ames company made a mistake by expanding its activity to the market of the entire United States (so far, the traditional region of its operation was the northern-east part of the country). The chain of Ames stores was finally liquidated in 2002.

In turn, the Sony company is an example of the fact that leaving the current activities too late may be a mistake. The company has been affected by the consequences that it has switched into the manufacturing of the LCD and plasma TV sets too late. Sony has produced colour CRT TV sets for a long time. The Sony receivers with the CRT monitors introduced at the end of the 1960s were very profitable at that time and allowed the company to become the biggest manufacturer of colour TV sets in the world. Over time, the era of LCD and plasma TV sets came. In the mid-1990s, it was not a real threat for Sony, and the company was still very successful in the production of CRT TV sets. The limitation of the activities, which has brought so much success to the company for such a long time, proved to be extremely difficult for Sony. This has led to the delayed shift of the company into LCD and plasma TV sets [Andrew, Sirkin, Butman, 2008, p. 208].

The history of the Eastman Kodak company [Carroll, Mui, 2010, pp. 134-156] also shows that a too slow reaction to the ongoing changes can also be catastrophic. Kodak has functioned perfectly for over 100 years. In 1888, George Eastman presented his first photographic camera. It was sold at a price of 25 dollars, and the client received 100 frames in the set. The buyer, after taking photos, sent the camera back to the company. The photos were developed there and sent back to the customer along with the camera equipped with a new film. This system has brought a market success to Eastman. The company has quickly facilitated the production of the camera and introduced more modern models. In 1898, the price of the camera was only 1 dollar, and a film was available for 15 cents. In 1981, the Sony Corporation company introduced the first digital camera. The management of the Kodak company was convinced that the new technology is not able to threaten traditional photography, because the quality of electronic copies was lower than copies made in a traditional manner. Home printing systems could not compete with the commercial services of developing photos at that time. Moreover, the management of Eastman Kodak believed that the consumer feels a need to have copies, which he can hold in his hand. It did not take into consideration that the development of new technologies will take place in the geometrical progress. In the 1990s, this development has greatly weakened the position of traditional photography. The quality of digital cameras has clearly improved, and what is important – their price has significantly decreased. The quality of printers started improving. The Internet got widespread, which enabled sending digital photos instead of printing. The possibilities of posting photos online have also appeared. Kodak treated digital photography as an enemy, which will

destroy the industry of chemicals and photographic paper, meaning what constituted the main source of its profits. The company tried to stick to traditional activity as long as it was possible. Meanwhile, after 2000 the digital revolution gained enormous momentum. In 2002, in the United States, more digital cameras were sold than the traditional ones for the very first time. Too long delay of the shift into the digital photography and lack of appreciation for its potential has led to the situation in which Kodak has lost its dominant role on the market of photographic cameras. If the decision-makers reacted in time to changes, they could sell the company at a much more favourable price before the dissemination of the digital era. The Agfa company did so, the main competitor of Kodak on the market of film and paper. It has sold the unit dealing with film and paper to private investors. In turn, the Fuji company has totally shifted into digital photography. By the way, Fuji developed a technology that was the basis of the flat matrices used in flat TV sets and screens.

The companies often perceive the future as an evolutionary variant of the present. They are not aware that the incoming changes may lead to the liquidation of the market on which they function. The Polaroid Corporation also fell into this trap, which delayed the entry into the market of digital cameras. The basic activity of the company involving the sale of cameras for taking instant photos generated 60% of the margin, while the margin from the sale of digital cameras was estimated only at the level of 38%. The company, instead of shifting to the digital photography, tried to look for the market for the instant development of photos on foreign markets. Meanwhile the users of Polaroid, which often included the insurance companies' appraisers, shifted to the digital photography. As a result, the company had to declare bankruptcy [Carroll, Mui, 2010, p. 156].

But also each new idea can be a cause of the company's troubles, if it treats it as the final solution. Because the classic stereotype has to be overcome, if someone develops a new product – e.g. at the time a typewriter – it is hard to acknowledge that it will disappear of the market one day. This is very well illustrated by the sentence uttered by W. Churchill: "if you do not grab the change by the hand, in time it will grab you by your throat" [Jerzyk, Leszczyński, Mruk, 2004, p. 66].

In business, it is very important to focus on the well-identified challenges. This does not only mean undertaking the right initiatives, but also the elimination of projects that will not bring profits. Decisions related to the continuation or cessation of works on the project are usually difficult, because they are associated with emotions [Andrew, Sirkin, Butman, 2008, p. 204]. Works in the Sony company have been stopped numerous times, on which plenty of money has been spent. It is much better to do this in time than to allow the continuation of works with no trade perspective and meaning the further waste of money. The key to success is to realize when the works on the new product should be continued, and when they should be stopped [Morita, Reingold, Shimomura, 1996, p. 212]. The Ford and GM companies were the

first ones to start working on the concept of a minivan, but they quit from introducing this type of a car, being afraid that it will prove to be a “cannibal” for their own combi models. Chrysler benefited from their decision, which in 1984, although on the edge of bankruptcy, introduced a minivan into the market as a completely new type of vehicle. Minivan was smaller than a delivery car, and at the same time offered a greater space than the combi model. In addition, it was easier to drive, had more space inside, and despite this it fit in the garages provided for personal cars. Already in the first year of production, the minivan took the place of the best-selling Chrysler car [Kim, Mauborgne, 2005, p. 280-281].

Asking the right questions about the new idea has basic significance in the creation of the concept of the product or business model. Dr Siegfried Dais from Bosch expressed this as follows: “The most complicated thing is to ask questions about what will be decisive in five years” [Andrew, Sirkin, Butman, 2008, pp. 177-178]. Therefore, knowledge and experience gained in the professional work are an important factor allowing the recognition of business occasions.

Changes in the business environment reveal new winners and losers. The example is an American automotive market in the 1970s. The energy crisis and the associated high petrol prices provided the Toyota company with the advantage over the American car manufacturers. The clients loss interest in large cars in favour of smaller ones more economical in terms of usage, such as, e.g., Toyota, Honda [Rothman, 2001, p. 167].

The so-called “Blue Ocean Strategy” plays a huge role in the creative actions. “Blue Oceans” mean the industries that do not exist today. It is an unknown market area [Kim, Mauborgne, 2005, pp. 18-19]. In the already known, so-called “Red Oceans”, the industry boundaries are determined and adopted, and the rules of competitive games are known. Here, the companies try to attract their rivals and take the bigger part of the existing demand. As the market area becomes more and more crowded, the perspectives of profit and growth are more and more limited. The products become the standard goods, and the competition fights for life and death. Some “Blue Oceans” are created outside the existing industry boundaries, however the majority is created from the part of “Red Oceans” by expanding the boundaries of the existing industries. In “Blue Oceans”, the competition is insignificant, because the rules of the game are yet to be set. The companies must go beyond the framework of competing. In order to gain new profits, the companies should create “Blue Oceans”.

The offer of Ford T is an example of a successful application of the “Blue Ocean Strategy”. Before its debut, its competitors tried to develop luxurious cars for weekend excursions. Unfortunately, bumpy and muddy roads, dominating at the beginning of the 20th century, natural for horse-riding, often proved to be impassable for delicate and elegant cars. This limited the time and places that could be reached by a car. A rainy or snowy time made it difficult to use a car. At the same time, the then cars

often broke down, and their repairs required the assistance of mechanics, who were expensive and hard to reach. The T model of Ford at the same time eliminated these two problems. It was called the car for any occasion. It was produced only in one colour (black) and in one model with a limited number of options. Instead of a car for weekend trips out of town, Ford developed a car for everyday use, reliable and solid, and at the same time easy to repair and use. According to assumptions, it could be driven on field roads in various weather conditions, and it was possible to learn its operation during one day [Kim, Mauborgne, 2005, pp. 18-19].

The differentiator of the innovative company is not only the fact that it is the first one to come out with new ideas. Knowledge and skills of overcoming the competitors are the most important, when the company is behind. When implementing iMac computers to the market, Apple focused on the possibilities of the users to manage photos and films. It neglected the management of music files. In turn, its competitor enabled the users of personal computers to download and exchange music and record own CDs. The users of iMacs could not record CDs. Apple instead of catching up by equipping iMac with CD drives, decided to develop an integrated system, which was to transform the music industry. The result was the combination of the iTunes, iTunes Store solutions with an iPod, which allowed the users to buy, share, collect and play music more conveniently than on the devices offered by the competitors [Walter, 2012, pp. 92-102].

When a new breakthrough technology appears on the horizon, not many people really realize how to use it properly. Only the next generations of entrepreneurs introduce this innovation into life. Below there are a few examples. The first one – throughout the 1990s, the search engines did not use the existing networks of relations combining various websites, this technology has been implemented only in the Google search engine [Brandt, 2011, p. 49]. The second one – it was not Apple that came up with the idea of developing a portable digital music player, i.e. iPod [Andrew, Sirkin, Butman, 2008, pp. 57-58]. Several companies have introduced such devices into the market before Apple, among others, the Diamond company, which released the Rio player, as well as the manufacturers of Compaq computers, which constructed a prototype of a player with a hard disk, with numerous the same parameters as the first iPod. The factor that influenced the success of the iPod was not the attractive design, but also the skilful management of the costs. When implementing the iPod, the company managed to maintain low initial costs [Andrew, Sirkin, Butman, 2008, p. 58]. Another factor that contributed to the success of the iPod was the great pace of works on its implementation on the market, it took Apple less than a year. The company has greatly relied on the suppliers and partners within the manufacturing capabilities and expert knowledge. It has also applied many finished components [Andrew, Sirkin, Butman, 2008, p. 59]. Apple turned to PortalPlayer, a small company which has already developed a project of iPod and convinced it to drop its

other clients and focus only on the iPod. For the next few months, Apple has cooperated closely with PortalPlayer and other main suppliers on the expansion of the prototypes and their design.

The creative activity involves the use of ideas from various sources. The example of the iPod shows that new products are created by combining the already existing concepts and elements [Neil, 2009, p. 17]. In the phase of the product development, Apple agreed with Toshiba Corporation, the only world supplier of hard disks used in the iPod, that it will buy its whole production for 18 months. In this way, it has not only received a more favourable price, but it has also secured itself against the potential competition, in case if it wanted to introduce a product competitive for the iPod in a short time. Thanks to this, Apple could focus on building the market, instead on fighting to make the iPod stand out from among other similar products. Taking over of the almost entire market, with high prices, has greatly increased its profits [Andrew, Sirkin, Butman, 2008, p. 60].

## **6. Manifestations of creativity in terms of modification and creation of new structures**

Creativity can also concern the changes leading to the increased effectiveness of employees, for example, by reducing redundant activities. Ford, after implementing the T model, was not able to meet the demand for this car. The launch of a bigger factory did not help. Over time, it found a way to facilitate the production process – using a conveyor belt, it sped up the work of the employees. Before the introduction of the mounting belt, the worker dealt with the assembly of the whole car. The modification of the organization of the production meant that workers moved from one partly assembled car to the next one, every time adding the same component to it. Then, this process has been improved by placing all elements on moving belts, thanks to which all elements came directly to the workers' stations, saving their time. Because of this, the T model won one-third of the car market in America [Rothman, 2001, p. 24].

Revolutionary ways of increasing the productivity can also concern the modification in the management of the material resources of the enterprise. The example of such a modification is the delivery model just-in-time developed by Toyota. It involves a new system of material supply, within which the parts are provided with omission of the warehouse, directly to the mounting belt, but only according to the needs, i.e. "just in time" [Rothman, 2001, p. 166].

Finally, creativity can concern the development of a new business model, not used so far. The McDonald's company is an example here. Its financial success emerged only when the company commenced the franchise system and focused on gaining profit from real estates. In the 1950s, Ray Kroc, the salesman of equipment for mixing

dairy cocktails, came to the hamburger bar belonging to the McDonalds brothers. The bar was characterized by low prices, limited menu and great interest from the customers. Ray Kroc made an offer to McDonalds brothers concerning the expansion of their chain. The proposed solution meant that the brothers would not need to incur the costs of the expansion of the chain. Kroc was to sell licences to franchisees and taken less than 2% of commission from turnover from them. 30% of the amount taken from the licence recipients was to be given to the McDonalds brothers. Ray Kroc started from establishing the company product. He applied a strict specification of the product, he imposed a harsh quality control, which lead to the fact that all dishes served in all bars have always been the same, regardless of the location. Only the entrance of the McDonald's into the real estate market provided the company with solid bases. At first, it leased, and then purchased plots, where the restaurants were to be created. The basic rent for franchisees was calculated based on the real costs of real estate, adding 40% margin, whereas the amount of the rent also included the percentage from turnover after exceeding a certain level of sales. The company has also required cash deposits from the licence recipients, which created the company's fund for the purchase of the next plots. This solution proved so significant that one of the stock market analytics stated that the domain of the McDonald's company is not fast food, but real estate [Craig, 2002, pp. 75-76].

Another example of the Green Tree company shows that the creation of a new business model decides about the success or failure of the undertaking. Green Tree thanks to several innovative solutions facilitates access to own house made of prefabricates to people whose earnings were in the average and low range. This has led to a rapid increase in the sales of houses made of prefabricates. In 1991-1998, the annual sales of this type of houses increased almost twice. The problem was that the Green Tree company made a mistake by granting long term, 30-year credits to secure short-term assets [Carroll, Mui, 2010, pp. 64-70]. Thanks to this, the monthly rate of the mortgage credit was similar to the monthly rental cost. The previous standard for granting mortgage credits was 15 years. In 1997, the average crediting period by the Green Tree company was 25 years. The houses of prefabricates, contrary to the traditional houses, lose their value faster. Traditional houses even during crisis usually keep a substantial part of its value. Meanwhile the life cycle of a house made of prefabricates is estimated at 10-15 years, and the value of such a house is rapidly decreasing, while the amount of the credit granted for 30 years is decreasing very slowly. After a few years, there was a situation that the value of the credit exceeded the price of the house. Therefore, the company has unconsciously taken on a huge risk associated with credits. As long as there were people willing to buy the houses, the company had resources to finance the credits, but in 1997 its business model stopped working. The number of unpaid credits started increasing, when the borrowers realized that the amount remaining to be paid exceeds the value of the house.

One of the previously mentioned characteristic features of modern economy is the exceptionally fast development of new information and communication technologies. Especially the Internet created the possibility of conducting a totally new business model based on the cooperation of a greater number of people that can easily undertake cooperation or resign from it. The example of the Internet bookstore Amazon.com shows that the activity online can be more profitable thanks to the service of the international market from the centralized place of orders and distribution. The advantage of the online sale is the easy accessibility to books: “You can build an online store, which simply cannot exist in any other way. You can create a huge supermarket, with exhaustive collection of titles, which will satisfy the tastes of every customer” [Spector, 2000, p. 26]. The prevalence of trade online over traditional trade is the fact that the bookstore can be programmed in such a way, to prepare individual offers for customers for a small fee, at the same time collecting information on the preferences of each buyer. This, in turn, allows to build, in a shorter time than in the case of traditional bookstores, a huge customer base, individualization of service and achievement of higher income in a long period of time [Spector, 2000, p. 26].

## 7. Summary

The family environment is an important factor affecting the creativity and intentions concerning entrepreneurship [Zampetakis, Moustakis, 2006, pp. 413-428]. The feature that distinguishes creative managers from non-creative ones is the temporal orientation and concentration on strengths. Creative managers seek strengths in themselves, while non-creative ones outside, valorising others [Szopiński, 2007].

The love for the work performed is a shared feature of creative individuals. Fame or money is not the factor prompting them to act, but the possibility of performing work that brings them joy [Csikszentmihalyi, 2001, p. 158]. When Steve Jobs with his team designed an original Mackintosh computer in the 1980s, his motto was to make this product “exceptionally great”. He has never spoken about maximizing the profit or cutting the costs. He has focused on the product claiming that profits are the secondary issue [Walter, 2012, pp. 92-102].

The societies enjoying greater freedom and valuing courage usually have a higher overall level of creativity in terms of economy. Because freedom gives people a chance to get involved in the creative activity. This is also usually associated with the proprietary copyrights that allow to use the fruit of this work. The inherent timidity provides the people with courage necessary to make risky innovative undertakings [DiPietro, 2003, pp. 37-45].

The centres, in which the creative attitudes are developed, are characterized by, among others, openness to multi-culturalism, and thus the accumulation of



information and ideas that come from many cultures, which can be freely exchanged. The example is the ancient Egypt, Florence in the Renaissance epoch, Paris, London and Vienna in the 19th century or New York in the 20th century [Csikszentmihalyi, 2001, p. 202].

The studies by DiPietro and Anoruo [2006, pp. 133-139] show that creativity of a given country, innovativeness, level of technological development, transfer of technologies from another countries and development of new companies are positively correlated with the economic success of this country internationally, involving the increase in the value of its export. This suggests that the promotion of creativity and its components can be a path leading to the economic growth. Therefore, the impulses that favour creativity should be prepared and implemented, which will translate into the economic growth and the future development. Impulses, such as tax incentives and investment credits should be offered to companies in order to get them involved in research and development.

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# WYKORZYSTANIE PRACOWNICZYCH PROGRAMÓW EMERYTALNYCH W ZARZĄDZANIU ZASOBAMI LUDZKIMI<sup>1</sup>

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## 1. Wprowadzenie

Starzenie się ludności jest zjawiskiem obecnie powszechnym i pogłębiającym się w krajach wysoko rozwiniętych. Wiąże się ono z wieloma implikacjami społecznymi i gospodarczymi. W oczywisty sposób trendy te odczuwalne są nie tylko w skali całych krajów, ale również poszczególnych przedsiębiorstw. Struktura wiekowa siły roboczej wpływa bowiem na różne aspekty działalności przedsiębiorstw. Zjawiska te stanowią nowe i coraz bardziej istotne wyzwania dla menedżerów także, a być może przede wszystkim, w zakresie zarządzania kapitałem ludzkim.

Wraz ze zjawiskiem starzenia się populacji coraz powszechniejszy staje się problem niskich emerytur z systemów publicznych (obowiązkowych). W obliczu tych procesów na znaczeniu zyskują dodatkowe źródła dochodu emerytalnego, tj. oszczędności indywidualne oraz oszczędności gromadzone w ramach pracowniczych programów emerytalnych. Popularność ostatniej z wymienionych kategorii jest zróżnicowana w przekroju krajów i zależy w dużym stopniu od wprowadzonych rozwiązań prawnych i instytucjonalnych oraz tradycji i historii. Przykładowo, w Polsce pracownicze plany emerytalne nie są jeszcze upowszechnione, niemniej jednak niedawno wprowadzone regulacje dotyczące quasi-obowiązkowych pracowniczych planów kapitałowych (PPK) mogą zmienić ten stan rzeczy. Można wyróżnić również kraje, gdzie udział programów pracowniczym w zabezpieczeniu emerytalnym jest znaczący. Np. w USA ponad 70% pracowników przedsiębiorstw sektora prywatnego ma możliwość oszczędzania na emeryturę w tego typu planach, przy

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czym 80% z tej grupy faktycznie uczestniczy w programach emerytalnych [Rau i Adams, 2012, s.122].

Ja wskazano w pracy [Lee i in. 2017] w literaturze przedmiotu tematyka przechodzenia na emeryturę w kontekście zarządzania zasobami ludzkimi (ZZL) podejmowana była dotychczas głównie w trzech obszarach. Pierwszy z nich dotyczy praktyk i procedur wdrażanych w przedsiębiorstwie w odpowiedzi na ryzyko wystąpienia kadrowych niedoborów jako wyniku odchodzenia na emeryturę. Drugi z podejmowanych w literaturze wątków związany jest głównie z aspektami kulturowymi w organizacji. W ramach tego obszaru prowadzone są badania, jak dojrzały wiekowo pracownicy są postrzegani przez współpracowników i menedżerów, ale również, jak oni sami siebie postrzegają przez pryzmat wieku, a także, jak wpływa to na ich wybory związane z karierą zawodową, w tym wcześniejsze lub późniejsze przejście na emeryturę. Trzeci z wymienionych nurtów badawczych dotyczący zarządzania w przedsiębiorstwie w kontekście problematyki emerytalnej dotyczy powiązania działań podejmowanych na poziomie organizacyjnym z rozwiązaniami instytucjonalnymi i prawnymi na poziomie krajowym w celu osiągnięcia założonych rezultatów na poziomie organizacyjnym i indywidualnym. Choć w ramach tej problematyki w literaturze przedmiotu dominują badania, które koncentrują się na dojrzałych pracownikach, tj. w okresie przedemerytalnym, to można też rozszerzyć ten wątek o planowanie emerytalne w przebiegu całej kariery zawodowej, również na jej wczesnych etapach. W tym kontekście rozważać można rolę pracowniczych programów emerytalnych w zarządzaniu zasobami ludzkimi w organizacji. Programy takie są rozwiązaniami mocno determinowanymi na poziomie krajów. Specyficzne dla danego kraju prawne rozwiązania przewidziane w ramach dobrowolnego lub obowiązkowego systemu emerytalnego mogą stanowić o większym lub mniejszym potencjale pracowniczych programów emerytalnych jako jednego z instrumentów wykorzystywanych w obszarze ZZL na poziomie przedsiębiorstw do motywowania, pozyskiwania nowych pracowników, ich utrzymania itd.

Niniejsza praca wpisuje się w wyżej wspomniany zakres tematyczny. Podejmowana tu problematyka odnosi się przede wszystkim do programów emerytalnych, w których pracodawca organizuje program emerytalny i występuje jako podmiot wnoszący składkę, samodzielnie, lub na zasadzie współdzielenia jej z pracownikiem. Na potrzeby podjętych rozważań przyjęta zostanie definicja pracowniczego programu emerytalnego zaproponowana przez OECD, określająca taki program jako plan oszczędzania na starość, do którego dostęp jest powiązany ze stosunkiem pracy między uczestnikiem planu a podmiotem tworzącym plan (sponsorem) [OECD, 2005, s. 12].

Zgodnie z wyszczególnieniem przedstawionym w pracy [Garcés-Galdeano i in., 2016, s. 111] pracowniczy program emerytalny z perspektywy zarządzania zasobami ludzkimi można postrzegać jako:

1. Składnik wynagrodzenia z odroczoną płatnością (na emeryturze).
2. Element systemu motywacyjnego będący dodatkową finansową zachętą.
3. Instrument zwiększający konkurencyjność przedsiębiorstwa na rynku pracy.

Cel niniejszej pracy można nakreślić dwojako. Po pierwsze jest nim wskazanie możliwości i uwarunkowań wykorzystania organizowanych przez pracodawców pracowniczych programów emerytalnych w obszarze zarządzania zasobami ludzkimi. Jest to temat w bardzo ograniczonym zakresie eksplorowany dotychczas w literaturze przedmiotu, zarówno od strony empirii, jak i teorii. Po drugie, niniejsza praca odnosi się wprost do polskich przedsiębiorstw i ma na celu zbadanie, ocenę i porównanie pod kątem potencjału dla potrzeb prowadzenia polityki kadrowej dwóch rodzajów pracowniczych planów emerytalnych dopuszczonych przez ustawodawcę w Polsce, z których jeden działa od 1999 r., zaś drugi ma w założeniu powszechnie funkcjonować w Polsce od 2019 r.

## **2. Uczestnictwo w pracowniczych programach emerytalnych a polityka kadrowa – teoria i wcześniejsze badania empiryczne**

Podstawowym celem funkcjonowania pracowniczych programów emerytalnych jest z uzupełnienie dochodu w okresie starości, po zakończeniu kariery zawodowej. Jest to cel tym bardziej istotny, im mniejszą adekwatnością dochodową charakteryzuje się powszechny system emerytalny. Jest to jednocześnie cel rozpatrywany z punktu widzenia finansów osobistych jednostki (pracownika) w perspektywie dochodu w cyklu życia. Niemniej jednak, dodatkowe pracownicze programy także mogą być wykorzystywane jako instrument polityki kadrowej, a tym samym służyć również celom pracodawcy. Programy te, stanowiące pozapłacowy element systemu wynagradzania, przede wszystkim podnoszą atrakcyjność (konkurencyjność) pracodawcy na rynku pracy, co ważne jest zarówno na etapie rekrutacji nowych pracowników, jak i utrzymania dotychczasowych. W pracy [Szczepański, 2010, s. 267] wyróżniono następujące cele w obszarze zarządzania zasobami ludzkimi, do których realizacji przyczyniać się może wdrożenie pracowniczego programu emerytalnego:

- zatrzymanie odpływu personelu, w tym kadry o wyższych kwalifikacjach, poprzez zwiążanie pracownika z zakładem pracy;
- poprawa atmosfery w pracy oraz zwiększenie motywacji pracowników do pracy;
- poprawa wizerunku pracodawcy jako podmiotu dostrzegającego potrzeby pracownika oraz dbającego o zaspokojenie tych potrzeb;
- kształtowanie polityki kadrowej związanej z pracownikami w wieku przedemerytalnym i emerytalnym.

Ostatni z wymienionych punktów wpisuje się bezpośrednio w koncepcję zarządzania wiekiem (*age management*) w przedsiębiorstwie, czyli wszystkich działań zorientowanych na optymalne wykorzystanie potencjału starszych pracowników [Walker, 2005]. Z tej perspektywy fakt posiadania oszczędności w pracowniczym programie emerytalnym – w sytuacji, gdy przedsiębiorstwo chce zwolnić stanowisko zajmowane przez starszego pracownika i zatrudnić na to miejsce np. osobę o wyższych kompetencjach lub/i o wyższej wydajności – może pozytywnie wpływać na zmniejszenie obaw starszych pracowników dotyczących przejścia na emeryturę. Jednakże, jak wskazano w pracy [Terry i White, 1998, s. 21] przydatność programu emerytalnego jako instrumentu ułatwiającego taką politykę kadrową zależy silnie od jego specyfiki. O ile w programach o zdefiniowanym świadczeniu (DB – *defined benefit*) jest to łatwiejsze, o tyle popularniejsze obecnie programy o zdefiniowanej składce (DC – *defined contribution*) mogą nie spełniać tego zadania.

**Tabela 1.** Efekty prowadzenia pracowniczych programów emerytalnych z punktu widzenia polityki kadrowej w świetle wybranych teorii

Teoria	Autor	Objaśnienia
Teoria hierarchii potrzeb	[Maslow, 1954]	Uczestnictwo w programie emerytalnym zaspokaja potrzebę bezpieczeństwa pracownika. Korzyść postrzegana przez pracownika, a tym samym motywacyjny potencjał programu, będą tym większe im większy wzrost poczucia bezpieczeństwa. Nie będzie to najsilniejszy z bodźców motywacyjnych ze względu na pozycję bezpieczeństwa w hierarchii potrzeb.
Teoria ERG	[Alderfer, 1972]	Uczestnictwo w programie emerytalnym zaspokaja potrzeby egzystencjalne pracownika. Jego efektywność jako bodźca motywacyjnego jest niezależna od współwystępujących bodźców motywacyjnych zorientowanych na wypełnienie potrzeb wyższego rzędu.
Teoria dwuczynnikowa	[Herzberg i in., 1959]	Uczestnictwo w programie emerytalnym jako element w grupie czynników higienicznych nie wpływa na podwyższenie poziomu zadowolenia, a jedynie na obniżenie niezadowolenia pracowników z warunków pracy.
Teoria sprawiedliwości	[Adams, 1965]	W przypadku zróżnicowania dopłat pracodawcy do planów emerytalnych ze względu np. na wynagrodzenie, staż pracy lub posiadane stanowisko, uczestnictwo w planie emerytalnym może być źródłem motywacji i zadowolenia z warunków pracy dla pracownika lub też źródłem frustracji i niezadowolenia.
Teoria kosztów transakcyjnych	[Coase, 1937]	Program emerytalny występuje jako element specyficznych aktywów, dzięki którym przedsiębiorstwo obniża koszty transakcyjne związane z zakupem i utrzymaniem zasobów pracy. Uczestnictwo w programie emerytalnym dla pracownika wiąże się z utratą spodziewanych korzyści płynących z kontynuacji oszczędzania w przypadku zmiany pracy.

Źródło: opracowanie własne na podstawie [Jedynak, 2010, ss. 32-34] oraz [Szczepański, 2010, ss. 268-268].

W tabeli 1 przedstawiono przegląd teorii, które odnoszą się przede wszystkim do potrzeb pracowników. Można przyjąć, że dany program emerytalny będzie tym atrakcyjniejszy dla pracownika, im bardziej będzie odpowiadał jego preferencjom i potrzebom. Z kolei to subiektywne postrzeganie przez pracownika ma bezpośrednie przełożenie na skuteczność tego instrumentu w realizacji założonych celów polityki kadrowej.

Sformułowany powyżej wniosek wynikający z przedstawionych teorii można poprzeć również wynikami badań empirycznych. W przypadku dodatkowego zabezpieczenia emerytalnego dostępnych jest wiele rozwiązań, które charakteryzują się większym lub mniejszym zakresem decyzji pracownika. Wśród wielu pracowniczych programów emerytalnych funkcjonujących w różnych krajach można w szczególności wyróżnić takie, w których pracownik musi wyrazić chęć uczestniczenia oraz takie, w których objęty jest programem automatycznie, bez możliwości rezygnacji (lub z mocno ograniczoną możliwością rezygnacji). W pierwszym z wymienionych przypadków, w sytuacji, gdy część pracowników odrzuca uczestnictwo w pracowniczym programie emerytalnym jego potencjał jako instrumentu polityki kadrowej jest z oczywistych względów ograniczony. Dlatego też, aby dany program rzeczywiście efektywnie wspierał zarządzanie zasobami ludzkimi w firmie musi być przede wszystkim postrzegany przez pracowników jako atrakcyjny. W pracy [Dummann, 2007] na podstawie przeglądu wcześniejszych badań oraz własnych analiz zidentyfikowano powody, dla których pracownicy odmawiają najczęściej uczestnictwa w programie emerytalnym oferowanym przez pracodawcę. Głównych przyczyn takich postaw należy szukać w niedostosowaniu samych programów emerytalnych do potrzeb pracowników lub też wiążą się one z obawami dotyczącymi opłacalności i ryzyka związanego z długoterminowym oszczędzaniem. Autorzy zwracają również uwagę na zależność między chęcią uczestniczenia w dodatkowym planie emerytalnym oferowanym przez pracodawcę a indywidualnymi czynnikami, takimi jak motywacja i potrzeby. Jak wskazano w pracy [Rau i Adams, 2012] oprócz oferowania programów emerytalnych, przedsiębiorstwa w ramach prowadzonej polityki kadrowej również podejmują działania nakierowane na edukację finansową swoich pracowników, w szczególności dotyczącą długoterminowego planowania finansowego. Należy również podkreślić, że polityka komunikacji pracodawcy z pracownikami w zakresie pracowniczych programów emerytalnych, która zwykle należy do kompetencji działów ZZL, ma ogromne znaczenie dla postrzegania takich programów, co przekłada się na poziom uczestnictwa, wyniki oszczędzania, a w konsekwencji na pozytywne efekty w obszarze zarządzania zasobami ludzkimi np. większą satysfakcję pracowników, zatrzymanie wartościowych pracowników itp. [Maloney i McCarthy, 2017].

Dotychczas prowadzone badania empiryczne rzadko odnosiły się wprost do korzyści (lub też braku korzyści), jakie przedsiębiorstwa notują w związku

z prowadzeniem pracowniczych programów emerytalnych. Jak wcześniej stwierdzono, pracowniczy program emerytalny może być postrzegany jako jeden z całej gamy instrumentów zarządzania zasobami ludzkimi. Wśród nielicznych publikacji, w których analizowano to zjawisko, można wymienić pracę [Garcés-Galdeano, 2017]. Na podstawie szeroko zakrojonych badań dotyczących hiszpańskich przedsiębiorstw, wykazano w niej, że firmy, które stosowały bardziej innowacyjne rozwiązania w zakresie ZZL, angażowały się w organizację szkoleń, oferowały bardziej hojne świadczenia socjalne i zachęty finansowe, jednocześnie były tymi podmiotami, które chętniej wdrażały pracownicze programy emerytalne. Badania te dowiodły również, że pracownicy-uczestnicy planów emerytalnych niezależnie od zajmowanego stanowiska i płacy wykazywali wyższy poziom satysfakcji z pracy oraz byli mniej skłonni zmienić miejsce pracy w porównaniu do pracowników nieuczestniczących w programie emerytalnym.

Nieco inne spojrzenie tj. z perspektywy sektorów gospodarki, na problematykę funkcjonowania pracowniczych planów emerytalnych w kontekście zarządzania zasobami ludzki przedstawiono w pracy [Munnell i in., 2015]. Autorzy, na podstawie szeroko zakrojonych badań empirycznych prowadzonych w odniesieniu do amerykańskiego rynku pracy, wysunęli wniosek, że ograniczanie świadczeń emerytalnych dla pracowników sektora publicznego powoduje odpływ wysoko wykwalifikowanej kadry na rzecz przedsiębiorstw sektora prywatnego, a także zniechęca pracowników do przechodzenia z sektora prywatnego do publicznego. Wynika to ze wspomnianego wcześniej dużego upowszechnienia pracowniczych programów emerytalnych w sektorze prywatnym i świadczy jednocześnie o tym, że program emerytalny jako poza-płacowy element wynagradzania ma dla pracowników duże znaczenie.

Ciekawe analizy empiryczne dotyczące omawianej problematyki zaprezentowano również w pracy [Werner i in., 2016]. Na podstawie wyników badań przedsiębiorstw z branży przewozowej w USA zaobserwowano, że wdrożenie programów emerytalnych może być sprzężone nie tylko z polityką kadrową, ale też z celami strategicznymi firmy. Przykładowo, firmy oferujące plany emerytalne były atrakcyjne dla pracowników (kierowców) preferujących mniej ryzykowny styl jazdy, co przekładało się na mniejszy odsetek wypadków w skali przedsiębiorstwa i tym samym pozytywnie wpływało na wyniki firmy.

### **3. Pracownicze plany emerytalne w Polsce**

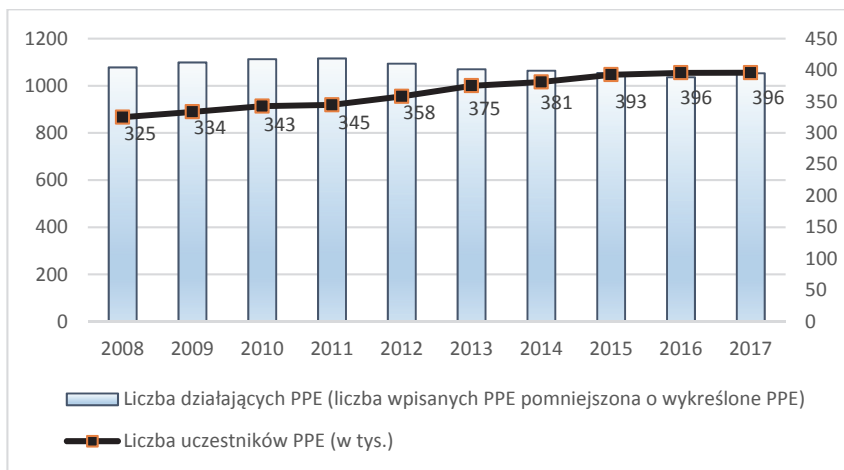
Tworzenie pracowniczych programów długoterminowego oszczędzania na starość zostało prawnie uregulowane w Polsce w 1999 r. Wówczas, wraz z reformą obowiązkowego systemu emerytalnego wprowadzającą otwarte fundusze emerytalne (OFE), zaczęły obowiązywać przepisy umożliwiające pracodawcom



na zasadach dobrowolności tworzenie programów zwanych pracowniczymi programami emerytalnymi (PPE). Mogą one przyjmować następujące formy:

- pracowniczego funduszu emerytalnego (PFE) zarządzanego przez pracownicze towarzystwo emerytalne;
- funduszu inwestycyjnego zarządzanego przez towarzystwo funduszy inwestycyjnych;
- umowy grupowego ubezpieczenia na życie z funduszem kapitałowym zawartej z zakładem ubezpieczeń na życie.

Dwie pierwsze z wymienionych form mają charakter inwestycyjny, zaś trzecia – ubezpieczeniowo-inwestycyjny.



**Rys. 1.** PPE w Polsce w latach 2008-2017

*Źródło: opracowanie własne na podstawie [KNF, 2018, s. 8].*

Na rysunku 1 zaprezentowano, jak na przestrzeni ostatnich 10 lat kształtowało się uczestnictwo w pracowniczych programach emerytalnych, zarówno w odniesieniu do liczby zakładanych programów PPE, jak też liczby osób objętych pracowniczymi programami emerytalnymi. Według danych KNF [KNF, 2018, ss. 11-15] w ostatnich latach w Polsce prowadzonych jest nieznacznie powyżej 1000 programów, z których większość (ok. 45%) funkcjonuje w przedsiębiorstwach zlokalizowanych na terenie województw: mazowieckiego, śląskiego i wielkopolskiego. Około 50% przedsiębiorstw, w których wdrożono PPE, stanowią spółki z ograniczoną odpowiedzialnością, zaś kolejne 25% to spółki akcyjne. Połowa firm oferujących PPE zatrudnia poniżej 50 pracowników. Jednocześnie 1/3 pracodawców płaci składkę w maksymalnej wysokości 7% wynagrodzenia pracownika (dane za lata 2016 i 2017). Pracowniczymi programami emerytalnymi w Polsce objętych jest blisko 400 tys. osób, co stanowi tylko około 3% ogółu zatrudnionych (dane Eurostat za 2017 r.).

Od połowy 2019 r. w Polsce zacznie funkcjonować w nowa forma pracowniczych programów długoterminowego oszczędzania tj. pracownicze plany kapitałowe (PPK). Mają one być obowiązkowo tworzone przez przedsiębiorstwa, natomiast uczestnictwo pracowników będzie quasi-obowiązkowe (automatyczny zapis z możliwością rezygnacji). Programy te mają w założeniu objąć wszystkie osoby zatrudnione, z tym, że proces ich wdrażania jest rozłożony na 2 lata. Od 1 lipca 2019 r. PPK ruszą w przedsiębiorstwach zatrudniających co najmniej 250 osób, od 1 stycznia 2020 – co najmniej 50 osób, od 1 lipca 2020 – co najmniej 20 osób, a od 1 stycznia 2021 – w pozostałych podmiotach oraz jednostkach sektora finansów publicznych.

W obecnym stanie prawnym możliwe jest, aby przedsiębiorstwo, które prowadziło PPE przed wyżej wymienionym terminem obligatoryjnym było zwolnione z obowiązku utworzenia PPK. Dodatkowe warunki, które muszą być spełnione w tym przypadku obejmują wymóg składki w wysokości co najmniej 3,5% podstawy wymiaru w ramach PPE oraz uczestnictwa w programie co najmniej 25% załogi.

Pracownicze plany kapitałowe, podobnie jak pracownicze programy emerytalne, mogą być zarządzane przez towarzystwa funduszy inwestycyjnych, powszechnie towarzystwa emerytalne, zakłady ubezpieczeń na życie, oraz pracownicze towarzystwa emerytalne. Występujące tu różnice dotyczą ograniczenia ustawowego kosztów zarządzania PPK przez instytucje finansowe, co czyni ten rodzaj programów tańszymi w obsłudze. W PPK także ustawowo zagwarantowany jest wachlarz wyboru subfunduszy dostosowanych profilem ryzyka do wieku uczestnika. W PPK, w odróżnieniu od PPE, przepisy uszczegółwiają też limity inwestycyjne dotyczące instrumentów dłużnych i udziałowych.

W tabeli 2 przedstawiono porównanie PPE i PPK z punktu widzenia celów zarządzania zasobami ludzkimi. Przedstawiona analiza dokonana została w oparciu o przesłanki dyskutowane we wcześniejszym podrozdziale, dotyczące wpływu specyficznych rozwiązań odnoszących się do architektury pracowniczego programu emerytalnego na jego użyteczność dla polityki kadrowej, co z kolei warunkowane jest atrakcyjnością danego programu oszczędnościowego dla pracownika. Podejście takie opiera się na założeniu, że sam fakt oferowania pracowniczego programu emerytalnego nie jest wystarczającym warunkiem uzyskania pozytywnych efektów w zakresie ZZL. Dokonana analiza obejmuje wyszczególnienie spodziewanego oddziaływania na pracownika różnych aspektów konstrukcji obu programów tj. zasad tworzenia przez pracodawcę, obowiązkowości uczestnictwa dla pracownika, wysokości składek pracodawcy i pracownika, dodatkowych form dofinansowania, ryzyka inwestycyjnego, minimalnego wieku uprawniającego do wypłaty środków, oraz możliwości dysponowania zgromadzonymi środkami przed osiągnięciem wieku emerytalnego oraz po przejściu na emeryturę.

Tabela 1. Specyfika programów PPE i PPK w kontekście polityki ZZL – analiza porównawcza

Aspekt	PPE	PPK	Spodziewane oddziaływanie
Zasady tworzenia przez pracodawcę	nieobowiązkowo	obowiązkowo (od lipca 2019 r.)	W przypadku PPK sam fakt prowadzenia programu emerytalnego przez pracodawcę ze względu na powszechny charakter przestaje być wyróżnikiem podnoszącym jego konkurencyjność na rynku pracy.
Uczestnictwo pracownika	nieobowiązkowe wymaga podpisania umowy	quasi-obowiązkowe – automatyczny zapis (dla osób poniżej 55. r.ż.) z możliwością rezygnacji i ponownym automatycznym zapisem każdego roku	Obowiązek uczestnictwa pracownika w PPK obniża potencjał tego typu programów jako dodatkowego bonusu, który z jednej strony służy motywowaniu, a z drugiej strony buduje pozytywny wizerunek firmy.
Składka podstawowa pracodawcy	do 7% wynagrodzenia pracownika; może być to stała kwota, lub kwota określona jako procent wynagrodzenia (dodatkowo z górnym limitem kwotowym)	1,5% wynagrodzenia	PPE z porównaniu z PPK mogą (choć zależy to od opcji wybranych przez pracodawcę) w większym stopniu pełnić funkcję pozapłacowego składnika wynagrodzeń, gdyż pozwalają one na składkę pracodawcy aż do 7% wynagrodzenia (w PPK maksymalna składka pracodawcy wynosi 4%). Dodatkowo w PPE składka pracownika nie jest wymagana. Dla tego też PPE są programami, które mogą wydawać się atrakcyjniejsze z punktu widzenia pracownika, stąd również ich wartość jako instrumentów motywujących oraz podnoszących konkurencyjność firmy na rynku pracy jest większa.
Składka podstawowa pracownika	brak	do 2,5% wynagrodzenia – możliwość zróżnicowania ze względu na staż pracy lub inne kryteria 2% wynagrodzenia	
Składka dodatkowa pracownika	brak	do 2% wynagrodzenia – ustalana indywidualnie	
Dodatkowe zachęty finansowe	brak	Jednorazowa dopłata powitalna (250 zł) oraz coroczne dopłaty (240 zł) z Funduszu Pracy	Zakładając podobne hipotetyczne wyniki inwestycyjne (kapitał końcowy) w PPE i PPK, dodatkowe dopłaty z budżetu państwa w PPK pozwalają na niższe składki pracodawcy lub/i pracownika.

Forma programu oraz możliwość dostosowania w zakresie ryzyka inwestycyjnego	jednostki funduszu inwestycyjnego lub umowa grupowego ubezpieczenia na życie z funduszem kapitałowym; brak możliwości (co do zasady) indywidualnego wyboru profilu ryzyka	jednostki funduszu inwestycyjnego lub ubezpieczeniowego funduszu kapitałowego; gwarantowana możliwość indywidualnego wyboru funduszu o określonym profilu ryzyka	PPK mogą być bardziej atrakcyjne dla pracownika ze względu na możliwość wyboru między różnymi subfunduszami prowadzonymi w ramach jednego programu. W obu programach możliwa jest ochrona ubezpieczeniowa (w przypadku umowy z zakładem ubezpieczeń). Jednak zarówno w PPE, jaki i PPK to pracodawca decyduje o wyborze formy i dostawy planu. Czynniki ten zatem nie różnicuje znacząco obu programów.
Minimalny wiek uprawniający do wypłaty środków i forma wypłaty	60 lat lub 55 lat, gdy uzyskano uprawnienia emerytalne; wypłata jednorazowa lub ratalna	60 lat, do 25% środków wypłaconych jednorazowo, 75% wypłaconych w miesięcznych ratach przez okres 10 lat	PPE może być postrzegane subiektywnie przez pracowników jako atrakcyjniejsze ze względu na naturalnie młodszą, jednorazową gratyfikację i niższy wiek uprawniający do dokonania wypłaty.
Transfer lub wypłata środków przed okresem emerytalnym	brak opcji wcześniejszej wypłaty; możliwość transferu do IKE lub do innego PPE; w przypadku likwidacji PPE możliwość wypłaty kapitału po potrąceniach	możliwość wcześniejszej wypłaty (bez dodatkowych potrąceń) w przypadku poważnej choroby (25% środków), na cele mieszkaniowe (100%), na rachunek IKE lub do innego PPK; możliwość wypłaty środków (po potrąceniach) bez podania przyczyny przed 60. rokiem życia	PPK oferują bardziej elastyczne rozwiązania niż PPE w odniesieniu do możliwości wcześniejszej wypłaty środków, co może stanowić ich zaletę w oczach pracowników.

Źródło: opracowanie własne.

#### 4. Podsumowanie i wnioski

W niniejszym rozdziale dokonano przeglądu wcześniejszych (nielicznych) badań nad wykorzystaniem pracowniczych programów emerytalnych w obszarze ZZL oraz przedstawiono spodziewany (na gruncie teoretycznym) wpływ funkcjonowania takich programów na poziom motywacji i satysfakcji pracownika. Pozwoliło to na sformułowanie wniosku, że w kontekście celów polityki kadrowej ważne są również uwarunkowania dotyczące funkcjonowania tego typu programu. Zgodnie z tym, w dalszej części dokonano porównania i oceny poszczególnych rozwiązań przyjętych przez ustawodawcę dla programów, które funkcjonują już (PPE) lub też dopiero zaczną funkcjonować (PPK) w Polsce. Analiz użyteczności programów emerytalnych jako narzędzia ZZL dokonano przede wszystkim przez pryzmat potrzeb i preferencji pracowników, które determinują podatność pracowników na tego rodzaju instrumenty. Choć można wskazać pewne pozytywne aspekty oferowania PPK z perspektywy pracodawcy, takie jak niższe koszty zarządzania, to jednak programy PPE wydają się dawać większe możliwości uzyskania korzyści w zakresie polityki kadrowej. Odpowiednio zaprojektowane mogą być one atrakcyjniejszym dodatkowym bonusem będącym elementem systemu motywacyjnego oraz elementem wzmacniającym pozytywny obraz przedsiębiorstwa i przywiązanie pracowników do firmy. Należy zaznaczyć jednak, że PPE nie są same w sobie lepsze od PPK, lecz ze względu na fakt, że dają większe pole manewru pracodawcom. Największe znaczenie w tym przypadku ma ustalenie wysokości składki pracodawcy. Podczas, gdy w PPE może ona wynieść maksymalnie 7% wynagrodzenia pracownika, w PPK tylko 4%. Dodatkowo, w PPK pracownik obligatoryjnie partycypuje w składkach, a program PPE może być finansowany wyłącznie przez pracodawcę. Tym samym potencjał PPE jako narzędzi realizacji polityki kadrowej na etapie rekrutacji, utrzymania satysfakcji z pracy, motywacji i zarządzania wiekiem jest większy niż w przypadku PPK. Firmy konkurujące o pracownika o określonych kwalifikacjach, posiadające programy PPK, będą mogły rywalizować w zakresie dodatkowych planów oszczędzania na starość tylko poprzez wysokość składki fakultatywnej pracodawcy, która maksymalnie może wynosić 2,5% wynagrodzenia. W przypadku PPE pole manewru jest znacznie większe, a tym samym większa jest możliwość wyróżnienia się danego przedsiębiorstwa na tle innych firm. Dokonane analizy charakteryzują się pewnym ograniczeniem, które dotyczy ich teoretycznego charakteru. Z oczywistych względów skonfrontowanie otrzymanych wyników z wynikami analiz empirycznych będzie możliwe dopiero po pewnym czasie funkcjonowania PPK w Polsce, nie wcześniej niż za kilka lat.

Odnosząc się do tych rozważań należy również stwierdzić, że wspomniane pojęcie atrakcyjności w oczach pracowników poszczególnych rozwiązań przyjętych

w planach emerytalnych jest bardzo subiektywne, zależy od indywidualnych czynników i niekoniecznie ma na względzie obiektywnie optymalne decyzje z punktu widzenia wygładzenia dochodu jednostki w cyklu życia. Przykładowo, pracownik może postrzegać jednorazową wypłatę środków z planu emerytalnego po przejściu na emeryturę jako lepszą dla siebie opcję, podczas gdy faktycznie z punktu widzenia jego finansów osobistych annuitet może być bardziej odpowiednim rozwiązaniem. Jak wskazuje się w literaturze przedmiotu, obciążenia behawioralne i heurystyki mają bardzo silny wpływ na decyzje emerytalne [Maloney i McCarthy, 2017].

Analizując omawiany temat warto mieć również na uwadze, że w polityce kadrowej, która uwzględnia aspekty emerytalne, lub też szerzej – związane z wiekiem pracowników, program emerytalny może być postrzegany jako jeden z wielu elementów, aczkolwiek istotny. Jak wskazano w pracy [Wang i Shultz, 2010] cele takie, jak poprawa satysfakcji pracowników oraz zwiększenie ich zaangażowania, wspierają takie środki, jak oferta świadczeń medycznych w okresie emerytalnym, czy też wdrożenie systemów zorientowanych na długookresowe utrzymanie pracownika w przedsiębiorstwie (*life-long employment system*).

Choć prowadzone w tym rozdziale analizy dotyczą programów pracowniczych (w rozumieniu przytoczonej we Wprowadzeniu definicji OECD), to organizowanie i prowadzenie przez firmę takiego programu nie jest warunkiem koniecznym, aby pracodawca oferował dopłatę do składki emerytalnej jako dodatkowy bonus i element systemu wynagrodzeń. W wielu krajach (np. w Czechach, Irlandii, Islandii, Portugalii, Wielkiej Brytanii) funkcjonują również indywidualne programy emerytalne, niepowiązane ze stosunkiem pracy, w których pracodawca może zadeklarować partycypację w planie oszczędnościowym pracownika, mimo, że sam nie organizuje programu emerytalnego (przez co nie jest to program pracowniczy). Można przypuszczać, że również takie rozwiązania w podobnym zakresie mogą być wykorzystywane przez przedsiębiorstwa do realizacji celów w obszarze zarządzania zasobami ludzkimi.

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# SUCCESSSES AND FAILURES OF MODERN COMPANIES IN THE INDUSTRY 4.0

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## 1. Introduction

Under the conditions of Industry 4.0, much attention is beginning to be paid to such trends in the development of the modern economy as competitiveness, innovation, labor productivity, knowledge economy, and digital economy. Despite the globalization process, the situation in the global economy continues to become more complex. The US review of NAFTA's trade relations with Canada and Mexico and the creation of a new USMCA free trade zone (the United States-Mexico-Canada Agreement) the toll wars between the US and China, and the transition to a new round of technology development – Industry 4.0, led to changes in the rules games and world order for companies engaged in international business.

At the same time, universities are also greatly affected, which are beginning to be viewed as drivers of territorial development in three main areas: economics, science and innovations, human capital, and education is becoming one of the main factors of state competitiveness. People are beginning to be seen as creators of goods, producers of works and services and carriers of demand, and also become the core of qualitative changes and transformations in the knowledge economy and the modern digital economy.

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Therefore, the purpose of the study is to propose a model of interaction between universities and companies for the formation of their human resources, allowing them to successfully conduct business in the modern conditions of Industry 4.0.

The scientific novelty of this study is to examine the nature of the economic processes currently operating in the global economy, and to develop a number of recommendations based on the experience of companies from the Russian Federation for companies participating in international business to increase market stability, including by building up intellectual capital and building close ties with educational institutions. Research methods are system method, statistical method, graphic method, and analogy method.

## **2. Key Features of Industry 4.0**

### **Modern companies within Industry 4.0**

Industry 4.0 (Fourth Industrial Revolution) initially appeared as a project aimed at improving the competitiveness of the manufacturing industry. As part of it, it was proposed to integrate automated machines and processing centres connected to the Internet into industrial processes in order to provide the machines themselves to change production templates. At the same time, the digital approach covers all stages of the product life cycle, including design and prototyping, commissioning and maintenance of the production line, production control and optimization, as well as data obtained as a result of feedback from customers and consumers [Tarasov, 2018, p. 58].

At the same time, in the framework of Industry 4.0, not only the production process, but also the service sector associated with the manufactured products changes radically. Thus, each work object will determine for itself what work must be done for production. Such an architecture of industrial systems can be not only implemented in completely new enterprises, but also under the condition of evolutionary development through digital upgrading of existing production facilities in already existing enterprises.

Among the key principles on which Industry 4.0 is based, the following can be singled out: the interoperability of man and machine – the ability to contact directly via the Internet; transparency of information and the ability of systems to create a virtual copy of the physical world; technical assistance to human machines – combining large amounts of data and performing a number of unsafe tasks for humans; the ability of systems independently and autonomously to make decisions.

At the same time, among the main trends in the Industry 4.0 market are the following:

- growth of investments in new technologies;

- increase in the number of mergers and acquisitions and strategic alliances;
- growth in the sales of automation solutions.

Among other things, Industry 4.0 changes the working conditions of employees. The second thematic annual report “Four types of managers who will lead their companies to success in the Fourth Industrial Revolution” highlighted a number of leadership skills that leaders of the most effective innovative companies should have, including: the pursuit of public benefit, determination, long-term vision in technology, data-based decision making and an active approach to staff development [Information Portal Deloitte]. The study was based on a survey conducted by Forbes Insights in June and August 2018 among 2.042 heads of international companies from 19 countries of the world (Asia, Europe, and North and South America)<sup>4</sup>.

Also, within the framework of this study, 30% of managers among the main problem that they face when adapting a business strategy to the changing needs of their organizations, identified the lack of a managerial strategic vision. 55% of managers noted a significant gap between the skills their employees possess and the skills needed in the future. At the same time, 25% of respondents prefer to hire new workers, while 57% believe that, within the existing education system, new workers do not receive the necessary training.

Among the leading countries in the development of technology within Industry 4.0, Germany can be singled out, which annually allocates up to \$ 10 billion to implement this project [Fast Salt Times]. The goal of the Germany’s Government, which is the ideological inspirer of Industry 4.0, is to maintain leadership in the industry by encouraging innovation in all sectors, provided that the government and business join forces with the country's best scientists for a new technological breakthrough in the German economy.

Thus, as Klaus Schwab (Founder and Executive Chairman, World Economic Forum) had said: «...it all comes down to people and values. We need to shape a future that works for all of us by putting people first and empowering them. ... As a complement to the best parts of human nature – creativity, empathy, stewardship – it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny» [Information Portal „World Economic Forum”].

### **Higher education institutions within Industry 4.0**

Due to the fact that in the framework of Industry 4.0, the competitive advantages associated with the abilities, capabilities and speed of self-development of countries, organizations and people come to the fore, universities are not only among the actors

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<sup>4</sup> All managers who participated in the survey are organizations with revenue of at least \$1 billion. At the same time, half of the respondents (50.1%) are heads of organizations, whose revenue exceeds \$5 billion.

in the development of an innovative economy, but also undergo changes [Wissema, 2009, p. 40] These changes are due to several reasons, among which are the following:

1. Universities are interested in continuing advanced scientific research; therefore, they are forced to look for alternative sources of funding. This is facilitated by the collaboration of universities with high-tech companies that reduce the volume of independent fundamental research in favour of cooperation with universities in the framework of projects that are important for their competitiveness. Thus, the worlds of scientific and applied research become interconnected, which allows to achieve the maximum effect in the implementation of projects.

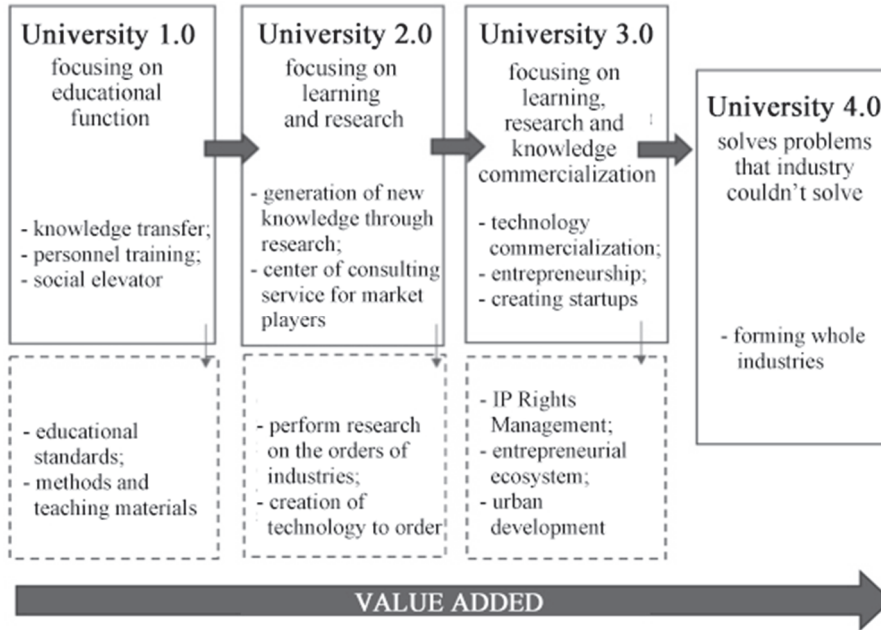
2. Increased globalization and expanding opportunities for learning and conducting research in other countries are forcing universities to compete more actively among themselves for the best students, teachers, and contracts with companies for research work. The result of this competition is an increase in the gap between the leading universities and the universities of the "second echelon". In order not only to defend their positions, but also to improve their universities, it is necessary to become a platform for the concentration of world experience, which all those involved in a particular area of knowledge are eager to attend: students, teachers, companies. Therefore, universities are beginning to actively engage in the development of projects for the introduction and commercialization of knowledge generated, which becomes one of their tasks along with education and research.

3. Changes of government policy lead to the development of the commercial component of the work of universities. This leads to the fact that in the knowledge economy, universities become one of the instruments of economic growth, playing an active role in deriving benefits from projects to create new knowledge.

4. Recently, interdisciplinary projects have been greatly developed, which has an impact on changing the form of organization of activities at the university. Thus, interdisciplinary teams focusing on solving specific problems become the most effective. Changes also affect university management. It should create new structures and positions to manage such projects and processes to benefit from the know-how gained, allowing them to adapt to the need to be most effective in the face of increasing the scale and level of complexity of the tasks facing the university.

In connection with the above reasons, in order to develop in modern economic conditions, university must have a number of characteristics, among which are the following: deriving benefit from its own know-how; conducting activities in the international highly competitive market; support of projects aimed at networking with representatives of the real sector of the economy; the prevalence in the structure of interdisciplinary research and projects; the creation of special conditions for attracting the best and most promising students and teachers; cosmopolitan activity; reducing dependence on government regulation.

This is the driving force to university transitions from models 1.0 and 2.0 to models 3.0 and 4.0, the features of which are shown in Figure 1. When universities switch to a more modern model, there is a constant increase in the level of service. University 3.0 is becoming a separate economic agent, a large company at the expense of its own competences in understanding how markets develop.



**Fig. 1.** Model transition from University 1.0 to University 4.0

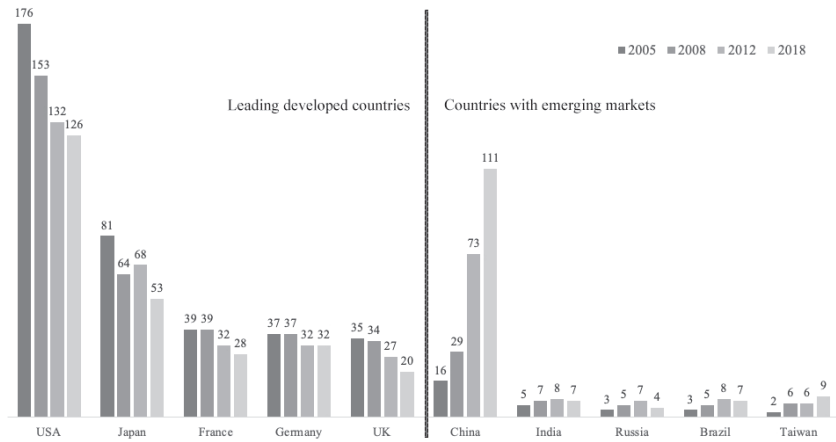
*Source: Wissema, 2009, p. 52.*

### 3. Analysis of research objects

Evaluation of the effectiveness of international companies can be carried out on various grounds, including the amount of revenue and market capitalization.

The company Fortune prepared an annual ranking of world companies in terms of revenue – Fortune Global 500 [Information Portal Fortune, Fortune Global 500]. Figure 2 presents a dynamic country analysis of the companies represented in the rating by years in the rating.

The strengthening of the positions of large economic entities from the China looks particularly impressive as can be seen from the above data. The best idea of competitiveness is given not by the cumulative indicator of the company's revenue, but by the actual profitability of its operations (profit). In 2018 Walmart took the first place in terms of revenues, and Apple took the first place in terms of profit. The data presented in Table 1.

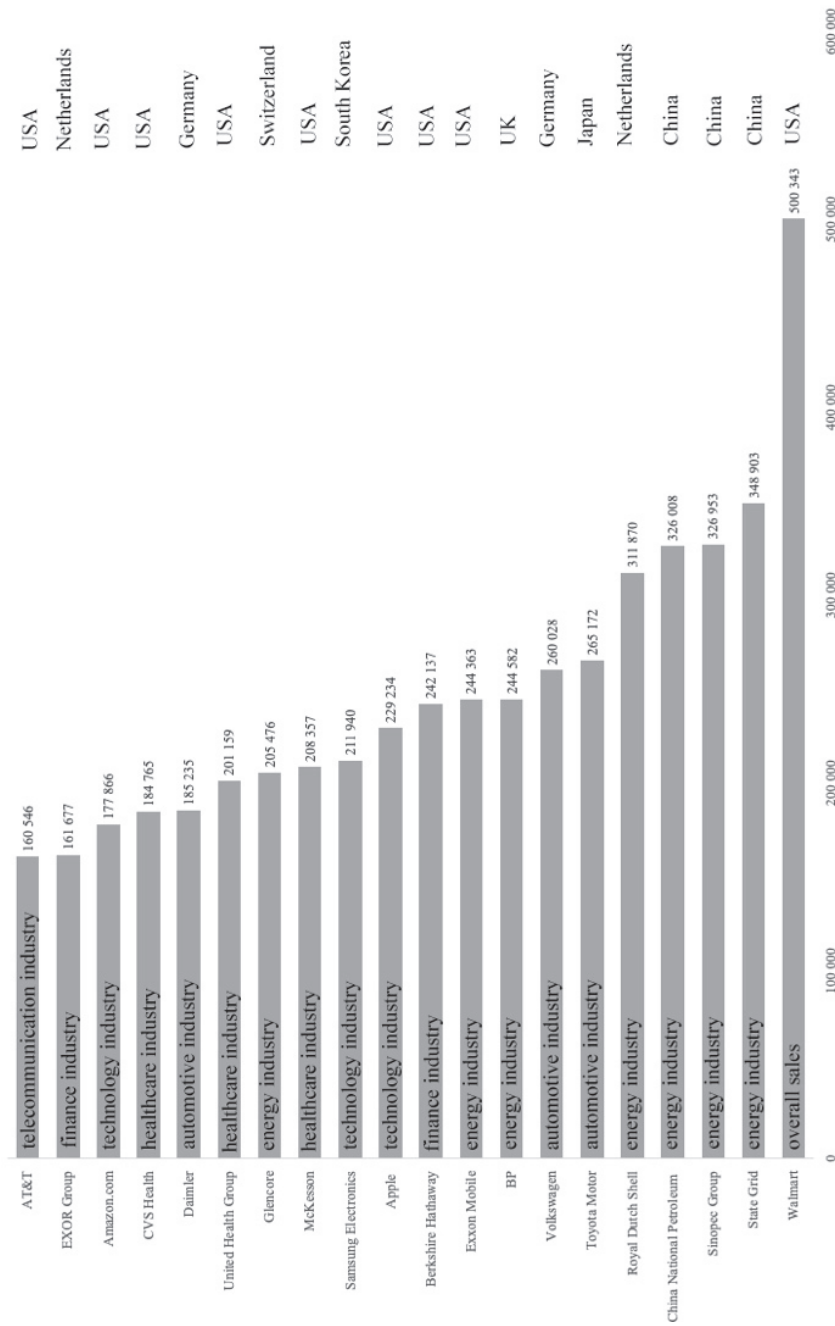


**Fig. 2.** Representation of companies from selected countries in the Fortune Global 500  
 Source: Information Portal Fortune, Fortune Global 500.

**Table 1.** The largest companies in the world in terms of profits according to the Fortune Global 500, 2018

Name of the company	Profit, million dollars	Place (profit)	Place (revenue)	Revenue, million dollars	Sales profitability, %
Apple	48 351.0	1	11	229 234	21.09%
British American Tobacco	48 327.8	2	453	26 128	<b>184.97%</b>
Berkshire Hathaway	44 940.0	3	10	242 137	18.56%
Industrial & Commercial Bank of China	42 323.7	4	26	153 021	27.66%
Samsung Electronics	36 375.4	5	12	211 940	17.16%
China Construction Bank	35 845.2	6	31	138 594	25.86%
Verizon	30 101.0	7	37	126 034	23.88%
AT&T	29 450.0	8	20	160 546	18.34%
Agricultural Bank of China	28 550.4	9	40	122 366	23.33%
Bank of China	25 509.2	10	46	115 423	22.10%
J.P. Morgan Chase	24 441.0	11	47	113 899	21.46%
Comcast	22 714.0	12	80	84 526	26.87%
Toyota Motor	22 510.1	13	6	265 172	8.49%
Wells Fargo	22 183.0	14	62	97 741	22.70%
Pfizer	21 308.0	15	187	52 546	<b>40.55%</b>
Microsoft	21 204.0	16	71	89 950	23.57%
Exxon Mobile	19 710.0	17	9	244 363	8.07%
Bank of America Corp.	18 232.0	18	60	100 264	18.18%
Facebook	15 934.0	19	274	40 653	<b>39.20%</b>
Procter & Gamble	15 326.0	20	135	66 217	23.15%

Source: Information Portal Fortune, Fortune Global 500.



**Fig. 3.** The largest companies in the world in terms of revenue, according to FG 500, 2018 (US \$ million)  
 Source: *Information Portal Fortune, Fortune Global 500.*

At the same time, as of 2012, the situation in the world was as follows: the first place in terms of income was taken by the Russian company Gazprom, the second by the company Exxon Mobil, also representing the fuel and energy sector, the third was the Industrial and Commercial Bank of China. The largest company in the world in terms of gross revenues received in 2012 was Royal Dutch Shell, second place was taken by Exxon Mobil, and Gazprom got only 15th place here. Thus, we can conclude that the financial crisis has strongly affected the fuel and energy industry, which led to a sharp drop in the performance of global companies representing it.

A study of companies in terms of market capitalization is conducted by the international firm Price Waterhouse Coopers [Information Portal Price Waterhouse Coopers, TOP-100 according to Price Waterhouse Coopers]. In 2018, the main trends in the TOP-100 rating were the following:

1. In 2018, the growth of the total market capitalization of TOP-100 companies continued and amounted to 15% compared with 2017. The greatest growth was shown by Amazon and Apple.

2. The quantitative composition of companies from different countries has changed. The data are presented in Figure 4 The largest representation of US companies (total capitalization – \$12.187 trillion).

3. 85 companies from the list of 2017 remained in the list of 2018 (in 2017 there were 91 such companies – the best indicator of stability for all the years of research). Giants such as Starbucks, Daimler, Vodafone Group, Deutsche Telekom, BASF, Bayer, etc. left the list. At the same time, 61 companies from the 2009 list remained in the 2018 list.

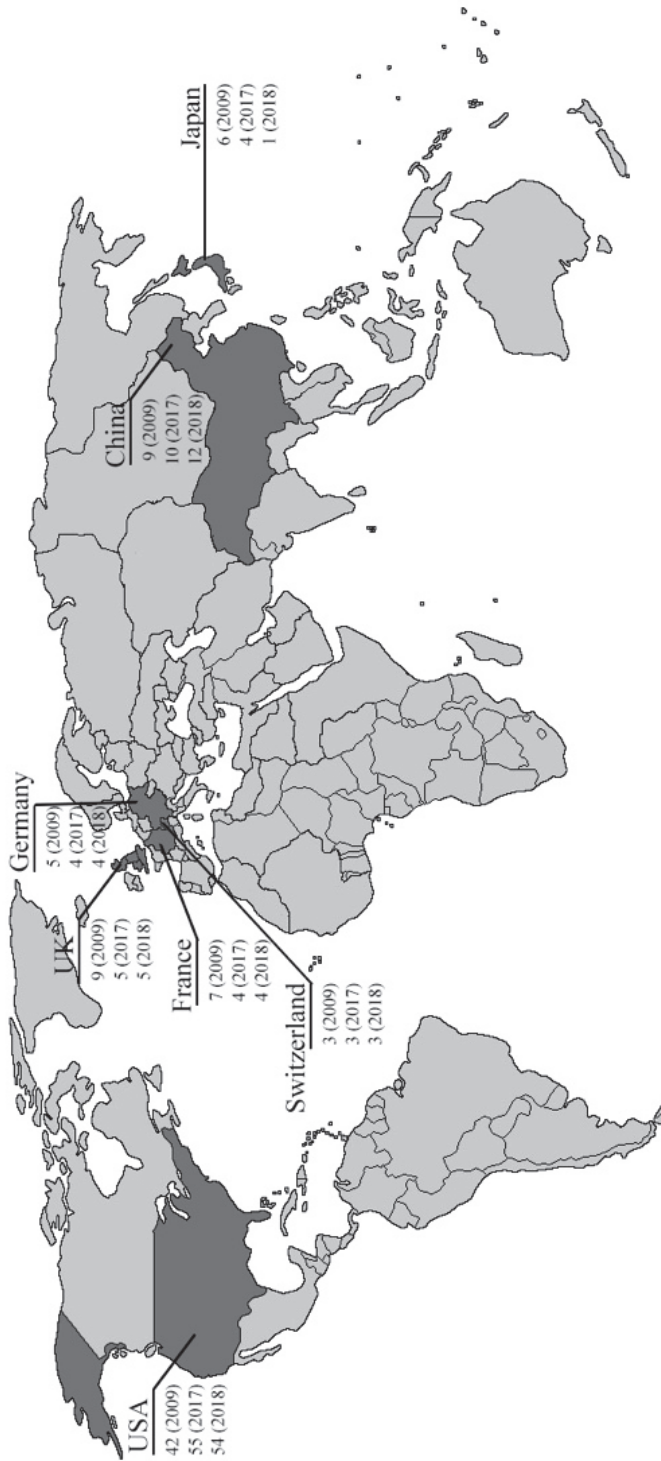
4. The leader of the list Apple became the first company in the world, which reached a capitalization of \$1 trillion in August 2018. [Information portal of the Interfax Information Agency]. In 2009, it was on the 32 position in the list with a capitalization of \$94 billion.

5. The maximum number of positions (77) was increased by Bank Of America (10<sup>th</sup> in the 2018 list), reaching a market capitalization of \$307 billion.

6. In the list of TOP-100 for all years of research (since 2009) there is not a single company from Russia.

At the same time, economic growth is possible mainly due to increasing the volumes of labour used, as well as improving their quality through the development of education and technology. In this regard, in recent years considerable attention has been paid to the study of the main economic resources of the national, world and global economy, namely labour and knowledge, which together constitute human capital.

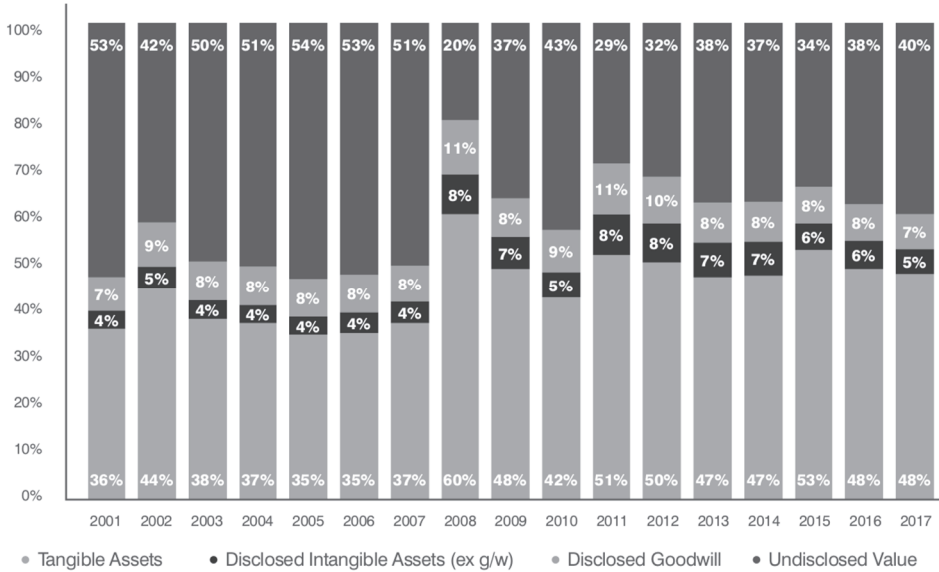
So, if previously up to 80% of the company's value was occupied by tangible assets, then in the era of the development of the digital economy and the knowledge economy [Zashchitina, 2019, p. 27], up to 80% of the company's value begins to be diverted to intangible assets [Sullivan, 2000, p. 330].



**Fig. 4.** Representation of companies from individual countries in the TOP-100 according to Price Waterhouse Coopers  
 Source: *Information Portal Price Waterhouse Coopers, TOP-100 according to Price Waterhouse Coopers.*



The global value of companies in 2017 for the first time exceeded \$100 trillion and amounted to \$109.3 trillion according to the Global Intangible Finance Tracker (GIFTTM) 2018 – an annual review of the world’s intangible value. In this value, the share of intangible assets is 40%. The data are presented in Figure 5.



**Fig. 5.** Global Enterprise Value - Relative Breakdown (%)  
 Source: Global Intangible Finance Tracker (GIFTTM) 2018.

At the same time, among the industries with the largest volume of intangible assets are: Cosmetics & Personal Care (90%), Aerospace & Defense (90%), Internet & Software (87%), Pharma (87%), Healthcare (85%), Media (84%) [Global Intangible Finance Tracker (GIFTTM) 2018].

At the end of 2017, the World Economic Forum ranked 130 countries for the development of their human capital on a scale from 0 (worst) to 100 (best), both as a whole and by individual indicators, including capacity subindex, deployment subindex development subindex, know-how subindex. The top 10 countries-leaders in the global human capital development index in 2017 are represented both by small European countries, namely Scandinavia and Switzerland, and by countries with strong global economies, such as the USA and Germany. The index leaders are countries with high incomes and a high level of education of their citizens, which contributes to greater attention to the future potential of human capital and engaging a large part of their workforce in a wide range of industries that require specialized knowledge and skills. The data presented in Table 2.

**Table 2.** Global Human Capital Index, 2017

Country	Overall index		Capacity subindex	Deployment subindex	Development subindex	Know-how subindex
	value	rank	value	value	value	value
Norway	77.12	1	80.46	73.18	82.63	72.22
Finland	77.07	2	81.05	65.09	88.51	73.62
Switzerland	76.48	3	76.36	69.12	84.87	75.75
USA	74.84	4	78.18	68.72	83.45	68.99
Denmark	74.40	5	79.37	71.41	78.65	68.18
Germany	74.30	6	76.33	69.52	79.38	71.96
New Zealand	74.14	7	78.92	72.76	80.38	64.50
Sweden	73.95	8	76.21	69.60	77.10	72.89
Slovenia	73.33	9	81.10	65.90	79.21	67.10
Austria	73.29	10	73.71	68.00	81.53	69.92
Russian Federation	72.16	16	83.19	74.33	72.97	58.14
Japan	72.05	17	80.96	66.32	73.92	67.00
UK	71.31	23	71.59	67.40	76.23	70.02
France	69.94	26	74.68	60.90	75.34	68.86
China	67.72	34	70.34	74.06	68.47	58.01

Source: Insight Report "The Global Human Capital Report 2017".

Also, as part of the work of the World Economic Forum, a new Global Competitiveness Index 4.0 was presented in this report. It allows defining a set of factors that are critical for production under the Fourth Industrial Revolution (4IR), divided into the following groups:

- Enabling Environment: Institutions, Infrastructure, ICT adoption, Macroeconomic stability;
- Markets: Product market, Labour market, Financial system, Market size;
- Human Capital: Health, Skills;
- Innovation Ecosystem: Business dynamism, Innovation capability.

Among the leaders of this index are also USA (85.6), Singapore (83.5), Germany (82.8), Switzerland (82.6), Japan (82.5), Netherlands (82.4), Hong Kong SAR (82.3), UK (82.0), Sweden (81.7), Denmark (80.6). Russian Federation with a rating of 65.6 ranks 43rd among 140 world economies [Insight Report „The Global Competitiveness Report 2018”].

Thus, we see that the countries in which the companies with the highest revenue and profits are also among the leaders in the global index of human capital and global competitiveness, which indicates a close relationship between education and business.

#### **4. Communication of companies in the real sector of the economy and institutions of higher education as an opportunity to succeed in the era of Industry 4.0 (experience of the Russian Federation)**

For the most effective integration into the existing reality of Industry 4.0, modern companies operating on the territory of the Russian Federation need to create conditions for the transition from state support of large enterprises with state participation to the development of small and medium-sized enterprises that are able to produce a technological “digging” as soon as possible.

Today it is important to join the global value chains, increase the share of value added created by national companies and the competitiveness of products, including through the placement of foreign industries in Russia and the use of imported components and technologies. Modern international cooperation is the basis of the socio-economic and scientific-technical progress of countries, the globalization of world economic relations, regional economic integration, transnationalization, and international industrial cooperation. The development of international cooperation suggests: cooperation implemented through a contract and not accompanied by the creation of any organizational structures; cooperation implemented through international business associations.

Examples of successful international cooperation are demonstrated by companies that are leaders in global aircraft manufacturing Boeing (Figure 6) and Airbus (Figure 7). It should be noted that in Russia industrial cooperation has not received such wide development as in countries with developed market economies. Among one of the obstacles to the participation of the Russian Federation in it is the raw material orientation of its economy.

To overcome this obstacle, the Agency for Strategic Initiatives autonomous non-profit organization developed a program of measures to create fundamentally new markets and create conditions for Russia's global technological leadership by 2035 (the markets for the National Technology Initiative - NTI). This program includes systemic solutions for determining key technologies, necessary changes in the field of norms and rules, working measures for financial and personnel development, mechanisms for involving and rewarding carriers of the necessary competencies. The choice of technologies is made taking into account the main trends of world development, based on the priority of network technologies centered around the person as the final consumer.

At present, 10 promising markets have been selected, represented in the matrix of the NTI, combining markets, technologies, institutions and infrastructure (Figure 8).



**Fig. 6.** Scheme of production cooperation of Airbus companies on the example of the A-320  
*Source: Information Portal Airbus.*

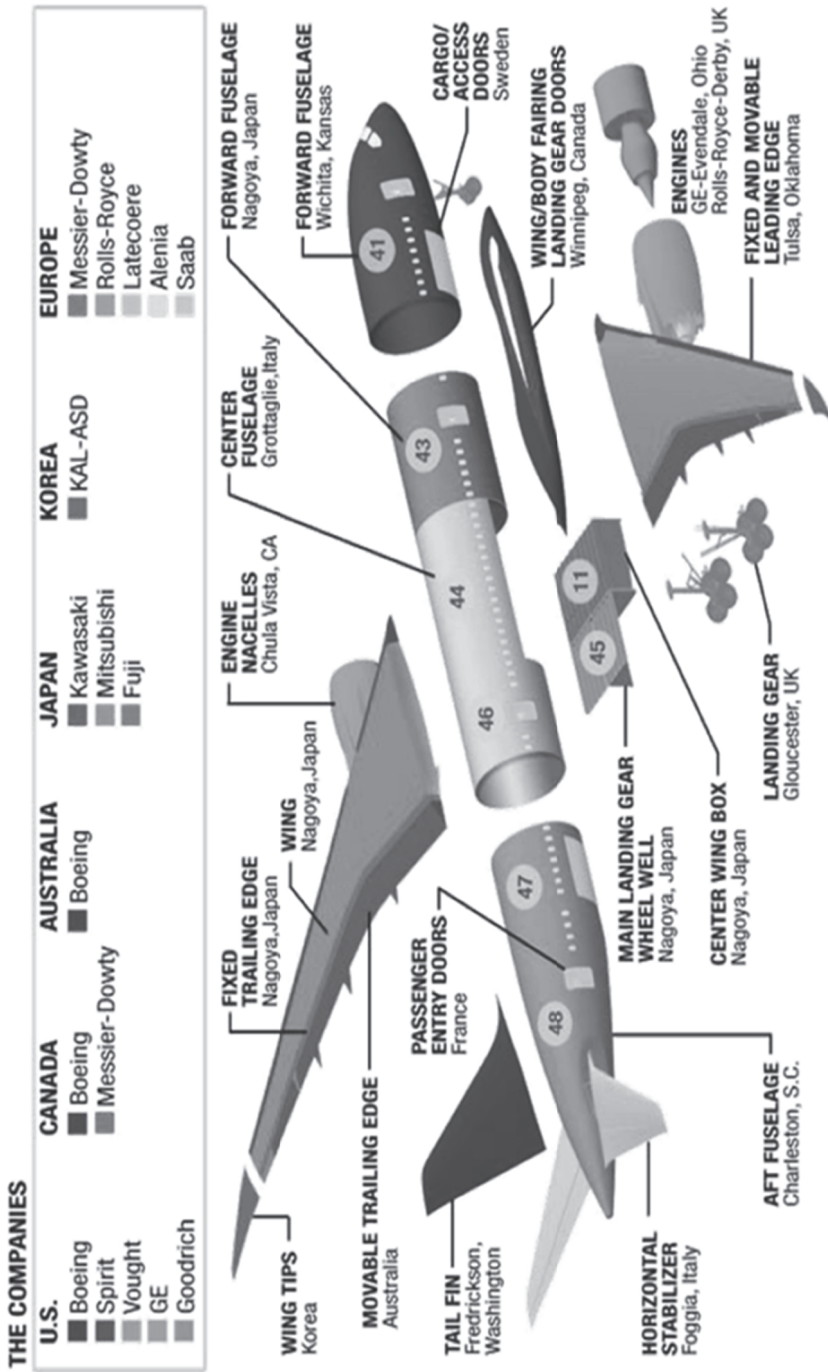
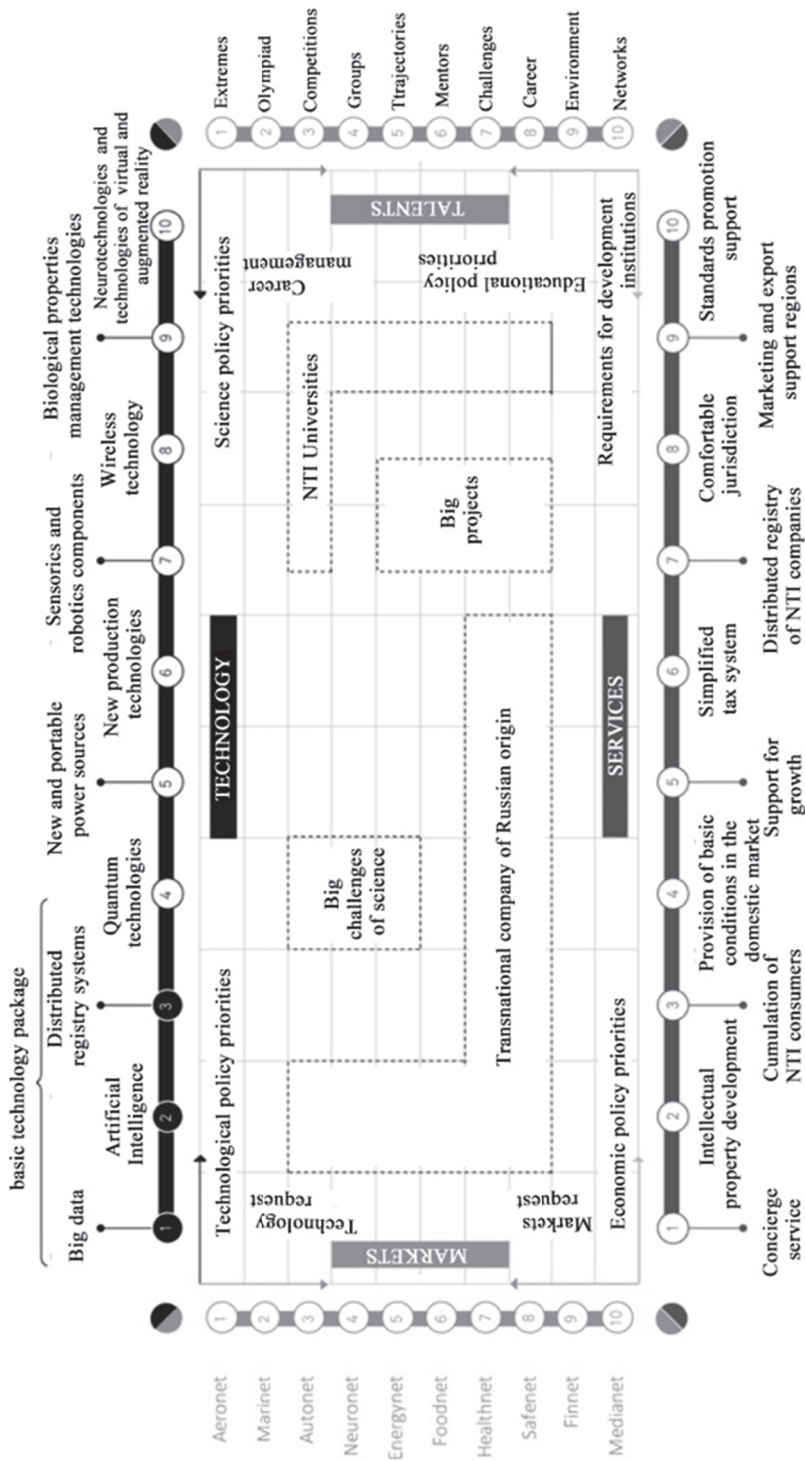


Fig. 7. Scheme of industrial cooperation of Boeing companies on the example of the aircraft B787  
 Source: *Information Portal Boeing.*



**Fig. 8.** NTI Matrix

Source: *Information Portal National Technology Initiative.*

In addition to the creation of NTI markets, great attention is paid in Russia to the development of human resources. Among the projects presented in this direction are the following:

1. Inclusion of the Russian Federation in an international organization that promotes professional, technical and service-oriented education and training WorldSkills. Thanks to international cooperation and the development of links between industries, governments, organizations and institutions, it is possible to show the advantages and the need for qualified specialists through holding competitions, organizing joint projects and sharing experience [Information Portal WorldSkills Russia].

Among the main projects are the following: holding championships for young professionals, the creation of specialized competence centres, the creation of advanced training centres.

2. Implementation of the project "Profstazhyki 2.0". The essence of the competition is that employers offer students to find solutions to real problems in various areas. Among them, in particular, business, tourism, education, medicine and other areas. Students, in turn, will be able to choose the direction of interest and write a scientific work. Those who successfully cope with the proposed task will be invited for an internship or even a job [Information Portal „Profstazhirovki”]. Among the key activities and project formats are the following:

- competition of student works "Profstazhirovki" – a new mechanism of interaction between the student, educational organization and the future employer, involving student work and internships as a social elevator for young people;
- all-Russian campaign “Days in Profession” – for schoolchildren of different age groups (grades 5-6, grades 7-8, grades 9-11) and first-year students undergo a series of one-day excursions to modern industrial and other organizations. The task of the action is to show schoolchildren and students the full range of possibilities for future professional self-realization;
- all-Russian base (aggregator) internships – thanks to the project, students can complete an internship directly in their field and receive additional employment opportunities immediately after receiving a diploma. The project allows the enterprises to participate in the preparation and training of personnel or to select graduates of educational organizations in any region of the country;
- research, monitoring, surveys;
- legislative proposals and initiatives.

3. Creating a world-class scientific and educational centers (SEC). Combining educational institutions of higher education and scientific organizations, regardless of their departmental affiliation with organizations of the real sector of the economy, conducting world-class research and development, the result of which is obtaining new competitive technologies and products and their commercialization, carrying out personnel training to address major scientific and technological tasks in the interests of the development of branches of science and technology according to the priorities of scientific and technological development Russian Federation. The SEC activity has an applied nature; therefore its key idea should be the pairing of the tasks formulated by the industrial partner, the groundwork and prospects of the scientific partner and the educational partner base, which should together provide innovative development.

Among the main goals of the project are the following:

- development and implementation of Integrated Research Programs and Integrated Scientific and Technical Programs;
- ensuring the legal protection of the management of rights to the results of intellectual activity and the protection of the results of intellectual activities obtained by the Program initiator, as well as the results of intellectual activities transferred to it for management, including abroad;
- commercialization of the results of intellectual activity, including marketing research and the search for partners to promote products to specific markets, including external ones;
- provision of the possibility for the SEC participants to use the SEC infrastructure on preferential terms;
- implementation by the initiator of the Program and participants of the SEC of educational activities, educational programs of higher education – graduate programs and programs for the training of scientific and pedagogical personnel in graduate school;
- conducting admission to targeted training in educational programs of higher education within the established target figures for admitting citizens to study at the expense of budget allocations from the federal budget, budgets of constituent entities of the Russian Federation and local budgets with a license to carry out educational activities and state accreditation of core educational programs;
- the implementation by the initiator of the Program and participants of the SEC of educational activities for the implementation of additional professional education programs with the presence of an appropriate license to carry out educational activities;



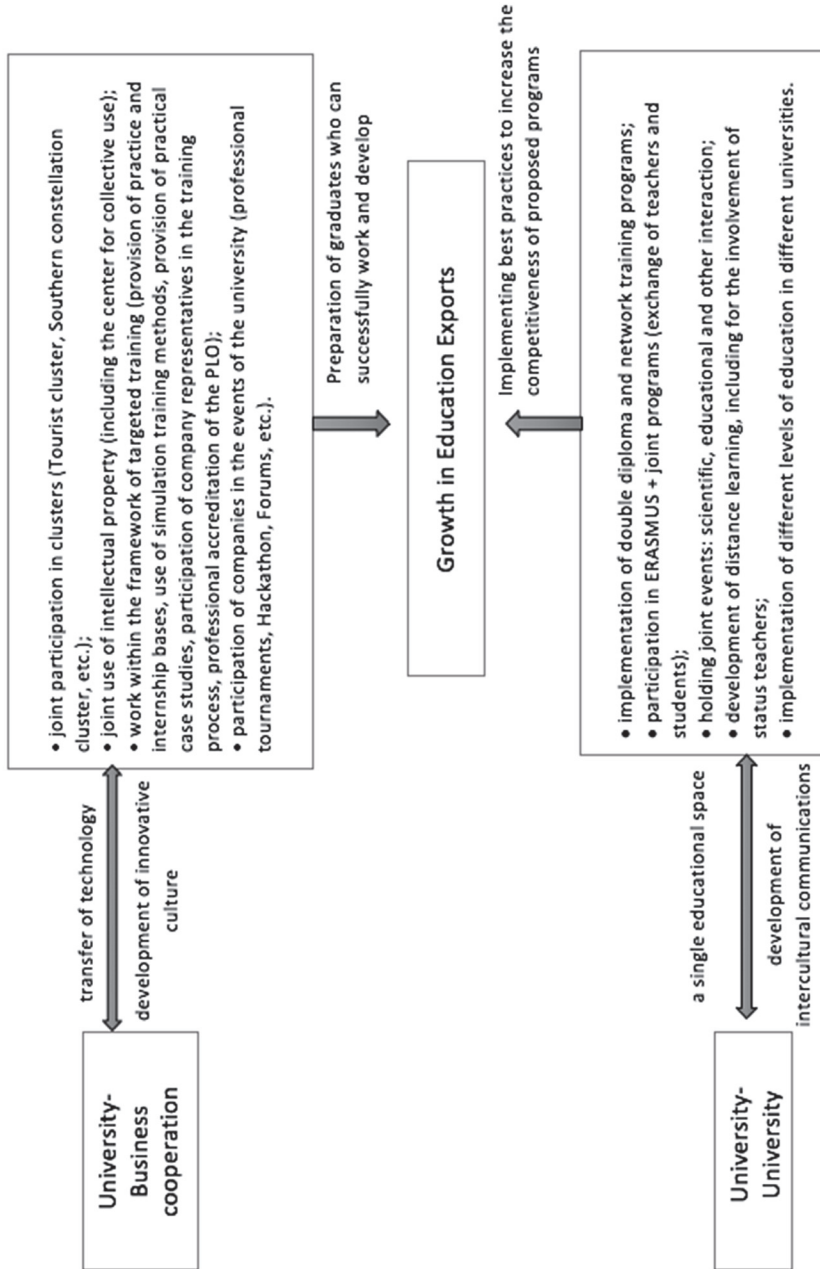
- information and consulting support on certification and standardization issues;
- provision of engineering services, including accelerated design of innovation;
- examination of the quality of innovative projects, including when making decisions on the provision of state support measures for innovative projects;
- organization of interaction with federal and regional export support centres, as well as with trade missions of the Russian Federation.

4. Intensification of interaction between institutions of higher education, scientific, commercial and non-profit enterprises. Currently, the idea of cooperation between commercial organizations and universities receives a large number of supporters, since it allows to solve many issues, including issues of demand for graduates, which is also an important aspect when choosing an educational institution. A well-developed vocational education system is needed to train well-trained and qualified personnel (Figure 9).

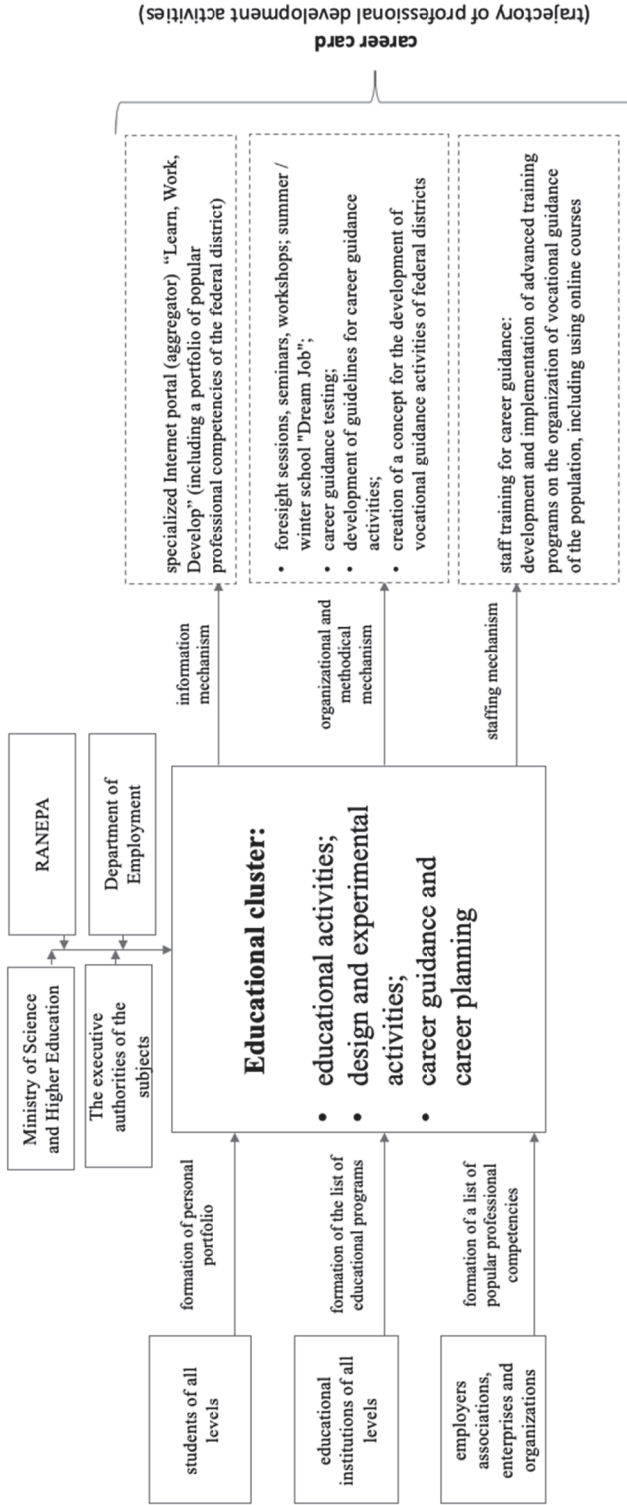
Among other things, projects aimed at educational activities, design and experimental activities, career guidance and career planning are currently gaining popularity through informational, organizational, methodical and personnel mechanisms that allow you to choose educational institutions, including on the basis of individual career maps – development trajectories professional activities, as the choice of profession is a driving factor in the subsequent selection of the country of study and the institution itself.

Figure 10 shows the model of the possible interaction of the educational cluster of federal significance and other subjects when building a career card for students.

This model will most effectively improve the regulatory, organizational and informational mechanisms for the formation and implementation of career guidance; create a comprehensive system of vocational guidance based on interagency cooperation; provide the needs of enterprises operating in the district with the necessary personnel; carry out training and professional development of human resources for the enterprises of the district; implementation of career-oriented work on the basis of socio-economic information about the prospects for the development of the district economy.



**Fig. 9.** The model of collaboration between Universities and University-Business Cooperation  
 Source: Zashchitina, Bondarev, Pavlov, Pavlov, 2018, p.187.



**Fig. 10.** Interaction model of the educational cluster of federal importance and other subjects when building a career card  
 Source: Zashchitina, 2019, p.115.

## 5. Summary and conclusions

The study showed that the unpreparedness of a number of world business leaders of the 20<sup>th</sup> century to transition to Industry 4.0 led to a change in the composition of leading companies in the global economy in the 21st century, and also had a negative impact on modern international activities of Russian companies participating in international business. Finding ways to restore the former leading positions led to their understanding of the need to change the economic and production model, the importance of participation in international industrial cooperation, the transformation of part of existing business areas and the creation of new directions in the development of network digital technologies. To implement these plans, companies need adequate staffing those universities can provide as part of the proposed model of joint cooperation within the educational cluster of federal significance.

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# ERGONOMICS AS AN AGE MANAGEMENT TOOL IN THE ERA OF INDUSTRY 4.0

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## 1. Introduction

Aging population is one of the principal demographic and socioeconomic problems of the contemporary world. The distinctive features of an aging population are decreasing total fertility rates and increasing life expectancy. With age, individual ability to work changes, which is primarily caused by deterioration of physical capacity, fitness, and some psychophysical function (perceptiveness, reaction time, sensory function). At the same time, older people more frequently tend to suffer from cardiovascular, respiratory, and musculoskeletal disorders as well as hormonal imbalance and metabolic disorders. On the other hand, job demands, unless a change of jobs occurs, usually remain the same regardless of the worker's age, as a result of which the actual workload may in fact increase with age [Bugajska, Makowiec-Dąbrowska, Wągrowaska-Koski, 2010, p. 55]. This compels employers to seek measures to counter the shrinkage of working-age population.

In the era of Industry 4.0, enterprises strive to shift the burden of labor from human beings to automated machines and industrial robots – a solution which is still too expensive for businesses operating in Poland. According to the International Federation of Robotics [2018a], the global robot density in manufacturing in 2017 was 85 units per 10 000 employees. By region, it took the highest value for Europe – 106 units. For both Americas, it was 91, whereas for Asia – 75 units. Within Europe, Germany was the leader with 322 units per 10 000 workers. By comparison, in Poland the ratio is rather low: in 2016, it was a meager 32 units [2018b]. A rocketing rate of robot densification and automation of labor (frequently, rudimentary and not requiring specialized qualifications) entails a number of threats including increased social exclusion of the elderly and the disabled and further disadvantages them

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economically. Another counter measure is to acquire workers in remote regions. Enterprises may also entice workers to continue their employment by offering them incentives and accommodating the workplace to the needs of more age-diverse workers. Therefore, it appears imperative that tried and trusted strategies be implemented to facilitate in an economically viable and technically consistent manner decision-making processes as regards the rationality of work systems organization and design, and the replaceability of the human being with the machine in aging populations. The article makes a point of the role of ergonomics as one of the components of age management policy in the organization. Based on the literature review, ergonomic methods are presented that can support organizational decision-making strategies concerning age management including the replaceability of the human being with the machine in Industry 4.0.

## **2. Definition of 'an older worker'**

All human beings age but the process of aging is characterized by significant intra- and interindividual variability. What is meant by interindividual variability is that not all functions determining the ability to work deteriorate with age by the same degree, and therefore, declining work ability does not affect all areas of the working life. However, it is important to be mindful of the fact that the range of interindividual variability increases as people get older because they do not all age at the same rate [Ilmarinen, 2005]. Thus, it is difficult to pinpoint the age that would mark the onset of this process. Koradecka, Bugajska, Pawłowska [2007, pp. 2-6] draw attention to the life period in which age-related changes in individual psychophysical function may hinder job performance posing a risk to the health and welfare of the worker and of others. Bugajska, Makowiec-Dąbrowska, Konarska [2008], Barnett, Spoehr and Parnis [2008] think that it would be reasonable to determine the so-called functional age by which age would be measured not only by reference to the number of years one has already lived but also by way of criteria to determine fitness and physical and psychological agility. It is worth remembering that human beings may exhibit features characteristic of several age groups at the same time depending on which criterion is used: chronological, biological, or psychological, where each determines their capacity for living and for working.

The World Health Organization divided the age of older people into several groups. For economically active people, a group of workers of 'pre-elderly age' is singled out, workers 45 to 59 years of age, and a group of 'young elderly' - workers aged 60 to 74 [Duda, 2013]. Whereas in EU reports and publications, the threshold age most frequently referred to for older workers is 50. Workers older than that are defined as 50+. Similarly, in general, in Polish research and in publications, people aged 50 and over are considered older (e.g. Rysz-Kowalczyk and Szatur-Jaworska

[2007], Schimanek [2006]) or people aged 45 and over (e.g. Korzeniowska [2004, pp. 129-138], Urbaniak [2008]). As for publications concerning age management – Walker [1998], Naegele and Walker [2006], Taylor [2006] among others, they do not specify a threshold age above which workers should be subject to actions aimed at supporting their capacity for work. Only a general term 'older workers' is used, which appears to be a specific conceptual shortcut and may be construed as a designation of people whose productivity is relatively low due to age-related decline in physical and/or cognitive capacity or due to discrimination by the employer. Therefore, it is rather an oversimplification because not all older workers are less productive than younger ones. Support actions should not be directed at older people but at people whose productivity is limited due to age. Otherwise, they could be considered discriminatory treatment of younger workers and therefore, a violation of law. Moreover, it is often emphasized that age management policy (or at least some of its instruments) should include all employees regardless of their age, which means that it should have provisions that span over the entire working life of the worker (life course approach) [Taylor, 2006; Liwiński, Sztanderska, 2010].

### **3. Global, European, and national demographic trends**

The future of the economy and organizational management strategies are strongly determined by population changes. Therefore, information concerning populations of young and older people will be very meaningful for investors, entrepreneurs, and managers.

The UN projects that the global population will have risen from 7.3 billion to 9.8 billion by 2050. More than half of that growth will be contributed to by Africa, whose population is projected to double and reach 2.5 billion. The most probable estimates based on the available data indicate that the world population may reach 11.2 billion 2100 [Department of Economic and Social Affairs Population Division, 2017a].

Populations are getting older. Today's median age of 30 is expected to rise to 36 in 2050 and 42 in 2100, whereas today, one fourth of the population of Europe is aged 60 and over [Department of Economic and Social Affairs Population Division. *United Nations*, 2017b]. The world working-age population is projected to grow by 900 million in 2010-2030, which would mean a 20 percent increase. By comparison, the increase of 40% was recorded in the years 1990-2010. The annual rate of working-age population growth dropped from the record level of 2.2% in 1985 to 1.1% in 2015, and is projected to fall to 0.7% in 2030. The number of working age persons in general is projected to decrease, although significant variation by region and by development group is expected. Dissimilarities in the growth rate of working age populations by country are mainly attributable to differences in the growth rate of the youth in



working-age populations, which reflects variation in the rate at which fertility rates decline [Lam, Leibbrandt, 2015, p. 2].

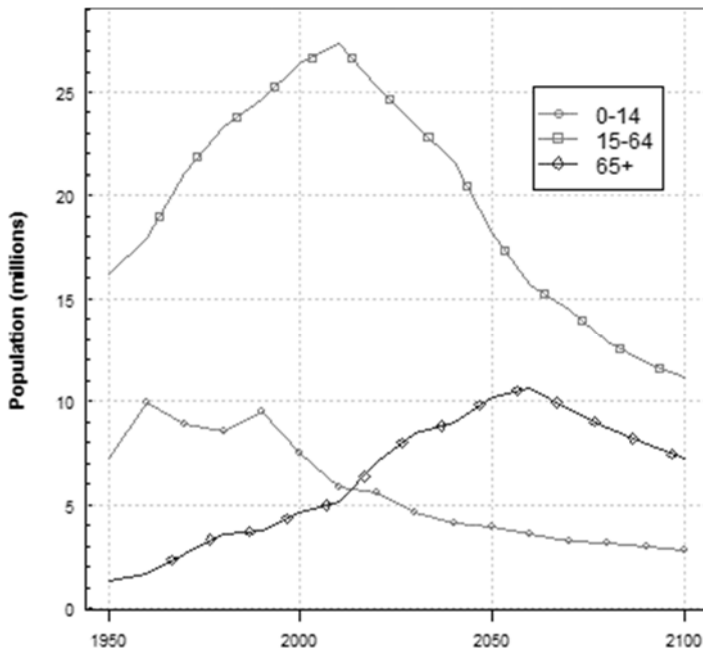
Europe and China will experience declines in their working-age populations between 2010 and 2030, while many low-income African countries will have growth rates of over 2% per year [Lam, Leibbrandt, 2015, p. 14]. For Europe, aging population is currently one of the gravest socioeconomic issues. The changes will primarily pose a challenge for national job markets because they may entail shrinking workforce and increased proportion of older persons in working-age populations. Furthermore, as follows from the European Commission forecasts [2011], the trend is expected to continue at least until 2060. The population in 2060 is indeed projected to be larger than in 2017, yet it will also be much older. Obviously, it is an oversimplification to take the number of people of a certain age as an indicator of workforce availability. Nevertheless, in the case of manual labor on an assembly line, in the warehouse, in construction, shortage of workers capable of manual labor is certain to pose a serious problem for employers [Butlewski, 2017, pp. 29-30].

The European Commission estimates [2011] that in 2060, there will be two working age persons per one person aged 65 and over (by comparison, in 2008 the old-age dependency ratio was 4 to 1), whereas the proportion of people aged 65 and older in the total population is projected to rise to 30% by 2060 in comparison to 17.1% in 2008. As a result, fewer and fewer people will be entering the job market and it will become imperative to encourage older workers to remain in paid employment. Currently, potential older age human resources are used to a much lesser degree than they could actually be [Kołodziejczyk-Olczak, 2014, p. 20].

The United States need not be concerned about human resources shortages, which puts the country in a much privileged position in comparison to other highly developed countries. The United States are unlikely to experience demography-related problems that Japan and Western Europe are tackling any time soon [Kołodziejczyk, 2012].

Demographic prospects for Poland based on population projections do not diverge from the European trends. Poland should expect further steady population decline and significant changes in age distribution of its population (Figure 1). Poland finds itself at such a stage in its demographic development that even if the total fertility rate reached the replacement level fertility within a short time, the processes could not be reversed nor could population decline be halted. With the age distribution of its population so distorted, redressing demographic balance will be a slow process and will require consistent and sustainable action [Gross-Gołącka, 2018, p. 129]. By 2050, Poland will have become one of the European countries where the process of population aging will be the most advanced. It follows from the Eurostat forecasts for the 28 European Union states that by 2050 the total population of Poland will have decreased by close to 10%, whereas the total population of the EU-28 will have grown

by 3.6%. Poland will be one of the five oldest countries of the European Union, and will have the seventh largest percentage of population aged 65 and older. The process of population 'double' aging, the measure of which is the share of persons aged 80 and over in the total population, will proceed at a slower rate in Poland (Poland persistently lags behind other EU states as regards its mortality rates and life expectancy at birth), and in 2050, it is projected to have one of the smallest percentages [GUS, 2014, pp. 109-167].



**Fig. 1.** Total population of Poland in 1950-2100 by age group

Source: Department of Economic and Social Affairs Population Division, *United Nations (2017), World Population Prospects 2017, New York, [online] <https://population.un.org/wpp/Graphs/DemographicProfiles/> date access: 11.08.2018.*

This demographic situation makes filling the gap left by the numerous birth cohorts of the 1950s and the first half of the 1960s gradually exiting the workforce the foremost challenge for many economies including Poland's [Gross-Gołacka, 2018, p. 133]. Aging workforce need not be – contrary to the mythicized belief – a burden on the economy but may become a valuable knowledge and experience resource as well as of increased purchasing power in the job market [Rudnicka, Surdej, 2013]. It is underscored in the literature that to manage the issue of the shrinking workforce it is necessary to draw on hidden reserves by, among others, engaging older people in the job market and building transgenerational singleness of purpose based on a high

level of participation of all age groups. These ideas inspire age management in the organization [Gross-Gołacka, 2018, p. 133].

#### **4. Ergonomics and age management in enterprises**

In the last 20 years, a growing interest in age management strategies has been observed both at the level of European institutional structures as well as at the level of national policies of member states. The term 'age management' is defined by Walker [1997] as referring 'specifically to the various dimensions by which human resources are managed within organizations with an explicit focus on ageing and, also, more generally, to the overall management of workforce ageing via public policy or collective bargaining'.

Walker [2005, pp. 685-697] points out five reasons why interest in age management systems has been growing:

1. Aging European workforce.
2. The paradox observed in the job market that consists in the declining economic activity of older persons in spite of an increasing share of this age group in the total population.
3. Social policy mandatory requirements.
4. Employer initiatives.
5. The urge to prevent age discrimination in employment.

Over the last several years, many aspects of age management have been codified on a number of occasions. One important example of such is 'Ageing in Employment: A Proposed European Code of Good Practice' developed by Eurolink Age in 2000 (Eurolink Age is an NGO which promotes the interests of older persons across the European Union) (Eurolink Age 2000). The Code provides a set of guidelines on good practices in age management, although whether an organization follows them or not is facultative for the organization. Recommended practices are grouped around the following seven aspects of age management: recruitment, training, development, and promotion; promotion and internal job change; flexible working practices and the modernization of work; workplace design and health promotion; employment exit and transition to retirement; changing attitudes toward older workers.

A similar classification was proposed by Naegele and Walker [2006] who, in their guide to good practice in age management, distinguished the following seven domains: recruitment, learning, training and lifelong learning, career development, flexible working time arrangements, health protection and promotion, and workplace design, redeployment, employment exit and transition to retirement. This classification is to a large extent consistent with the one specified in the Code of Good Practice. Admittedly, Naegele and Walker [2006] omitted to include change of attitudes toward

older workers in their guide yet it does not mean that they consider this type of actions non-essential. Quite the contrary, raising awareness of top management is regarded by them as the principal factor determining effective implementation of any activities related to age management [Liwński, Sztanderska, 2010].

Somewhat broader classification is employed by the European Foundation for the Improvement of Living and Working Conditions (EFILWC). In 1994-1998, the Foundation carried out the project 'Combating Age Barriers in Employment', under which activities undertaken by business organization in EU states to recruit or retain older workers were researched. According to the EFILWC, age management within organizations should include 11 areas of activities: recruitment; job changes; training and development; wage arrangements; health and well-being; flexible working practice; ergonomics and work organization; employment exit policy; comprehensive approach, and other policies [Ketsetzopoulou, 2007]. The catalogue is a compilation of age management dimensions included in the Code of Good Practice (Eurolink Age, 2000) and in the Naegle and Walker's [2006]. Two new dimensions are featured: wage policy and well-being.

Based on the previous discussion of actions and activities, it is evident that age management systems - even though they are implemented, among others, to improve competitiveness and flexibility of organizations coming to terms with the changes in the job market, to increase productivity or to facilitate the management of age-diverse workforce – tend to focus on the worker. Therefore, the type of work performed by workers is a relevant factor impacting on the type of actions taken by organizations as part of age management. For different actions should be taken for white-collar workers and different for blue-collar workers. Useful in this regard is ergonomics (reports on how ergonomic principles can be applied to workplace design can be found in Polak-Sopińska publications [Polak-Sopińska, Wiśniewski, 2010; Polak-Sopińska 2012, pp. 227-244; Polak-Sopińska, Górczyńska 2013, pp.136-159; Polak-Sopińska, Kucharska, 2014, pp. 141-172; Polak-Sopińska, 2019b, pp. 66-76] and by gerontechnology<sup>2</sup> whose aim is to match technology supporting older people participation to their health, housing, mobility, communication, leisure, and work [Knauth, Karl, Braedel-Kühner, 2005, pp. 11-16]. Due to the constraints concerning the recommended length of the article, issues related to gerontechnology in age management will be discussed in another publication.

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<sup>2</sup> Gerontechnology is a branch of science addressing older persons' access to all goods, services, and infrastructure. Its aim is to promote older people's good health, full social participation and long, independent life. It also involves research, development, and design of products and service to improve the quality of life. Gerontotechnology is an interdisciplinary science combining gerontology and technology [Knauth, Karl, Braedel-Kühner, 2005, pp. 11-16], [Butlewski, 2018].

It is important to be mindful of the fact that redeployment carried out at the right moment in the course of an older worker's working life is a crucial point not only in age management systems but in occupational safety and health management systems in general, which also feature ergonomic activities. For there are many jobs which are excessively demanding for older workers but there are also jobs – such as work in special conditions – which should not be performed by the same worker throughout his/her entire employment. Redeploying the worker in another job with a reduced workload or less demanding, should be conducive to aging workers' good health, continued employment and job satisfaction, and should prevent their early exit. However, it needs to be accentuated that age management must not be looked upon as a policy of preferential treatment of older people, which would constitute a breach of discrimination, including age discrimination, regulations – but rather as a policy of providing equal opportunity to persons of different age. Actions aimed at boosting productivity will not be deemed discriminatory as long as the people at whom they are aimed have limited physical and/or cognitive ability (which are a natural consequence of aging) or have previously been subject to age discrimination by the employer e.g. in terms of access to training and advancement opportunities. In other words, so long as the support is provided based on the hardship a person experiences in the job market rather than on the person's age, there is no risk of discrimination.

Furthermore, it is important that a point be made of the fact that actions addressing workers are the most effective when they are sustained and distributed over the course of the working life due to the prolonged effect that factors such as health promotion and disease prevention, education, training, long-life learning, and workstation furnishings and equipment have on the ability to work [Karppinen, Buschak, 2006; Polak-Sopińska, 2017, pp. 79-92]. What is important is the objective of age management – to sustain economic activity of persons at least until they reach their statutory retirement age and possibly longer [Liwinski, Sztanderska, 2010, p. 10]. Industrial ergonomics strives to achieve a similar aim.

In considering actions taken in age management systems aimed at increasing employment participation of older persons, one needs to underscore the role that the individual ability to work shaped – according to the model developed by Finnish Institute of Occupational Health – FIOH, by many overlapping factors including education and skills, job demands, organizational factors, and finally, individual factors (physical capacity and fitness, health, attitude toward work) plays. Based on the model, the Work Ability Index (WAI) was developed, which is an instrument facilitating subjective assessment of the level of a person's ability, which is result of the interplay between a worker's ability and the demands of the workplace [Tuomi, Ilmarinen, Jahkola, et al., 1998; Pokorski, 1998]. According to Makowiec-Dąbrowska et al. [2008, pp. 9-24] the index is a good predictor of sustained economic activity, especially in such a contradictory situation where on the one hand in Poland, the most

frequent reason cited for early exit is deteriorating health, and on the other hand, the average life expectancy is rising suggesting at once that the health of the population is improving.

Conclusions that can be drawn based on the index should be regarded as meaningful guidelines for occupational medicine practitioners and managers in charge of age management programs in organizations on further actions concerning workers' employment [Ilmarinen, 2006, pp. 362-364]. Results of many international studies reveal a relationship between the ability to work and the type of work. Congruent findings have also been made by Polish researchers studying both healthy and ailing workers. Among the factors that statistically significantly increase the risk of low values of the Work Ability Index are work-related stress, heavy manual work, strenuous body posture, fast-paced work environment, carrying/lifting heavy loads, heat stress in the workplace, shifts longer than 8 hours, night shifts, fatigue [Malińska, 2007, pp. 16-20]. Results reported by [Camerino, Conway, et al., 2005], confirm the need to incorporate ergonomic methods and instruments in human resources management and in particular, in age management strategies.

## 5. Ergonomic methods and tools in age management

Ergonomics is provided with a number of tools to support the process of workplace adjustment to accommodate a range of different needs including those of the aging workforce. Based on the literature review, ergonomic methods and instruments were analyzed in terms of their fitness for age management strategy. The findings for the following eleven groups of methods are presented in Table 1 and 2:

- checklists;
- research questionnaires;
- worksheets to assess musculoskeletal disorder risk (MSD) related to working postures;
- worksheets to estimate the level of physical stress and MSD risk associated with manual material handling in the workplace;
- somatographic data collection methods;
- estimation and analysis methods for the evaluation of the work process and its effects;
- instruments to assess physical and functional capacity;
- tools to assess sensory function;
- monitoring physiological parameters at work task performance;
- old age simulators;
- Digital Human Model application software.

The most representative examples of each are provided.

The list presented in tables is a continuation of M. Butlewki's works [2017, 2018].

Table 1. Results of the analysis of ergonomic methods and instruments in terms of their fitness for age management strategy

Method group	Selected methods and instruments	Fitness for age management strategy
Checklists	<p>The Dortmund checklist (developed by G.C. Burger's research team) – the first comprehensive method for work environment diagnosis to incorporate ergonomic and occupational safety and health aspects. Its results may be used to modify work, its course and its conditions [Kania, 1980, pp. 28-49].</p> <p>NIOSH checklists – an instrument to prevent musculoskeletal impairments and disorders caused by working posture and movements at the stage of new workstation and product planning, and to identify ergonomic risk factors in the already existing workstations and products [Horst, Lubinski, 2003, pp. 83-96].</p> <p>Working Posture and Movement Audit (Audyt SWP) – checklist related to postures that are 'not recommended' according to ISO 11226 and EN 1005-4 [Horst, Dahlke, 2003, pp. 572-575].</p> <p>Washington State Department of Labour Industries (WISHA) Industry-specific physical job evaluation checklist, Washington State Department of Labour Industries (WISHA) caution zone checklist, WISHA Hazard zone checklist – this checklist can quickly assess levels of risk of injury (minimal, moderate, or high) for the back, shoulder, hand/wrist, and knee in a given job. The Physical Job Evaluation Checklist was developed from observations of work activities performed and the evaluation of WMSD risk is based on those observations [Washington State Department of Labour Industries, 2018].</p> <p>Checklist to evaluate job suitability for the needs and abilities of people aged 50 and older developed by A. Polak-Sopińska at al. [2011, pp.149-188; 2013, pp. 136-159] – the checklist facilitates ergonomic evaluation of a job taking into account specific needs of mature workers.</p> <p>Checklist to evaluate job suitability for the needs and abilities of people with different disabilities developed by A. Polak-Sopińska at al. [2007, pp. 103-114; 2010; 2015, pp. 276-278] – facilitates ergonomic evaluation of a job in terms of its suitability for people with different disabilities.</p> <p>Checklist to evaluate job suitability for the needs and abilities of people with different disabilities developed by the Central Institute for Labor Protection – National Research Institute – facilitates multidimensional ergonomic evaluation of jobs taking into account specific needs entailed by various</p>	<p>There are generic checklists but there are also specific checklists designed for particular groups of users including older and disabled persons [Polak-Sopińska 2007, pp. 103-114; Polak-Sopińska, Wisniewski, 2010; Polak-Sopińska, Górczyńska, 2013, pp. 136-159; Polak-Sopińska, 2015, pp. 276-278; Central Institute for Labour Protection 2014].</p> <p>The fact that checklists cover a lot of different factors influencing work process and workload is their advantage. They enable thorough analysis of conditions inherent in job task performance. However, one weakness of many checklists is that fail to provide evaluation criteria. Thus, supplementary data is required, i.e. familiarity with standards, recommendations as well as methods of calculating optimal parameters for specific types of situations and conditions under which job tasks are performed [Kania, 1980, pp. 28-49], which limits the range of their users to ergonomics specialists, OSH specialists, occupational medicine practitioners.</p>

<b>Method group</b>	<b>Selected methods and instruments</b>	<b>Fitness for age management strategy</b>
Research questionnaires	<p>disabilities. The checklist can be used by the employer as an instrument to assess the degree to which a job meets the needs of a worker with a specific disability once the project has been completed [Central Institute for Labour Protection, 2014].</p> <p>WAI (Work Ability Index) - an instrument for subjective assessment of the level of a worker's ability to work [Tuomi, Ilmarinen, Jahkola, et al., 1998; Pokorski, 1998].</p> <p>Self-assessment questionnaire for people with disabilities for careers guidance - an instrument for subjective assessment of the level of a disabled worker's ability to work [Kurkus-Rozowska, 2007].</p> <ul style="list-style-type: none"> <li>- Ovako Working Posture Analyzing System (OWAS);</li> <li>- Rapid Upper Limb Assessment (RULA);</li> <li>- Rapid Entire Body Assessment (REBA);</li> <li>- Rapid Office Strain Assessment (ROSA);</li> <li>- Method to Analyze Jobs For Risk of Distal Upper Extremity Disorders - Strain Index (SI);</li> <li>- A concise index for the assessment of exposure to repetitive movements of the upper limbs (OCRA);</li> <li>- Assessment of Repetitive Tasks of the upper limbs (ART) tool;</li> <li>- Quick Exposure Check (QEC);</li> <li>- Method Assigned for the Identification of Ergonomic Hazards PLIBEL;</li> <li>- Key Item Method for Manual Handling Operations (KIM-MHO);</li> <li>- American Conference of Governmental Industrial Hygienists threshold limit value for hand activity level (ACGIH TVL HAL);</li> <li>- Manual Tasks Risk Assessment (ManTRA);</li> <li>- Posture, activity, tools and handling (PATH);</li> <li>- Method Assigned for the Identification of Ergonomics Hazards (PLIBEL).</li> </ul>	<p>Questionnaires enable to determine the level of ability to work, including of older and disabled persons'. Moreover, WAI is a good predictor of disability and death rate.</p> <p>No instruments enabling assessment of MSD risk caused by working posture in older people have been found. Evaluation worksheets, however, do allow for an assessment of the level of stress and strain, which enables the identification / specification of activities that could lead to disorders and early exit of workers (e.g. disability pension, bridging pension). These methods are used in DHM - Digital Human Model application software.</p>
Worksheets to estimate the level of physical stress and MSD risk associated with manual material handling in the workplace [Hartmann, Steinberg, 2017, Russell,	<ul style="list-style-type: none"> <li>- National Institute of Occupational, Safety and Health lifting equation (NIOSH);</li> <li>- Washington State Department of Labour Industries (WISHA) lifting calculator, Washington State ergonomics rule lifting calculator (WA L&amp;I);</li> <li>- Key Item Method;</li> <li>- KIM for Lifting/Holding/Carrying of loads (KIM-LHC);</li> <li>- KIM for Pulling/Pushing of loads (KIM-PP);</li> </ul>	<p>In this group of methods, only KIM takes into account the age of the worker performing manual handling tasks as an additional risk factor. People below the age of 20 and above the age of 40 were deemed to be characterized by limited</p>



<b>Method group</b>	<b>Selected methods and instruments</b>	<b>Fitness for age management strategy</b>
Winnemuller, Camp, et al., 2007, pp. 91-97; Waters, Occhipinti, Colombini, et al., 2016, pp. 695-711; HSE publications]	<ul style="list-style-type: none"> <li>- KIM for Manual Handling Operations (KIM-MHO);</li> <li>- Lifting Tables (Snook);</li> <li>- Manual Handling Assessment Charts (MAC);</li> <li>- Variable Manual Handling Assessment Charts (V-MAC);</li> <li>- Risk assessment of pushing and pulling (RAPP) toll;</li> <li>- American Conference of Governmental Industrial Hygienists lifting threshold limit values (ACGIH TLV- Threshold Limit Values for Lifting);</li> <li>- Variable Lifting Index (VLI);</li> <li>- Manual Handling Assessment Tables (MAT).</li> </ul>	<p>endurance, which may necessitate job redesign should the KIM value for the job be at the level allowable for people aged 20-40. The worksheets enable the identification of factors generating the highest risk during e.g. lifting, carrying, and collective handling of objects, pushing and pulling. They allow the user to predict the stress/strain level based on a description of planned tasks. Having identified the level of stress/strain, the user can single out tasks that could lead to disorders and early exit of workers (e.g. disability pension, bridging pension). These methods are used in DHM – Digital Human Model application software.</p>
Somatographic methods of data collection	<ul style="list-style-type: none"> <li>- Anthropometric tables providing anthropometric data for design:</li> <li>- Atlas antropometryczny dorosłej ludności Polski dla potrzeb projektowania [Batogowska, Słowikowski, 1989];</li> <li>- Atlas antropometryczny populacji polskiej – dane do projektowania [Nowak, 2000];</li> <li>- Atlas miar człowieka. Dane do projektowania i oceny ergonomicznej [Gedliczka, 2001];</li> <li>- Manikins to model workstation dimensions;</li> <li>- Graphic mapping of workspace;</li> <li>- Mock-ups.</li> </ul>	<p>There are anthropometric atlases and manikins that include measurements of older and disabled populations e.g. Atlas E. Nowak [2000]. They can be useful for designing furnishings, equipment, and workspace.</p>
Estimation and analysis methods for the evaluation of the work process and its effects	<ul style="list-style-type: none"> <li>- Questionnaire to identify causes of accidents at work;</li> <li>- Statistical analysis of accidents at work;</li> <li>- Estimation of accident risk;</li> <li>- Pinpointing errors in communication, decision-making, and executive processes [Kania, 1980, pp. 69-75];</li> <li>- Employee complaints and grievances.</li> </ul>	<p>This group of methods allows the user to establish the most frequent causes of accidents among older including disabled workers. This knowledge should be applied to workplace design.</p>

<b>Method group</b>	<b>Selected methods and instruments</b>	<b>Fitness for age management strategy</b>
Instruments to assess physical and functional capacity	<p>Verification of physical and functional capacity can be performed with e.g.</p> <ul style="list-style-type: none"> <li>- the FCE (Functional Capacity Evaluation);</li> <li>- measuring instruments (hand-eye coordination testing device, reaction parameters analyzers, balance boards, handheld dynamometers to measure finger and palm strength, etc.);</li> <li>- computer-based assessment of reaction time included in the Vienna Test System.</li> </ul>	<p>These tools can be used:</p> <ul style="list-style-type: none"> <li>- in the process of selecting jobs for older workers;</li> <li>- to adjust jobs to individual capacities of older workers;</li> <li>- to assess the impact of work;</li> <li>- to assess the level of fatigue of the worker.</li> </ul>
Tools to assess sensory function	<p>Evaluation of sensory function may be carried out with e.g.:</p> <ul style="list-style-type: none"> <li>- audiometer (hearing threshold, speech recognition);</li> <li>- pseudo-isochromatic Ishihara plates (color perception);</li> <li>- stereopsis tests (binocular vision, depth perception);</li> <li>- ACK apparatus (night vision and glare recovery time);</li> <li>- LEA Numbers Low Contrast Flip Charts (visual acuity).</li> </ul> <p>Measurements of internal physiological parameters e.g.:</p> <ul style="list-style-type: none"> <li>- energy expenditure with indirect and direct calorimetry, heart rate, estimation methods;</li> <li>- electromyography (EMG) to measure muscle response at task performance;</li> </ul> <p>Measurements of spatio-temporal parameters of segmented motion – np. Motion Capture.</p> <ul style="list-style-type: none"> <li>- FORD's Third Age Suit;</li> <li>- AGNES suit – Age Gain Now Empathy System.</li> </ul>	<p>These tools can be used:</p> <ul style="list-style-type: none"> <li>- in the process of selecting jobs for older workers;</li> <li>- to adjust jobs to individual capacities of older workers;</li> <li>- to assess the impact of work.</li> </ul> <p>These methods can be useful in the analysis of job suitability for older workers [Polak-Sopińska at al., 2019a, pp. 66-76; Polak-Sopińska, 2019b, pp. 77-89].</p>
Methods for monitoring physiological parameters at work task performance		
Old age simulators		<p>These methods make it possible to simulate mobility and movement, vision, and dexterity limitations. They are expected to enhance workplace designers' empathy with people with particular age-related dysfunctions and their needs [Butlewski, 2018, p. 137].</p>

Source: own study based on [Butlewski, 2017, 2018].

**Table 2.** Results of the analysis of DHM (Digital Human Model) application software in terms of their suitability for age management strategy

<b>Method group</b>	<b>Name and functionality of the DHM model</b>	<b>Applied ergonomic methods</b>	<b>Suitability for age management</b>
<p>DHM – Digital Human Model application software. They come as separate modules and can be integrated with other applications aiding the design process(CAD) or the manufacturing process (CAM) such as AutoCAD, Solid Edge, Solid Works, Catia [Dahlke 2014, pp. 21-32; Butlewski 2017, pp. 29-56]</p>	<p>Delmia includes DELMIA Ergonomics Analysis (EGA), DELMIA Ergonomics Evaluation (EGE) modules.</p> <p>EMA (Editor Menschlicher Arbeit) – allows the user to simulate workspace, worker motions, and to identify risk factors based on EAWS [Fritzsche, Jendrusch, Leidholdt, at al., 2011].</p> <p>3DSSPP (3D Static Strength Prediction Program) – developed by the University of Michigan Office of Technology Transfer allows the user to model workers' static postures and movements.</p> <p>JACK (Jack Human Modeling and Simulation Tool by Siemens) – allows the user to design work process and introduce a human model with specific anthropometric characteristics; it makes it possible to analyze the range and loading on the musculoskeletal system; thanks to Motion Capture extension it is possible to generate animations of real human motions in the Process Simulate environment.</p> <p>RAMSIS (Rechnergestütztes Anthropometrisch-Mathematisches System zur Insassen-Simulation) by Human SolutionsGmbH. Available modules:: Automotive, Industrial Vehicles, Bus &amp; Truck, Aircraft, Anthroscan, Cognitive, 2008/2/EG, Safety, NASA Analyze, REFA Analyze, NIOSH</p>	<p>Rapid Upper Limb Assessment, Lifting and Lowering Analysis, Push, Pull and Carry Analysis, Biomechanics Analysis.</p> <p>EAWS (analysis includes working posture, force exerted by the worker, the weight of loads moved, manual materials handling equipment, repetition rate and movement trajectories, types of grips involved) [Schaub, Caragmano, Britzke et al., 2013, pp. 616-639].</p> <p>3D Static Strength equations developed by the University of Michigan (calculation and analysis of the force and momentum acting upon each joint).</p> <p>NIOSH Analysis, Rapid Upper Limb Assessment,; Ovako Working Posture Analysing System, 3D Static Strength Analysis developed by University of Michigan.</p> <p>NIOSH Analysis; REFA Analysis; NASA Discomfort Analysis.</p>	<p>If a designer working in CAD on the design of a workstation uses the applications, s/he will be provided with a great deal of detailed information about the designed workspace. S/he can also perform a simulation of motions and generate a cumulative assessment of the risks the worker will be exposed to. Further, by scanning worker movements in a real-life workstation, s/he can process the data, which should make it easier for him/her to design adjustments [Dahlke, 2014, pp. 21-32].</p> <p>Veritas system and a tool developed by the national Institute for Labor Protection have been created to enable disability simulations. They allow the user to predict older and disabled workers' motions and manner of operation.</p>

Method group	Name and functionality of the DHM model	Applied ergonomic methods	Suitability for age management
	<p>Analyze; available as a separate application or a module in CATIA V5 and V6.</p> <p>Based on the anthropometric data computer tool to aid the design, ergonomic evaluation, and adjustment of jobs to meet the needs of the disabled developed by the National Institute for Labor Protection.</p> <p>VERITAS (<i>Virtual and Augmented Environments and Realistic User Interactions To achieve Embedded Accessibility DesignS</i>) – VERITAS is an Integrated Project (IP) within the 7th Framework Programme, Theme FP7-ICT-2009.7.2, Accessible and Assistive ICT</p>	<p>PN-EN 547 (Safety of machinery - Human body measurements), PN-EN 1005 (Safety of machinery - Human physical performance).</p> <p>VERITAS user models take into account motor, perceptual and cognitive impairments. Even multiple conditions can be simulated. Besides numerical simulation with graphical representation of the results VERITAS supports virtual product experience by using virtual reality technology including haptic devices. Designers can thus experience their designs through the eyes of a user with cataracts or feel the problems of operating a gas hob with the tremor of a Parkinson patient [Butlewski, 2018, pp. 135].</p>	

Source: own study based on [Butlewski, 2018, pp. 135; Dahlke 2014, pp. 21-32].

The literature review revealed that there are many ergonomic methods (of varying degree of complexity) which can be used as tools to support decision-making strategies of organizations with regard to age management. Unfortunately, the findings made by the author, by researchers affiliated with the Nofer Institute of Occupational Medicine, the Central Institute for Labor Protection, and with many other research institutions in Poland [Korzeniowska, 2004, pp. 129-138; Hildt-Ciupińska, Bugajska, 2013, pp. 297-306] as well as the findings reported by the National Labor Inspectorate lead to the conclusion that the application of ergonomic methods and tools in the process of designing and adjusting jobs to accommodate the needs of age-diverse workforce in enterprises operating in Poland is still rather rare. Awareness related to ergonomics among top management of large enterprises especially in the automotive and assembly industries has been observed to be rising. For small and medium-sized enterprises cutting costs continues to take priority to the health and well-being of the worker. It is the author's opinion that in order to extend the duration of economic activity of older persons, it is necessary to develop a model for the incorporation of ergonomic methods in the management of age-diverse workforce that will be adequate for the realities of the Polish business environment. Before such a model is developed, the following research questions will have to be answered:

1. Which ergonomic methods/tools are most often employed by certified ergonomists in Poland and in the world, and why?
2. Which ergonomic methods/tools are recommended by Polish and international research institutions, process engineers, designers, human resources specialists, and why?
3. Which ergonomic methods/tools are most frequently used by small, medium, and large enterprises in Poland, and why?
4. Which ergonomic methods/tools are preferred by OSH specialists, process engineers, designers, human resources specialists, and why?
5. How familiar are Polish employers, OSH specialists, process engineers, designers, human resources specialists with the presented methods?
6. To what extent do ergonomists determine the choice of ergonomic methods and tools to be used?
7. To what extent are ergonomic methods used by specialists relevant to specific risks in each industry?
8. In what ergonomic methods and tools are work organization; occupational safety and health; product and job design specialists trained in Poland?

The author shall present answers to the above research questions in her future publications.

## 6. Conclusion

Work that is in line with ergonomic requirements may contribute to the prolongation of a healthy life of workers. Optimization of working conditions needs to be a sustained process. It does not only involve designing but also correcting that takes into account changes that take place in the organization, in its environment, and in the workstation. The process should ensure safe working conditions that make intellectual and social (including physical) development of the worker possible, and should be conducive for the worker to take action to improve productivity. This is how ergonomic requirements fit in with the overarching – from the vantage point of economical sciences – objective of the organization that is the maximization of profits [Rembiasz, Górny, 2015, pp. 115-126].

Ergonomic workplace design and ergonomic physical working environment brings tangible positive results for the workers (especially, older ones) and employers (decreased fatigue, increased productivity, reduced number of occupational diseases and work-related accidents), and that is the reason why it is imperative that ergonomics become an integral part of a comprehensive age management strategy in the organization.

Based on the literature review, it has been proved that there are many ergonomic methods that can be applied in age management. In order to enhance the effectiveness of managing age-diverse workforce, it will be indispensable to develop a model of the incorporation of ergonomic methods in age management adequate to the realities of the Polish business environment which will require broader cooperation of employers, OSH services specialists, human resources, process engineers, production/assembly line workers, ergonomists, trade unions, and occupational medicine practitioners. Conceptualization of such a model shall be presented in future publications.

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# **NOVICE AND HABITUAL ENTREPRENEURS: ENTREPRENEURIAL MOTIVATIONS AND EXPLOITATION OF OPPORTUNITIES AS A PART OF ENTREPRENEURIAL PROCESS**

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## **1. Introduction**

Entrepreneurship, treated as a certain attitude towards management, which leads to the exploitation of opportunities thanks to widely understood existing resources, is currently an important stream of considerations undertaken in the literature on the subject. There have been many studies on the emergence of new business opportunities, arguing that some people better identify and use such opportunities than others [Shane, 2003].

Entrepreneurship is not limited to creating a new company [Ucbasaran et al., 2001], and it is also not a one-off event [Carter, Ram, 2003]. The exploitation of entrepreneurial opportunities can also take the form of acquisition or inheritance of an existing business [Shane, Venkataraman, 2000; Ucbasaran et al., 2001]. In addition, entrepreneurs may not limit themselves to having one company and can run several businesses simultaneously.

Persons systematically undertaking business activity, one at a time or several activities concurrently, have been the subject of research in many countries with developed economies in the last 20 years [Ucbasaran et al., 2008; Ucbasaran et al., 2003; Westhead, Wright, 1998; Wiklund, Shepherd, 2008]. Habitual entrepreneurs constitute a large and important segment in the population of entrepreneurs [Westhead et al., 2005]. According to MacMillan [MacMillan, 1986], entrepreneurial experience and research concerning habitual entrepreneurs should form the basis for studying the essence of entrepreneurship. Experienced entrepreneurs have had many opportunities to “try their hand” at running a business, analyse these attempts, identify errors and correct them in subsequent ventures. This is a departure from the search for

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entrepreneurial traits in favour of the behavioural approach, i.e. the study of behaviour and ways of undertaking entrepreneurial activities as well as the perception of entrepreneurship as a process. The process approach is one of the contemporary approaches to entrepreneurship presented in many concepts [Bygrave, Hofer, 1991; Hisrich et al., 2014; Shane, 2003]. The models presented by the researchers treat entrepreneurship as a complex process, determined by the configuration of many different factors. The process approach allows one to carry out the analysis of the phenomenon of entrepreneurship based on a dynamic approach, illustrating the actions taken by the entrepreneur and their consequences. The identification and exploitation of entrepreneurial opportunities are fundamental to the entrepreneurial process [Shane, Venkataraman, 2000]. Ucbasaran et al. [Ucbasaran et al., 2003], referring to the theory of human capital and cognitive capital, state that entrepreneurial experience is an important element of entrepreneurs' human capital which affects how entrepreneurs think and identify opportunities. Therefore, the entrepreneurial process can be different in the case of novice and habitual entrepreneurs. Existing research highlights the important role of previous experience related to starting, owning and managing a business in developing entrepreneurial behaviour [Krupski, 2011; Ucbasaran et al., 2006; Westhead, Wright, 1998]. The results of these studies suggest that people who engage in numerous start-ups have developed an entrepreneurial way of thinking and solving problems, which in turn increases their ability to identify and exploit opportunities [Shane, 2003; Ucbasaran et al., 2003]. Gordon et al. [Gordon et al., 2009] state that the motivation of the entrepreneur has a significant impact on the ability to identify entrepreneurial opportunities. The research conducted by Westhead and Wright [Westhead, Wright, 1998] suggests that novice and habitual entrepreneurs are guided by other motives when starting their business.

In Poland, so far, there has been no research on entrepreneurial behaviour taking into account different types of entrepreneurs depending on their previous experience in running a business, hence the author's research fills a gap in this area. Research into habitual entrepreneurs in Poland is important, as the economy develops, this phenomenon seems to be more and more common. In Poland, the survival rate of the first year of the company is 70% [Raport..., 2018] but there is no research to say how many of these failed entrepreneurs decide to re-establish a business and what factors determine it. The fear of failure in Poland is on higher level than in EU [Global..., 2016]. Those who perceive business opportunities do not choose to set up their own business due to this factor. This is an important issue, for example due to the Second Chance Policy program which is introduced in Poland, which one of the tasks is to support in restarting activity after a business failure.

This study was aimed at examining the behaviour of novice and habitual entrepreneurs in relation to the entrepreneurial process. To achieve the goal, the differences between novice and habitual entrepreneurs in several areas were

examined. First of all, the motives of undertaking business activity were compared with particular emphasis on pull and push factors. In light of the theory and research on entrepreneurship, it was expected that push factors would be less frequent among habitual entrepreneurs than among novice companies. Secondly, the ability of novice and habitual entrepreneurs to recognise and create opportunities was examined, expecting that the entrepreneurial way of thinking developed as a result of previous experiences should positively affect the creation of opportunities by habitual entrepreneurs.

## 2. Theoretical background

### Novice and habitual entrepreneurs

The definition of the phenomenon of habitual entrepreneurship has evolved, not finding a commonly accepted form for a long time. Defining habitual entrepreneurship is done on the basis of three main dimensions: (i) ownership, (ii) the decision-making role, as well as (iii) the ability to identify and exploit opportunities. The person of the entrepreneur plays a key role here, and habitual establishment of companies can be manifested in various forms and configurations.

MacMillan [MacMillan, 1986, pp. 241-243] identified three types of entrepreneurs: (i) one-shot, where the entrepreneur successfully builds a large enough business and manages its own business independently, (ii) drop-out, characterizing people who build a thriving companies before they decide to sell them. These entrepreneurs withdraw from their involvement in business and invest their profits in safe investments, (iii) a "business generator" which, unlike previous types, has more than one entrepreneurial experience.

Westhead et al. [Westhead et al., 2004] and Ucbasaran et al. [Ucbasaran et al., 2006] have carried out the universal operationalisation of novice and habitual entrepreneurs:

**Novice entrepreneurs** are persons without prior experience (both minority and majority) in the ownership of a business, founders and buyers or heirs of an existing independent enterprise who currently have a minority or majority stake in a newly established, acquired or inherited enterprise.

**Habitual entrepreneurs** are persons who have or had a minority or majority stake in two or more enterprises, and at least one of them was founded, acquired or inherited. Habitual entrepreneurs include:

- **serial entrepreneurs** – are persons who have sold or closed at least one business in which they have had a minority or majority stake, and currently hold a minority or majority stake in one independent enterprise that was newly founded, acquired or inherited,

- **portfolio entrepreneurs** – are persons who currently hold a minority or majority stake in two or more independent enterprises that were newly established, acquired or inherited.

### **Entrepreneurial process and entrepreneurial opportunities**

W.D. Bygrave and C. Hofer [Bygrave, Hofer, 1991] define the entrepreneurial process as a process covering all functions, activities and operations related to perceiving opportunities and creating an organisation for their exploitation. According to M.H. Morris [Morris, 1998] as well as R.D. Hisrich et al. [Hisrich et al., 2014], the entrepreneurial process includes the identification of opportunities, development and improvement of concepts, planning and obtaining resources, and implementation. As J.A. Timmons and J. Spinelli [Timmons, Spinelli, 2004] indicated in their model, there should be a balance and mutual fit between opportunities, resources and the team. In the model proposed by S.A. Shane [Shane, 2003], the entrepreneurial process begins with identifying entrepreneurial opportunities. Entrepreneurship in this model is understood as a relationship between an individual and an opportunity, it is a directed process which proceeds in a certain specific order, though it does not have to be linear.

While analysing the characteristics of entrepreneurship in the process approach presented by different authors, it can be noted that what comes to the fore is the identification and exploitation of opportunities, or chances, which in the further stages (planning and development of concepts, obtaining resources) leads to the creation of a new venture.

Opportunity-based conceptualizations of entrepreneurship are developed by scholars [Shane, 2003; Shane, Venkataraman, 2000; Krupski 2011]. The process of identifying opportunities is an individual process which proceeds in different ways depending on the information available and beliefs held. Access to information is shaped by many factors such as life experience, networks of connections, education and the way of seeking information. Even having access to the same information, not everyone is able to identify emerging opportunities [Shane, 2003]. The literature presents two approaches to opportunities: discovering opportunities and creating opportunities.

The approach based on discovering opportunities assumes that market imbalance is caused by exogenous changes, such as imperfection of technology, consumer preferences or other characteristics of the industry [Kirzner, 1997]. S. Shane [Shane, 2003] comes to a similar conclusion, indicating that technological, political, legal, social and demographic changes may disrupt the competitive balance existing in the market, thus creating opportunities. It follows from the above-presented considerations that an opportunity exists in the market and is not related to the activities of the entrepreneur but is sought after by the entrepreneur,

hence there is a need to constantly scan the environment in order to discover this opportunity. On the other hand, opportunities seen from the perspective of the creation approach indicate constructivism that emphasises the role of the entrepreneur in creating opportunities through the perception, interpretation and understanding of market forces. Additionally, Alvarez and Barney [Alvarez, Barney, 2007] consider, that an opportunity is not an event formed by the market through changes in demand and/or supply and resulting from information asymmetry. It arises as a result of endogenous activities created by the entrepreneur using his or her knowledge. Creating opportunities suggests that the creation of new products/services is not necessarily related to those existing in current industries and current markets. One can refer to Schumpeter's theory of creative destruction, according to which an opportunity emerges from the entrepreneur's internal environment and determines his or propensity for initiating changes.

In his research, M. Koczerga noticed the appearance of willingness to create their own venture among people employed as a result of two factors – a lack of job satisfaction and the identification of opportunities to exploit in the environment [Koczerga, 2014]. According to the researcher, this is not entrepreneurship initiated strictly out of necessity, but rather inspired by professional experience and the perception of opportunities in the environment.

The decision to undertake an entrepreneurial activity is a derivative of many factors that induce the entity to initiate a business. These are the motives that constitute the internal source of activity and the pushing factor. Many years of research on entrepreneurial motivation have led to the determination of various categories of reasons for starting business activity. The division into opportunity factors and necessity factors is often used in these studies [Verheul et al., 2010], or in other words, pull factors and push factors. Positive motives result from the 'desire to become an entrepreneur', a conscious choice of a better alternative, perceiving the chance for a successful venture. The necessity (compulsion) to start business activity results mainly from the situation in the labour market. Push factors related to the situation in the labour market include: unemployment, unsatisfactory earnings, dissatisfaction with the current job, as well as difficulties with reconciling professional and family roles [Verheul et al., 2010].

## **Hypothesis**

The current research carried out in the framework of the GEM project shows that in countries with a higher level of economic development the number of enterprises established out of necessity decreases, while the motivation related to the exploitation of a market opportunity becomes more significant. In Poland, in 2015, the percentage of people setting up a business due to a perceived market opportunity was 46.4%



(the European average – 47.5%), while 28.1% of owners of new companies (operating for less than 3.5 years) decided to start their own business due to a lack of other earning alternatives (the European average – 22.4%) [Global..., 2016]. Despite the decline in the share of push factors observed for several years, Poland's result is still worse than in innovative countries and compared to the European average. Habitual entrepreneurs should create enterprises out of necessity to a lesser extent. Having previous experience in business, they are equipped with knowledge and skills, thus they make decisions to establish a business of their own volition instead of being forced to do so [Gordon et al., 2009]. On the basis of the above-presented considerations, there should be a relationship between the motives for starting operations and experienced or novice entrepreneurs. The following hypothesis was formulated:

**H1:** Novice entrepreneurs are more often motivated to establish enterprises by economic reasons than habitual entrepreneurs.

Business opportunities, their identification or creation, are a basic element of the entrepreneurial process, emphasised by many researchers [Shane, 2003; Timmons, Spinelli, 2004]. Westehead et al. [Westehead et al., 2005] studied the differences in decisions and actions taken by experienced and novice entrepreneurs. Experienced entrepreneurs, using their own human capital related to the previous business operations, can acquire skills and experience that would allow them to identify additional business opportunities. According to the theory of cognitive adaptation [Gottschalk et al., 2017], experienced entrepreneurs are dynamic, flexible, capable of self-regulation and involved in the process of creating decision-making frameworks that focus on the ability to perceive and process changes in their environment. Based on the studies conducted, Ucbasaran et al. [Ucbasaran et al., 2008] as well as Westhead and Wright [Westhead, Wright, 2017] stated that experienced entrepreneurs identify more business opportunities, create companies more often on the basis of challenges that arise along with opportunities, and are more innovative, i.e. more involved in introducing new products or services into the market as well as new production or distribution methods.

People who have gained experience as business owners should have a higher cumulative level of entrepreneurial human capital [Ucbasaran et al., 2013]. In particular, they ought to have better managerial and technical skills, networks of contacts, access to market-specific information and knowledge, and should therefore be better prepared to identify and benefit from new opportunities.

**H2:** Habitual entrepreneurs engage in creating opportunities in the process of establishing companies to a greater extent than novice entrepreneurs.

### 3. Materials and Methods

Data for the study were collected as part of a comprehensive project entitled “Determinants of the development of entrepreneurship and innovation in small business” (“Uwarunkowania rozwoju przedsiębiorczości i innowacji w małych firmach”), carried out at the Faculty of Management of the University of Lodz, addressed to owners/co-owners of small innovative companies, i.e. companies that in the years 2014-2017 made at least one change related to the introduction of new products/services or upgrading existing ones, or related to the implementation of new technical methods of production/provision of services or their modernisation, or related to the introduction of new or improved methods of company organisation<sup>2</sup>.

The study was conducted by an experienced research agency. Minimum sample size is 382, at a confidence level of 0.95 and a margin of error 5% for 57.2 thousand small companies in Poland. Random sampling was applied. The research sample was selected from the database of enterprises employing from 10 to 49 people containing over 50.000 records, out of which 20.000 enterprises were drawn (from the database, every tenth unit was drawn for examination). The database was purchased from an external company (Bisnode). Enterprises were surveyed by means of a questionnaire using the CATI (Computer Assisted Telephone Interviewing) technique. The total number of completed questionnaires was 400, the response rate was 35.5% and the effective response rate was 2.06%. 373 questionnaires were accepted for the study (27 companies provided an ambiguous answer to the question “what is your business activity” – the answer “hard to say” suggests that the owner or co-owner did not participate in the study). Telephone interviews were conducted in the fourth quarter of 2017.

Out of the surveyed respondents, for 252 it was the first business activity, 121 had previous experience in business, however, the limited research framework did not allow to specify whether they were a portfolio or serial entrepreneurs. The characteristics of the research sample in the groups according to the entrepreneurial experience are presented in Table 1. Chi-square test of independence was applied to assess the relationships between variables and Cramer's V statistics was used as a measure of the effect size.

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<sup>2</sup> The definition of an innovative company used in research is based on concepts commonly used in public statistics. It is based on the methodology proposed by the OECD and Eurostat in the Oslo Manual 3th Edition. According to this broad definition: An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations. It corresponds with Porter's approach to the role of innovation at the micro level, in contrast to Schumpeter's approach to innovation.

**Table 1.** Characteristics of the research sample regarding the entrepreneurial experience

Variables	First business n = 252	Subsequent business n = 121	$\chi^2$ (df)	p-value	Cramer's V
Family business Yes No	(n = 148) 58.73% (n = 104) 41.27%	(n = 64) 52.89% (n = 57) 47.11%	1.14 (df = 1)	0.2866	0.0552
Gender of the general manager Male Female	(n = 212) 84.13% (n = 40) 15.87%	(n = 106) 87.60% (n = 15) 12.40%	0.79 (df = 1)	0.3754	0.0459
Sector Manufacturing Commerce Services	(n = 105) 41.67% (n = 33) 13.10 % (n = 114) 45.23%	(n = 40) 33.06% (n = 23) 19.01 % (n = 58) 47.93%	3.59 (df = 2)	0.1660	0.0981

Source: Own elaboration based on the research results (n 373).

The scale of the phenomenon of habitual entrepreneurship (32.44%) demonstrated in this study is comparable to studies carried out in other countries [Westhead, Wright, 1998; Westhead, Wright, 2017]. Measuring the scale of the phenomenon is determined by the definition used, the chosen sector or the selection of the research sample. Regardless of these differences, the analysis of conducted international studies and the author' research show that the phenomenon of habitual entrepreneurship is widespread.

### Independent variables

In the presented study, the distinguish between habitual and novice entrepreneurs was crucial for the analysis. This variables were assessed using the following interview question: "Which company is it for you? (Subsequent business – this term includes conducting business activity in various forms (natural person, partner/company shareholder). One business activity could be completed and the next company established, or the respondent might run several businesses concurrently)". If the answer was "first" respondents were classified as novice entrepreneurs, the answer was "subsequent" they were classified as habitual entrepreneurs. The study adopted the most general definition of habitual entrepreneurship, without distinction between portfolio and serial entrepreneurs or criteria concerning previous experience in terms of business success or failure. This was an initial survey of habitual entrepreneurs, hence the focus was on the general comparison of the two groups of entrepreneurs, with the assumption that if the hypotheses were confirmed, more detailed analyses would be possible in future research.

## Dependent variables

The motivations for starting business activity were operationalised with the opportunity, necessity or social motives variable and were assessed using the following question: “Which of the following motives guided you while establishing your company: Economic (earnings, a lack of a better job opportunity), Personal (personal development, self-fulfilment, your own ideas, perception of a market opportunity), Social (family tradition, job creation)”.

The ability to discover or create opportunities was measured by means of the question about factors that influenced the establishment of the company. The respondents had the following answers to choose from: “Entering into a network of business or personal connections that provided an opportunity to develop my own ideas, An idea for a new product or service, Discovery of new market needs, Creation of new market needs.”

To verify the research hypotheses, the Pearson chi-square test for independence was applied with the use of Cramer's V statistics as a measure of the effect size. In the study, the statistical significance level (alpha) for testing statistical hypotheses was set at  $p < 0.05$ , and  $p < 0.1$  was adopted as the acceptable level. Multiple correspondence analysis (MCA) was applied to explore the structure and relationships of categorical variables presented in multi-way contingency tables. Since maximum number of dimensions was used to perfectly represent the data, cluster analysis (Ward's method with the Euclidean distances) was applied to group the variable categories. All the calculations were performed with the use of STATISTICA 13.3 PL software.

## 4. Results and discussion

The economic motives of starting business activity were more often indicated among novice entrepreneurs (60.32%) than among experienced ones (53.72%), while personal motives were slightly more frequently (29.75%) indicated by habitual than by novice entrepreneurs (26.59%). This result, however, was not statistically significant ( $p = 0.4820$ , no effect was observed according to the value of the Cramer's V). Thus, H1 hypothesis has not been confirmed.

The results of the research showed a greater tendency of habitual entrepreneurs (27.27%) to create opportunities, manifested in the introduction of a new product or service, in relation to novice entrepreneurs (16.67%). However, the establishment of a new business based on creating new market needs was at a similar level for habitual (9.09%) and novice entrepreneurs (10.32%).

No statistically significant relationship has been found between the entrepreneurial experience and reasons for the establishment of a business ( $p = 0.2469$ , however, a small effect was observed according to the value of the Cramer's V). Probably, the H2 hypothesis would be confirmed with a larger number of respondents. The above results are presented in Table 2.

**Table 2.** Motivation for and factors related to establishing companies depending on entrepreneurial experience

Variables	First business n = 252	Subsequent business n = 121	$\chi^2$ (df)	p-value	Cramer's V
1. Motivation for starting a business			2.46 (df = 3)	0.4820	0.0813
Economic (financial – push)	(n = 152) 60.32%	(n = 65) 53.72%			
Personal (development, self-fulfilment – pull)	(n = 67) 26.59%	(n = 36) 29.75%			
Social (family tradition, job creation)	(n = 29) 11.51%	(n = 14) 11.57%			
Other	(n = 6) 2.38%	(n = 6) 4.96%			
2. Factors that have influenced the establishment of a business			6.66 (df = 5)	0.2469	0.1337
Entering into a system of business and personal connections	(n = 75) 29.76%	(n = 36) 29.75%			
An idea for a new product or service	(n = 42) 16.67%	(n = 33) 27.27%			
Discovery of new market needs	(n = 76) 30.16%	(n = 30) 24.79%			
Creation of new market needs	(n = 26) 10.32%	(n = 11) 9.09%			
Other	(n = 14) 5.56%	(n = 5) 4.13%			
I do not know/it's hard to say	(n = 19) 7.54%	(n = 6) 4.96%			

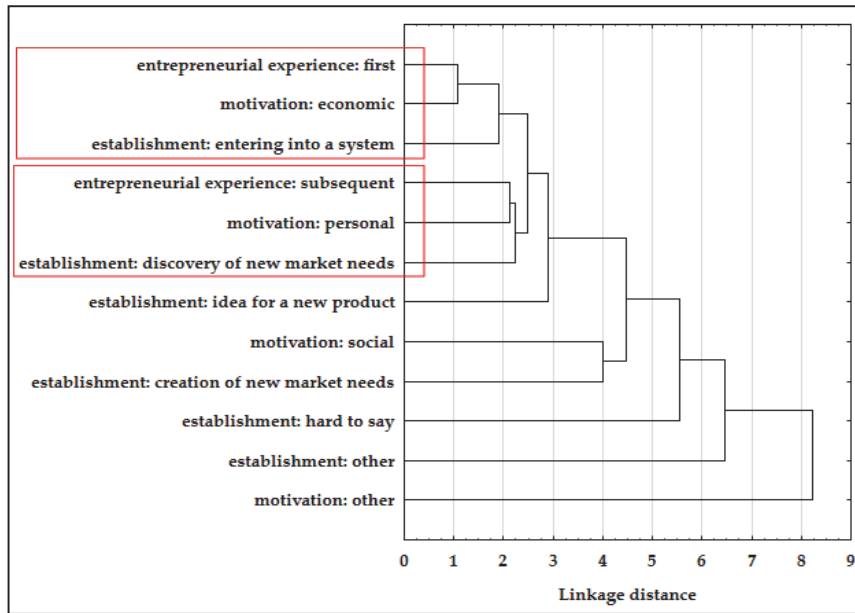
Source: own elaboration based on the research results (n 373).

Multivariate correspondence analysis was applied to reveal the relationships and structures of the analysed variables. The results of grouping the variables categories (based on the coordinates of variable categories) with the use of cluster analysis are presented in Figure 1.

Taking into account the three variables in total, two groups of similar categories of variables can be observed. The novice entrepreneurs establish businesses for economic reasons with regard to entering into a system of business and personal connections. The motivation for starting a business for the habitual entrepreneurs is mainly due to personal reasons, considering discovery of new market needs. These relationships cannot be identified in the case of the analysis of pairs of variables.

The paper presents the results of the preliminary exploration of differences between novice and habitual entrepreneurs. The scale of the phenomenon of habitual entrepreneurship in Poland among small innovative companies

demonstrated in the presented research results (32.44%) leads to the conclusion that more comprehensive research on this subject should be carried out, both in the scientific and practical aspect – in terms of the policy towards entrepreneurship. The question of whether habitual entrepreneurs differ from novice ones can be partly answered in the affirmative.



**Fig. 1.** Tree diagram summarizing the MCA results  
*Source: Own elaboration based on the research results (n 373).*

Although it can be said that actions of habitual entrepreneurs differ from actions of novice entrepreneurs, it cannot be assumed that this is true in every aspect. Discovering and creating opportunities is emphasised as a factor in establishing their business by both habitual and novice entrepreneurs. Small habitual entrepreneurs combine personal reasons with discovery of new market needs. Negative motives (necessity) for starting business activity dominate among small novice entrepreneurs to a small extent, however, these are not statistically significant differences. It should also be noted that the percentage of businesses created under the influence of push factors, both in the case of small habitual and novice entrepreneurs, is high, much higher than in the GEM research. This may be due to the perception of economic factors by the respondents as a mixed motivation, not strictly negative – the need to set up a business due to a lack of an alternative way to earn money. Multivariate correspondence analysis indicates that novice entrepreneurs start business for economic reasons with regard to

entering into a system of business and personal connections. Fu et al. [Fu et al., 2018] point to an important issue related to re-starting a business which are labour market regulations. They showed that in the case of high thresholds for obtaining paid employment in labour markets with rigid regulations, there is also a high percentage of people entering business again, driven by necessity.

The study assumed that previous entrepreneurial experience would increase the likelihood that small habitual entrepreneurs would be more involved in innovative activities by creating opportunities. These opportunities can refer to new products, services or processes, as well as to creating new market needs. Small habitual entrepreneurs showed greater propensity for the first option, while in the case of creating new market needs, the responses of novice and habitual entrepreneurs were at a similar level. Deliberate demand and market creation is a risky action that requires the adoption of an appropriate strategy, hence there is a small percentage of entrepreneurs opting to conduct such activities. There are also studies that do not confirm the positive impact of entrepreneurial experience on the recognition and exploitation of opportunities or provides only temporary performance effects [Gottschalk et al., 2017; Parker, 2013]. Habitual entrepreneurs may not be able to transfer previous experience to a new venture due to dynamic changes in the environment, errors in the cause-effect interpretation or over optimism. This has implications for the entrepreneurs support policy, which on the one hand would encourage novice entrepreneurs to use a good business practices presented by experienced habitual entrepreneurs and, on the other hand, would offer professional expert support aimed at eliminating development barriers by various types of entrepreneurs.

## **5. Limitations and future research directions**

It should be noted that the study has some limitations. The research sample consists of small enterprises, i.e. employing from 10 to 49 people. The inclusion of micro enterprises in the study, which constitute the vast majority of companies operating in Poland, would provide a comprehensive picture of entrepreneurial behaviours of habitual entrepreneurs. Another limitation is related to the specificity of the analysed sample associated with innovation. The criterion for the selection of the sample was the introduction by the company in its operations any changes in products, services, production or organisation methods in the last three years. As a result, the study was conducted among innovative companies in which the motives of entrepreneurs, their ability to recognise and exploit opportunities as well as activities undertaken may significantly differ from entrepreneurs not introducing innovations. Due to the fact that, as noted earlier, the study of habitual entrepreneurs was only part of a larger, comprehensive study,

the analysis was limited to the comparison of novice and habitual entrepreneurs. This is a strong limitation, research results [Shane, 2003; Ucbasaran et al., 2008] indicate, however, that differences between portfolio and serial entrepreneurs are often greater than between habitual and novice entrepreneurs. Therefore, there is a need to carry out in-depth studies based on the division into these two subgroups of entrepreneurs. Another issue to be considered in the deliberations is the impact of previous business experience on the entrepreneurial process, especially the differences in entrepreneurial behaviour of people who failed and succeeded in business. It is also the limitation of this study. Some scholars view business failure as representing an opportunity for learning, others contest this and argue that it may be difficult to learn from failure [Shane, 2003; Verheul et al., 2010].

The presented research results are a starting point for further detailed analyses that should be undertaken to investigate the nature of habitual entrepreneurship. The answers to the following questions are important in order to explore the characteristics of habitual entrepreneurs: whether and to what extent entrepreneurs learn from their own experience, what is the impact of success or failure in previous businesses on the current behaviour of entrepreneurs and their companies, and what implications this brings for the development of the future SME support policy.

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## MAKING TEAM VIABLY – A CHALLENGE FOR CONTEMPORARY COMPANIES

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### 1. Introduction

Over the last 50 years, teams have become a central element in the functioning of various types of organizations, both in the private and public sectors. The increase in the popularity of the team form of work organization was accompanied by numerous studies that provided evidence for a positive correlation between work based on teams and broadly understood results achieved by enterprises [Mathieu et al., 2008; Kozłowski, Bell, 2003; Katzenbach, Smith, 1993]. At the same time the dynamically changing, highly uncertain and complex environment and the growing need for innovation have given rise to numerous changes within enterprises. Among other things enterprises had to redesign their organizational structures, largely focused so far on individuals, so as to create conditions for necessary changes, including those conducive to teamwork. Many organizations have begun to develop towards TBO – Team Based Organizations [Kennedy, 2003; West, Markiewicz, 2004].

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Over time, as enterprises were gaining experience in the use of teamwork, research projects were conducted that focused on team effectiveness [Goodwin et al., 2009; Sundstrom et al., 1990]. These resulted in the development of a number of models of team effectiveness. It is worth noting that the issue is still valid because, despite numerous studies on this subject, the questions: why some teams are more effective than others and what factors and in what system and with what force determine this effect still remain open [Goodwin et al., 2009; Ilgen, Hollenbeck, Johnson, Jundt, 2005; Mathieu et al., 2008].

As part of the teamwork efficiency models developed over two decades ago, the concept of teams viability was introduced as one of dimensions of team effectiveness. Team viability as a construct has not yet received a unified definition nor has been operationalized and thus requires further work in this scope. Today team viability is understood as “the capacity of a team to be sustainable and continue to succeed in future performance episodes” [Bell, Marentette, 2011]. The main motivation of the paper’s authors to study this problem is that viability becomes significant due to the nature of contemporary teams, which to a large extent are long-term and ongoing.

The main aim of the paper is to show that team viability is a vital component to understanding team effectiveness in modern work environments. This chapter consists of two parts: theoretical and empirical. The aim of the theoretical part is to bring the concept of the team viability construct and show its place in the wider context of the team's efficiency. The authors of the chapter have used here the theoretical achievements of foreign and Polish literature.

The goals of the empirical part are:

- recognizing the extent to which the concept of team viability is known and how it is understood by practitioners - representatives of teams of employees;
- identification of key factors determining the viability of teams.

The paper answers the three research questions:

- How do contemporary domestic and foreign literature address team viability?
- How do the leaders and members of teams define the concept of team viability?
- What factors in their opinion determine team viability?

In order to answer the research questions the paper draws on literature on team effectiveness models and general criteria of team effectiveness. Further summarizes the literature on evolution of team viability’s definition as a relevant dimension of team effectiveness and it indicated the key variables that influence team viability. This paper contributes to the research on the team viability construct in the context of essential dimension of the contemporary team’s efficiency. The authors conducted their own research using a questionnaire and individual in-depth interviews. The research methodology is described in details

in the third chapter of this paper. Finally, the conclusion section includes the summary of research results. Additionally it has shown factors indicated by the respondents deserve special attention in view of the effective functioning of contemporary teams in the aspect of viability. In this context the authors indicate the challenges for HR departments and management and suggestions for future research.

## **2. Team viability as a relevant dimension of team effectiveness – review of literature**

Many models of team effectiveness have been developed to date. They can be hypothetically divided into two basic groups. The first of them are models focused on input elements that, by triggering specific processes, lead to mediation of inputs into the effects at the output, resulting in a specific level of team effectiveness. The second group comprises models referring to the elements conditioning the characteristics of teams and their tasks. They make the effectiveness dependent on skillful utilization of the team's potential in the process that allows to transform resources into specific effects [Pyszka, 2015].

The first group usually indicates the four main models of the team's efficiency, i.e. the Input-Processes-Output (IPO) model, the Input-Output (IO) model, the Input-Mediator-Output-Input (IMOI) model and the ecological model [Rico et al., 2011]. Despite differences between the four, it is worth noting that they derived from the IPO model [McGrath, 1964]. This model assumes a recurrent cycle of input, processes and output. The input conditions, related to the organizational context and characteristics of the teams, influence the group processes, which in turn impact the outputs. Then, the output data impact the inputs in the next period of time.

The IO model does not isolate the process module, which does not mean its omission. The processes part is integrated with the input part of this model and together with other elements directly impacts the final effectiveness of the teams [Campion et al, 1993].

The ecological model assumes that the team effectiveness is a process, not a state to be strived for and achieved. It contains four dimensions, namely: organizational context (surroundings), boundaries, team development and team effectiveness [Sundstrom et al., 1990].

The IMOI model introduces a mediator and a closed cycle, where the output/result impacts the input by way of feedback [Ilgen et al., 2005]. In this model, teams are perceived as comprehensive, multidimensional systems functioning in time, on tasks and within a specific context [Pyszka, 2015].

The second group of team effectiveness models focuses on internal and external factors that increase or decrease the team's effectiveness. They show the importance of these elements, their hierarchy and context. An interesting picture of factors determining the performance of teamwork is presented by the model created in 1995 by M. Lombardo and R. Eichinger [1995], referred to as the T7 model. It points out the five factors inside the team and two factors outside of it, determining teams performance [De Meuse, 2009].

Apart from the T7 model, the literature on the subject points to other models of team performance. Some of them were proposed over thirty years ago, others have been developed over the last several years. The most frequently cited in the literature are models created by, among others: Rubin et al. [1977], Katzenbach, Smith [1993], Hackman [2002].

The aforementioned models of team performance indicate multiply dimensions of team effectiveness. Team performance is fundamental to understanding team effectiveness; however, currently insufficient. It is worth noting that since the establishment of scientific management effectiveness was identified with efficiency and productivity, therefore the effectiveness of the team was usually associated with "hard" indicators and performance criterion [Kozusznik, 2002]. This approach to the team effectiveness focused on measures of work results and outlays necessary to obtain them (labor costs, time, labor intensity, number of employees). Over time, however, it was pointed out that the effectiveness of the team should be assessed not only through the perspective of team results, but also through the way the results are achieved, and thus through a number of psychosocial elements at the interface between the group and the individual [Sundstrom et al., 1990; Sundstrom, Altman, 1989]. As indicated in the subject literature the team effectiveness can be analyzed through the combination of economic and behavioral elements. For example Hackman [1987] proposed three general criteria of team effectiveness:

1. "The productive output of the work group should meet or exceed the performance standards of the people who receive and/or review the output.
2. The group experience should, on balance, satisfy rather than frustrate the personal needs of group members.
3. The social processes used in carrying out the work should maintain or enhance the capability of members to work together on subsequent team tasks".

The above is of particular importance for contemporary teams. Teams in today's organizations tend to exist for long periods of time, manage bundles of activities rather than one specific task. These teams go through several performance episodes, often managing several tasks simultaneously. Teams today are typically ongoing but are highly adaptive and characterized by continuous change (e.g., in membership, task demands) [Tannenbaum et al., 2012]. Teams that are ongoing differ from short-term teams in terms of team and task duration [Bradley et al., 2003]. Whereas short-term

teams are expected to disband after having worked together for a brief period, ongoing teams execute tasks that involve longer work cycles and are composed of members who expect to be working together on future tasks. Long-term teams that perform repetitive, predictable tasks might not undergo the same type of dynamic change that most ongoing teams face [Cooperstein, 2017].

Due to the nature of contemporary teams performance alone may not be the most appropriate measure of effectiveness of teams. There is a need for a construct, which will enable to evaluate how well a team will perform on subsequent tasks and that a team is capable of future success. Team viability among others is such a construct, which has been treated as significant dimension of team effectiveness in foreign literature on the subject in recent years. Team viability has been defined in several ways over the past few decades. It was first paid attention to by Hackman [1987] though he did not call it directly. He presented three criteria for team effectiveness, one of which captures the essence of viability: “the social processes used in carrying out the work should maintain or enhance the capability of members to work together on subsequent team tasks”. In his considerations on team viability Hackman emphasized social processes.

Three years later Sundstrom et al. [1990] also suggested a broader understanding of team effectiveness beyond performance, and indicated team viability as a potential criterion. However they proposed a wider understanding of viability. In their opinion “a more comprehensive definition of viability might include constructs such as cohesion, norms, intermember coordination, mature communication, and problem solving”.

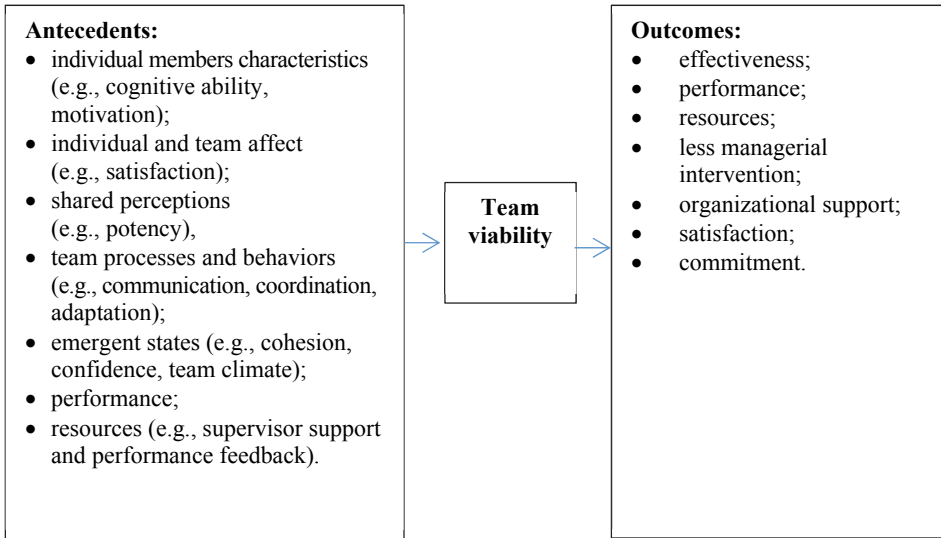
Later researchers built their definitions of team viability predominantly on the works of Hackman and Sundstrom. Other authors extended the concept by adding further elements. For example Barrick [1998] retained quite consistent with Hackman in the study of how team member personality and ability influence work team effectiveness when they had supervisors rate the team’s capability to maintain itself over time. Other researchers [Resick et al., 2010], basing on Sundstrom’s definition focused mainly on team members satisfaction, participation and willingness of further cooperation. In turn Balkundi and Harrison [2006] as well as Jehn, Greer, Levine and Szulanski [2008] defined team viability as a team’s potential to retain its members through their attachment to the team, and willingness to stay together as a team. Aube and Rousseau [2005] acknowledged Hackman’s approach and added the component of adaptability to internal and external changes to the willingness to work together again, problem-solving, and social integration as important aspects of team viability.

Due to the lack of definitional unambiguity further researchers attempted to clarify the construct of viability. [Mathieu et al., 2008]. Basing on the achievements concerning team viability Bell and Marentette [2011] defined it as follows „it is the

capacity of a team to be sustainable and continue to succeed in future performance episodes". By defining teams viability this way they retained the spirit of previous definitions focused on the ability to work together in the future, and continued success over time (e.g., Barrick et al., 1998; Hackman, 1983), emphasizing the team's sustainability, growth, and development. The authors highlight in their study that considering longevity of most organizational teams and the dynamic context within which teams exist resulting in membership and other changes, it is most useful to conceptualize team viability as a holistic property of a dynamic system rather than a property of specific individuals. In other words team viability is a global team property, which characterizes a team as a whole unit and does not necessarily originate from the characteristics of individual team members (e.g. team satisfaction) [Bell, Marentette, 2011; Kozlowski, Chao, 2012].

The subject literature highlights that viability should be considered with no reference to antecedents and outcomes. According to Figure 1 viability is a function of various team inputs and processes. Team viability is therefore a dynamic construct influenced by the most recent performance and other group characteristics such as collective efficacy and cohesion that may change in time [Bell, Marentette, 2011]. Viability can be viewed as an input for the next task to be undertaken or as a result of a current episode. The team viability can contribute to the next task episode by influencing future performance. Viable teams are able to develop successful strategies that can work effectively with one another and maintain task motivation. Such features improve future performance. Viable teams are considered more adaptable, motivated and able to develop better task strategies, hence they will outperform the teams that are not viable. As viable teams are sustainable they require less managerial intervention. Through effective management of their composition and the use of efficient processes they face less failures both the short- and long-term. Viable teams enjoy confidence on the part of the organization which is eager to offer more resources and attention to the teams members. Over time successful teams may also increase member satisfaction and commitment and perhaps attract outside members or groups [Cooperstein, 2017; Costa, Passos, Barata, 2015; Tu, Liu, 2017].

Considering the above it is important to identify how team viability is related to and distinct from constructs: performance, cohesion, satisfaction, resilience, adaptability, and potency. These constructs are highly correlated with team viability, but they don't adequately capture the team's capacity for sustainability and growth required for success in future performance episodes. The constructs in most cases are antecedents or outcomes of team viability [Bell, Marentette, 2011].



**Fig. 1.** Key variables that influence team viability

*Source: [Cooperstein, 2017, s. 9].*

### 3. Research methods

In the theoretical part the applied method consisted in analyzing Polish and foreign literature on the subject. The literature posed a theoretical foundation for undertaking own empirical research, in order to better understand and grasp the problem. In this part of the chapter the authors put the following research question:

RQ 1. How do contemporary domestic and foreign literature address team viability?

The empirical part used the results of a pilot survey conducted in 2018 among the representatives of teams of employees. The questionnaire consisted of two parts. The first part contained open questions and aimed to identify whether and how the respondents understand the concept of viability, based solely on their knowledge and experience in this area. The second part of the survey was preceded by an explanation to the respondents on how the viability of a team is defined in subject literature. Based on this information, respondents were asked to answer questions aimed at identifying factors that determine team viability. This part of the survey consisted of closed questions with multiple choice of answers.

The survey was complemented by individual in-depth interviews (IDI), conducted with nine senior managers, indicated by HR departments. The interviewees were selected based on a criterion of extensive experience in management of diverse teams.



The research methodology determined its scope in terms of object, subject time and area.

The object scope concerned selected issues related to the viability of contemporary teams and in particular, to indicating critical conditions for their effective functioning. In connection with the above, the following research questions were formulated:

RQ 2. How do the leaders and members of teams define the concept of team viability?

RQ 3. What factors in their opinion determine team viability?

In terms of time scope the research took place in the second and fourth quarters of 2018, whereas the area scope assumed conducting the research in selected enterprises in Lower Silesia region.

A total of 124 people completed the survey, of which 120 correctly completed questionnaires were qualified for the final analysis<sup>5</sup>. Due to the research area undertaken in this study, the subjective scope concerned both leaders (68 people, which was 56.7% of the research sample) and team members (52 people, 43.3% respectively).

The purposefulness of the subject scope of the research adopted by the authors resulted from the nature of the considered problem, which is team viability and the resulting need to look at it from both, team leaders and team members perspective.

#### 4. Empirical results and discussion

The results of pilot studies corresponding to the subject matter of this work are presented below.

In the first question, respondents were asked to define the concept of team viability. The analysis of the answers led to the conclusion that there were noticeable differences in the understanding of this concept, both among leaders and team members. And so members most often described viability in terms of the length of time of shared and effective work, for example: *"time in which the team works well together, when team is effective, and its members do not think about changing jobs", "willingness of individual team members to take part in its activities", "for how long has the team been working, how long it can last because of the way it is working now", "how long will the team operate", "the way the team functions, whether it can get along and if the team has a lot of problems, and how people try to solve them and work on them", "for how long the team members are able to work with each other", "the period in which the team brings results", "time from the teams set up until its liquidation/disintegration", "long-lasting teamwork, long-term cooperation of*

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<sup>5</sup> The surveyed group consisted of 124 employees – students of six post graduate courses at the University of Economics in Wrocław.

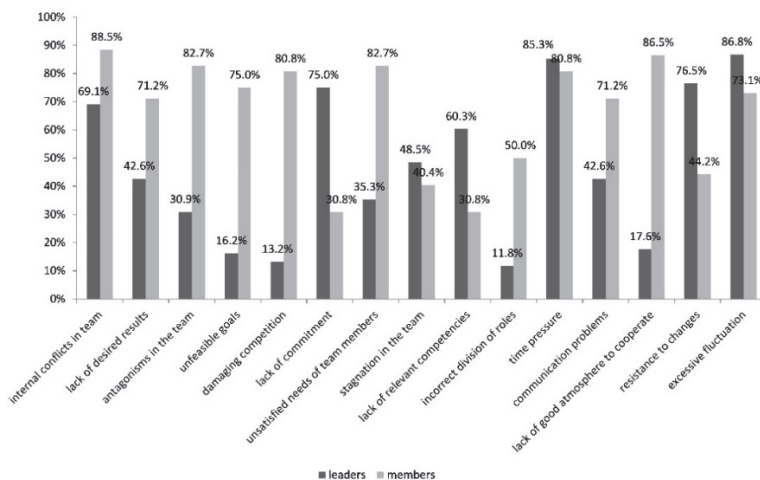
*members of a given team". In addition, the members of the teams emphasized the importance of mutual relations and persistence in pursuing the assumed goals, namely: "the team's ability to maintain relations", "team maintenance when it comes to striving for a goal", "Good atmosphere in the team", "maintaining motivation in the team", "achieving goals by the team and common communication", "dealing with problems, well-coordinated team", "cooperation and commitment of team members".*

In turn, leaders defined the team viability more in terms of efficiency, pointing to its various dimensions such as: work efficiency, achievement of objectives set by the team, satisfaction and time of the team's functioning together, rather than strictly viability, for example: *"adopting newly acquired knowledge and introducing it to a team that has been working together for a long time. This knowledge improves the performance of such a team", "the ability to constantly develop and increase productivity, efficiency and quality of work", "satisfaction and willingness for further cooperation", "teamwork, cooperation, the number of projects implemented, commitment", "a group that can work together, having common goals and supportive", "people who work within the team, and in principle their attitude, mental condition", "a group of people who work together despite problems and conflicts within the group", "time of the team's functioning together, existence".*

According to the authors, the presented opinions confirm the definitional chaos already noticed at the stage of literature studies. It is worth noting that both groups were in agreement that the main attribute of viability is the duration of the team. The above opinion was also shared by the interviewed managers. They agreed that they had not been familiar with the notion of team's viability, and each of them tried to define viability in his own way, emphasizing its various aspects. It is significant that the respondents expressed a great interest in the construct of team viability and decided that it would be worth taking a closer look at it.

The purpose of the next question was to identify the problems that the teams represented by the respondents had to face. Their task was to identify factors that impair team work. This question assumed the possibility of multiple choice of answers. From the proposed list of several factors, the respondents were supposed to indicate the ones that usually affect them on daily basis. As shown in Figure 2, both team leaders and team members pointed to three such factors. These include:

- internal conflicts in the team (selection frequency by leaders 69.1%, by team members 88.5%);
- time pressure (leaders 85.3%, team members 80.8%);
- excessive fluctuation (leaders 86.8%, team members 73.1%).



**Fig. 2.** Indication frequency percentages re factors that impair teamwork by leaders and members

*Source: own study based on the conducted own research.*

The analysis of the other factors, however, showed a relatively large discrepancy of opinions. According to the majority of leaders, in comparison to the opinions of members, the factors that impair teamwork include:

- lack of commitment, which was indicated by up to 3/4 of leaders (75.0%) against only 1/3 of indications by team members (30.8%);
- resistance to changes on the part of employees, where the respondents' disagreement amounted to as much as 32.3 percentage points (leaders 76.5% leaders, members 44.2%);
- lack of competencies to perform tasks, which was noticed by as many as 60.3% of leaders and only 30.8% of members.

Members of teams, in contrast to leaders, indicated as many as eight factors that impair teamwork (Table 1).

**Table 1.** Differences in opinions between leaders and members re factors that impair teamwork in percent points

Factors	Percent point difference
1. lack of good atmosphere to cooperate	68.9
2. antagonisms in the team	51.8
3. unfeasible goals	58.8
4. unhealthy / damaging competition	67.6
5. unsatisfied needs of team members	47.4
6. incorrect division of roles within the team	38.2
7. communication problems	28.6
8. lack of desired results	28.6

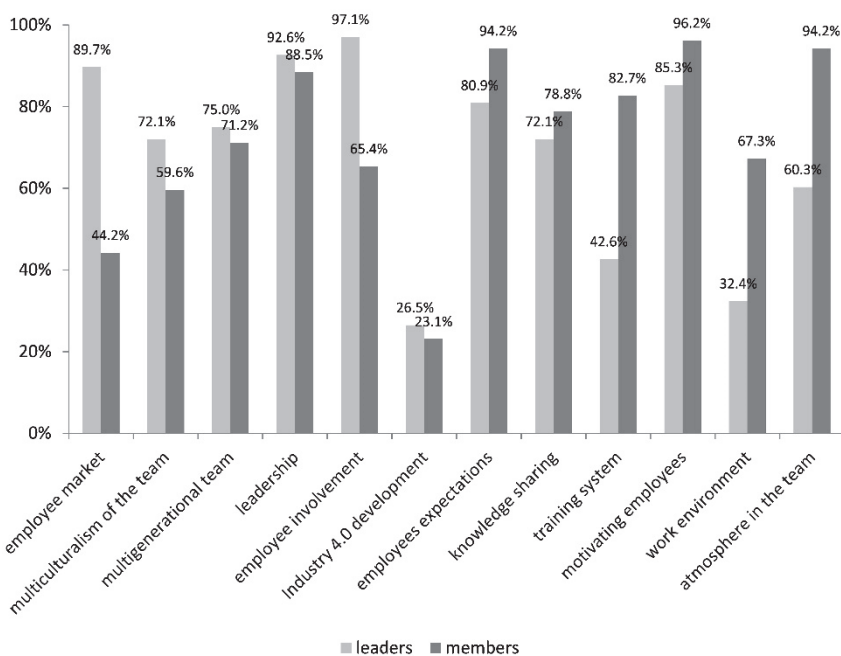
*Source: own study based on the conducted own research.*

In the analyzed question, the respondents also had the opportunity to use the "other" category. They pointed here to many important factors. Leaders mentioned: *"professional burnout of team members"*, *"existing differences regarding the age of team members"*, *"cultural differences existing in the team"*. On the other hand, team members pointed to: *"professional burnout of the leader"*, *"wrong person as a leader"*, *"unsatisfied needs of members"*, *"lack of development prospects"*, *"team managed by many informal leaders at the same time"*, *"new members in the team"*, *"no time to introduce new employees"*, *"lack of cooperation"*, *"blurred responsibility"*, *"bad division of labor"*, *"lack of mutual respect"*, *"domination of one sex in a team"*, *"lack of training, motivation"*, *"lack of 'rejuvenation' of the team"*, *"excessive reliance on others"*, *"self-interest"*.

The factors indicated by the respondents, which affect the work of teams, show potential threats to their viability. It is difficult to secure it, if the team operates under time pressure, when team composition is changing dynamically, when team members show poor involvement, stay in conflict with each other, have problems with adaptation to changes, or do not have the desired competences. At the same time, the number, frequency and diversity of the problems reported by the respondents is worrying, regardless of their role in the team. This means that the identified problems become potential challenges which raises an urgent need to develop ways to deal with them. Viable teams must have strategies to recover from emerging problems and the responsibility for viability should be shared by leaders as well as team members.

Another important question concerned factors that, in the respondents' opinion, could condition the team's viability. As shown in Figure 3, both team leaders and team members have recognized the following eight factors as very important:

- leadership (leaders – 92.6%, team members – 88.5%);
- motivating employees (85.3%, 96.2%, respectively);
- employees' expectations (80.9%, 94.2% respectively);
- multigenerational team (75.0%, 71.2%, respectively);
- employee involvement (97.1%, 65.4%, respectively);
- atmosphere in the team (60.3%, 94.2% respectively);
- knowledge sharing (72.1%, 78.8%, respectively);
- multiculturalism of the team (72.1%, 59.6%, respectively).



**Fig. 3.** Indication frequency percentages re factors that condition team viability by leaders and members

*Source: own study based on the conducted own research.*

Both leaders and members shared the opinion that the development of Industry 4.0 had relatively the weakest influence on team viability (the smallest percentage of responses). This factor was indicated by almost every fourth respondent (leaders 26.5% and members 23.1%). Alternatively the factors which divided the leaders' and the team members' opinions most were:

- training system – this factor was considered important by more than 4/5 team members (82.7%), with almost a half smaller indication by leaders, amounting to only (42.6%);
- work environment – the difference of reported opinions amounted to 34.9 percentage points, this factor was considered valid only by 32.4% of leaders, with 67.3% of indications by team members.

In the context of the above-mentioned differences in opinions, it is worth emphasizing that another factor that significantly divided the opinions of respondents was the "employee market", considered important by 89.7% of leaders, compared to 44.2% of indications by team members.

In the received answers the respondents pointed to a number of different factors which determine team viability. Relatively high indication frequencies prove that respondents recognize the importance and the impact of both internal as well as external factors. Especially external factors such as: multiculturalism,

multigenerational nature, employee market, should be considered important from the point of view of the functioning of contemporary teams. Decreasing the significance of unavoidable challenges that arise on this ground can lead to negative consequences in terms of team's sustainability, growth and development, which are so crucial for their viability.

## 5. Summary and conclusions

The undertaken literature research enabled the authors not only to bring up the notion of viability but first and foremost notice that, given the nature of the majority of contemporary teams, team viability is an important construct for studying and managing the effects of organizational teams.

Team performance is fundamental to understanding team effectiveness; however, ensuring that a team is capable of future success (team viability) is also important today. Understanding a team's viability can inform persons of interest of the potential the team has for sustaining itself and adapting to future performance demands [Bell, Marentette, 2011].

As emphasized above the empirical research confirmed the definitional chaos exhibited in literature and concerning the construct of team viability. It turned out that the concept is not well-known to the researched practitioners. They usually defined it in a subjective and intuitive manner, based on their professional experience. It should be emphasized that the respondents showed not only a great interest in acquiring knowledge in this area, but above all in applying the knowledge for development of viable teams. The surveyed team representatives showed a high level of awareness of various factors which affect their teams. The necessity to face these factors makes the need to think and act in terms of team viability even more important and urgent.

Among the factors determining team viability, external factors indicated by the respondents deserve special attention. According to the authors, they should be considered as significant determinants of the effective functioning of contemporary teams in the aspect of viability. The factors are:

1. Changes in the labor market – at the end of 2017, the registered unemployment rate fell to 6.6%, and the latest data indicate an even lower unemployment rate, amounting to 5.7% [<http://stat.gov.pl>]. Thus, the still-recent employer market has changed towards the employee's market. In addition, this situation is compounded by the negative population growth and changes in the age structure of the population, which entail a decrease in the supply of employees in the productive age. It is also worth emphasizing that in 2030 employers will have significant problems with filling every fifth job [OECD, 2018]. The relatively low level of unemployment and the

galloping process of population aging result in challenges for management teams and team leaders of not only attracting new employees to the organization, but above all, retaining the existing workforce. Thus, having the competence to create viable teams is the key determinant of effective leadership.

2. Multiculturalism – the employment of immigrants becomes a necessity in the modern labor market. As research results show, employers acquire employees from more and more distant countries, which results in employing members from different cultures [Kopertyńska, 2018]. The need for coexistence of groups representing different cultural traditions in a specific social space means the need to develop a new leadership model that promotes and supports viability of culturally diverse teams. This means that leaders must have knowledge about the cultures of other countries and must exhibit understanding and tolerance for their differences.
3. Multigenerationism – is related on the one hand to the entry of the youngest generation "Z" on the market, and on the other hand, in the absence of professionals, to the retention of "Baby Boomers" in some organizations. As a consequence, representatives of up to four generations co-exist on the modern labor market: "Baby Boomers" (BB) – people born between 1945-1964, "X" – people born between 1965-1980, "Y" – people born after 1980 and "Z" – people born after 1995 [cf. Miś, 2011; Smolbik-Jęczmień, 2017]. Such diversity of employees (age difference can reach up to 40 years) significantly complicates management processes and urges searching for answers to questions of how to ensure the long-term viability of multigenerational teams, what HR practices and processes determine viability and what challenges face team leaders in this context. The prospect of co-existence of four generations of employees in a team can be a source of both potential opportunities and threats to the team viability. Opportunities can be seen in the use of knowledge and experience of older employees, and in openness to technological innovations of younger employees. Threats for the effective and long-term operation of teams often result from stereotypical perception of each other and disrespect. In view of the above, the development of competencies in the management of multigenerational teams by leaders on the one hand and the willingness to share knowledge and mutual openness of team members on the other hand, become an important guarantor that sustains viability and a challenge that both parties must take.

According to the authors, it is surprising that the respondents considered the concept of Industry 4.0 as not important in the context of building the team's viability. This may indicate low awareness of the respondents regarding the importance of Industry 4.0 development, which is associated with three phenomena [Paprocki, 2016]:

- common digitization and ensuring constant communication between people themselves, people and devices and between devices themselves;
- more and more frequently implemented disruptive innovations, which allow for a stepwise increase in efficiency and effectiveness of the operation of the socio-economic system;
- the achievement of such development of machines that they gain the ability for autonomous behavior through the use of artificial intelligence in the process of their control.

The above will generate questions about where and in what role the employee will appear, e.g. in a human-machine configuration. Hence the need to think in terms of ensuring team's viability will become even more urgent.

The remaining factors conditioning the viability indicated by the respondents are internal in nature. These include: leadership, atmosphere at work, employee involvement and expectations, knowledge sharing, training system, motivating system and work environment. These should be seen in terms of challenges for HR departments and management. Work on the effectiveness of teams requires them to undertake parallel activities regarding the current and future perspectives. It is worth noting that team viability is forward thinking in nature as it emphasizes the capability of a team's success for future endeavors beyond the current situation. With an understanding of a given team's viability, managers can take a proactive approach to guide ongoing teams to successful performance. Team viability can provide information as to whether or not a team needs to improve upon their current behaviors as well as if they will work well together in the future [Bell, Marentette, 2011].

Due to the limitations of the research sample it is important to underline that generalizing the research results must be done with caution.

Identified factors open the wider space for in-depth research on their influence on team viability. In future the authors plan to broaden the research scope in terms of object (ex.: human-machine configuration, the role of leadership, multiculturalism and multigenerations, etc.), sample size, area scope and issues related to challenges for management and HR departments.



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# INFLUENCE OF INDUSTRY 4.0 ON PROJECT RISK MANAGEMENT

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## 1. Introduction

"Modern science has deprived us of illusions about the existence of stable and unchanging rules in the world whilst the awareness of uncertainty, impossibility and hazard, amplified by technological development, has grown. (...) As risk is integrated into the dynamic, evolutionary model of the world it is an objective entity." [Szumski, 1994, p. 26]

The reality that surrounds us is dynamically changing. It creates exciting opportunities for development, but at the same time increases the risk involved in the decisions we make. Projects, in comparison to other areas of a company's operations, are associated with a higher level of risk due to their unique nature and circumstances. In addition, in most cases project implementation involves high capital expenditures, without having full information on the future stages of the implementation. All of these factors force enterprises, and above all project managers, to apply appropriate methods of risk detection in projects.

This chapter outline the distinguishing features of Industry 4.0, also known as the fourth industrial revolution, and define project risk as a potential event or circumstance that may contribute to a delay in the project, increase the cost of its implementation or cause other adverse changes in the project. Project risk management is an integral part of many project management methodologies, traditional and agile methodologies being the most popular.

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## 2. The fourth industrial revolution

According to subject literature industry underwent three fundamental changes [Paprocki, 2016, pp. 39-58]:

- the first industrial revolution, epitomised by the steam engine. In the 19th century, the invention and implementation of the steam engine ushered the era of industrialisation in manufacturing;
- the second industrial revolution associated with the growing importance of electricity at the beginning of the 20th century. Electricity replaced steam engines, and production lines could produce goods in large series;
- the third industrial revolution, related to the development of the personal computer market at the end of the 20th century. More and more efficient computers and data processing systems have made it possible to control machines using software. Consequently, machines became more efficient, precise and flexible, and the process of digitisation enabled ever-increasing degrees of automation. Planning and control systems were established to coordinate activities within production.

„The three industrial revolutions of the past were all triggered by technical innovations” [Brettel, Friederichsen, Keller, Rosenberg, 2014, p. 37]. The fourth industrial revolution, also known as Industry 4.0, is defined as a combination of ICT, the Industry and Internet of Things [Kagermann, 2015, pp. 23-45], and is also seen as a term that bridges technology with the organisation of the added value chain [Hermann, Pentek, 2015, p. 11]. It means the unification of the real world of production machines with the virtual world of the Internet and information technology. People, machines and IT systems automatically exchange information in the course of production. Industry 4.0 spans the whole chain of activities, from placing an order, through delivering components for ongoing production, to sending goods to customers or providing after-sales services. Enterprises that implement Industry 4.0 solutions can reduce production costs and respond flexibly to customer inquiries, which gives them a significant competitive advantage.

Industry 4.0 is focused on creating smart products, procedures and processes, it is difficult to enumerate all its consequences [Kagermann, Wahlster, Helbig, 2013, p. 18]. Nevertheless, several hypotheses underpinning the emergence of Industry 4.0 have been put forward [Drath, Horch, 2014, p. 56]:

1. ICT infrastructure will become cheap and widely used in enterprises;
2. Devices, machines, plants, factories and final products will be connected to the Internet on a massive scale;
3. Equipment, machines, plants, factories and final products will be able to store full documentation and information about themselves in an external location.

Some contexts where the fourth revolution has been applied include: automatic vehicles, advanced robots (working with people, cleaning or providing care), 3D printing and new materials such as self-cleaning clothes, ceramics which turn pressure into energy, graphene. The fourth resolution poses a managerial challenge of upgrading the machine park to reflect New requirements introduced by the disruptive technologies of Industry 4.0 [[http://www.forschungsnetzwerk.at/downloadpub/mck\\_industry\\_40\\_report.pdf](http://www.forschungsnetzwerk.at/downloadpub/mck_industry_40_report.pdf), p. 13].

Thanks to the fourth revolution enterprises can produce more economically and respond faster to the individual needs of customers. The time necessary to adapt machines to new requirements has been reduced, and the flexibility of enterprises has definitely increased. Most machines can modify their activities on their own, adapting to new tasks. This enables manufacturers to fulfil small-series orders, and even to produce individual items at the cost of standard serial production. In addition, data generated by systems become more easily accessible and thus useful. Therefore, Industry 4.0 allows creating new business models, including those that incorporate project management. The challenge lies in noticing and implementing them as soon as possible. There is also a need to remember that technology creates enormous opportunities as well as New risks alike. [Schwieters, PwC, 2015].

### 3. Risk in projects

Project risk is "the possibility of a venture developing in such a way that the planned completion dates, costs or specifications are not achieved – when these discrepancies are difficult or unacceptable compared to the assumptions" [Jędrych, Pietras, Szczepańczyk, 2012, pp. 90-91]. The concept of risk in the project is closely related to the concept of uncertainty. A. Stabryła even states that in practice both concepts are often used interchangeably [Stabryła, 2006, p. 306].

Risk is a combination of internal and external factors that affect the implementation of the adopted project objectives and significantly affect the profitability of both the project and the entire organization. The ISO 31000: 2009 Risk Management standards define these factors in the context of:

- impact on the project – as a deviation from the expected result,
- various aspects (financial, health, safety, environmental protection) implemented at various levels (strategic, tactical, operational) of the entire organisation, project, product or process,
- uncertainty – as a state of partial lack of information about an event, its consequences or the probability of its occurrence.

The classification of project risk by cause distinguishes the following risks [Pietras, Szmit, 2003, p. 82]:

1. brought upon by external causes – determined by external forces and not under control of the entity managing the project. This risk is related to the forces of nature, economic conditions of the market, decisions taken in the political or legal sphere.
2. brought upon by internal causes – can be controlled by the entity managing the project and includes the method of project planning used. This risk is associated with the human factor.

According to the standards of the Project Management Institute project risk is defined as "an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, or quality" [PMI, 2013, p. 301].

#### **4. Project risk management and Industry 4.0**

Risk management plays an important role in the areas of business activity of enterprises, especially during projects. This is due to several main reasons. Firstly, enterprises are characterized by the uniqueness of innovation, which means that this type of activity involves a much higher level of risk in comparison with other areas of the company's operations [Roszkowski, 2014, p. 155]. Secondly, the lack of full knowledge for future periods is characteristic for projects, that are closely related to uncertainty and risk [Wyrozębski, 2014, p. 104]. Project risk management is based on identifying threats to the project and determining actions aimed at eliminating the detected threats or minimising their impact on the project. These activities should be carried out at every stage of the project life cycle. [Zaskórski et al., 2013, p. 31] J. Kisielnicki emphasizes, in turn, that risk management consists in striving for a state in which the level of risk is acceptable to the project's sponsor. The author emphasizes that it is necessary to identify the factors that may affect the correct implementation of the project in the earliest possible way [Kisielnicki, 2011, p. 132].

The risk management process is sequential and should be implemented on a continuous basis. The process is divided into four stages [Pritchard, 2002, p. 23-26] [PMBok, 2013, pp. 301-304]:

1. risk identification – identifying potential factors that may have a negative or positive effect on project implementation
2. qualitative risk analysis – risk factors are prioritised through evaluation; additionally, the likelihood of a risk factor occurring is related to its consequences.
3. quantitative risk analysis – the process of analysing the impact of identified risk factors on the overall project objectives.
4. risk control – developing acceptable solutions and actions that maximise opportunities and minimise project risks.

5. risk control – the process of implementing risk response plans, monitoring the identified risk and identifying new risks.



**Fig. 1.** The risk management process in project

*Source: [PMI, 2013, s. 301-304].*

As project management has abundant literature, organisations from every sector of the economy can choose from a number of methodologies to use for risk management. These methodologies are a source of standards and procedures describing specific actions and processes that can be implemented by members of the project team together with the project manager to succeed in their venture [Wyrozębski, 2014, p. 205]. The most popular classification of methodologies distinguishes two approaches to project management – traditional and agile.

Traditional project management assumes that the customer has a clearly defined need, a deadline for the work and a specific amount of money that they are willing to spend on the project. It brings good results primarily in situations where the goal and the way of achieving it are clearly and understandably formulated, and there is little probability of changing the scope during the project. In projects managed using a traditional methodology, there is low probability of unaccounted risk. Risks are identified only when they are common to particular tasks carried out as part of the project. [Wysocki, 2013, p. 27].

Agile project management emerged as a response to the need of implementing projects in conditions of increased uncertainty. Agile methodologies and assumptions have been developed and implemented as a solution for more effective work in the field of software design, although currently they are also used for other types of projects. The basic principles of this approach are efficiency, adaptability and collaboration. Some authors also emphasise the importance of simplification, which brings the agile approach closer to the principles of lean thinking based on flexibility and simplicity. As a result, the project team focuses on elements which contribute to the usability of the final effect and on setting priorities for the implementation of the



project. [Pichler, Schulze, 2005, pp. 371-373] In projects managed with an agile methodology there is a possibility of unplanned risk, especially in activities that were not in the original project plan. [Wyrozębski, 2007, pp. 151-152].

Digitisation in the broad sense of the term plays a key role in the Industry 4.0 concept, which is why the authors of various research studies assume that agile methodologies will become more and more widespread in project management. Some authors forecast that traditional methods will be completely abandoned as they are too rigid and formalised. [Cao, Zhang, 2016, pp. 1011-1016] In addition to agile project management methods the use of the hybrid approach may also increase. Hybrid methods make use of rigid frames imposed by traditional methods, but at the same time they integrate agile methodologies into a comprehensive project management process. Another approach that may gain in popularity is the network approach in organisation of work for task forces. The network approach introduces a new organisation of work and production, including both the creation and functioning of a fully integrated system that can identify, react and adapt to the changing needs of the customer, thereby increasing the chances of achieving the intended effect of the project. [Bendkowski, 2016, p. 31].

Bearing in mind the above we may suppose that project risk management in Industry 4.0 will require the project manager to apply various, even conflicting methods at times, by following well-developed routines and simultaneously applying new competences. This is due to the necessity of adapting to work in conditions of even greater uncertainty and volatility of the environment in which the projects will be implemented. Accordingly, such state of affairs forces project managers to use agile methodologies more frequently [Czakon, 2012, pp. 7-10].

There are four aspects of Industry 4.0 that project managers should consider in terms of project risk management, or perhaps even start implementing them in projects [[www.i-scoop.eu/industry-4-0/](http://www.i-scoop.eu/industry-4-0/)]:

1. The Internet of things (IOT), i.e. the use of software and networks to connect "things" via the Internet. This includes household items, consumer goods and many other devices. Greater connectivity will significantly improve performance of projects with regard to sharing data between project teams and external stakeholders, reducing the risk of a lack of information.
2. Big Data – a method of legally collecting information from various sources, then analysing and using them for company purposes. Research shows that by 2020, 60 percent of data that organisations consider mission-critical will exist outside the company's premises. [[www.constellationr.com/2017-year-integration-enables-industry-40-growth](http://www.constellationr.com/2017-year-integration-enables-industry-40-growth)] Data collected by entrepreneurs come through browsing data, e-commerce and social media usage obtained from the general public. Where to find data resources that could be used by project teams is still a matter of further debate and analysis. Managing data that in the so-called

cloud may one day enable forecasting of the project result using predefined variants. Therefore, Big Data could provide a new level of accuracy and automation of project risk management.

3. Automation, which means a significant reduction or replacement of human physical and mental work by the work of machines governed by the principle of self-regulation and performing specific activities without human involvement. In all projects the amount of work is relative and statistics show the need to automate some of the tasks carried out by the project team. Automation increases the team's morale and allows them to focus more on the implementation and monitoring of the project.
4. Self-learning machines – machines that can imitate human intelligence with the use of special algorithms. As a consequence, having the right information it is possible to predict project results with very high precision. The basic principle of machine learning is that devices become smarter over time. It can become an ideal solution for improving the project risk management quality.

Although the new Industry 4.0 technologies discussed above exist and are in use, their full potential is not yet known. „Industry 4.0 may require less employees without a change in production” [[http://doku.iab.de/forschungsbericht/2015/fb0815\\_en.pdf](http://doku.iab.de/forschungsbericht/2015/fb0815_en.pdf)]. Some entrepreneurs believe that learning machines will replace people in manufacturing, services and other industries. If that were true we may suppose that risks associated with people will be minimised, and robots will be able to do all the work without any risk. But what is the importance of experience and talent? Research from 2017 shows that directors of companies emphasise the importance of talent as well as intelligence of employees, as without the former there is no possibility of employee growth. [[www.gartner.com/doc/3678617?srcId = 1-8619339564](http://www.gartner.com/doc/3678617?srcId=1-8619339564)]. IT Directors also emphasise that the most important barriers to success are culture, resources and talent. This leads us to conclude that recruiting talented workforce will be a new challenge for the project manager in Industry 4.0. The risk associated with talent will be at the top of the identified hazards. It means putting more emphasis on the recruitment of employees for the implementation of projects.

According to the PMI report on the impact of disruptive technologies on projects, organisations with a mature digital transformation strategy believe that the project manager will become an authority in the field of breakthrough technologies. It follows that the new way to deal with project risk in Industry 4.0 will be to employ a new type of project manager. Having a new type of manager and talented workforce in the project team means the need to implement worker training and development. Training will therefore become an indispensable investment for Industry 4.0 companies. [<https://www.pmi.org/learning/thought-leadership/pulse/benefits-disruptive-technologies-projects>]

Organisational culture should also evolve when adapting to the new realities of Industry 4.0 in order for project management teams to cope with risk and become more flexible in action. Project managers should begin by understanding the dynamics of Industry 4.0, then start changing the culture, which will certainly not be an easy task.

It should be emphasized that Industry 4.0 does not mean replacing project managers or replacing project teams, but identifying tasks that can be delegated to machines. Thus, the human element, with its irreplaceable experience and talent, remains in place. To summarise, Industry 4.0 is aimed at improving projects through their creation. In project risk management this is possible with the aid of knowledge and application of appropriate methodologies.

## **5. Summary and conclusions**

The presented analysis of literature shows that the concept of Industry 4.0 and the associated fourth industrial revolution has and is going to have a huge impact on project risk management. Industry 4.0 in project management pertains to a growing number of projects, whose management is growing in importance. It also means using other management methodologies. The main stimulus for the development of Industry 4.0 is the rapidly expanding digitisation, which will have an influence on increasing the use of agile or hybrid project management methods. This will have an impact on further changes in organisational structures and methods of working in project teams, resulting in project management that is better adapted to changes taking place in the turbulent digital environment of Industry 4.0.

Projects will be implemented in order to create or introduce innovative products and services, using a flexible method of operation. Industry 4.0 is running projects in a virtual space, with loosely connected people. Intercultural and social skills as well as talent will be of high importance for projects requiring management diverse individuals working in a virtual workspace or in an online lab. Organisational culture should also evolve and adapt to the new reality. Project teams created in Industry 4.0 will be more and more fluid and therefore will require a flexible style of organisation and adequate style of risk management. [[www.ipma.world/fourth-industrial-revolution-means-project-management/](http://www.ipma.world/fourth-industrial-revolution-means-project-management/)]

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# ZWIASTUNY NADCHODZĄCEGO KRYZYSU GOSPODARCZEGO A ZAGROŻENIA DLA POLSKICH FIRM<sup>1</sup>

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## 1. Wprowadzenie

„Nigdy nie marnujcie dobrego kryzysu” – mawiał brytyjski premier Winston Churchill. To mądry postulat uczenia się na błędach. Tymczasem boimy się używać słowa kryzys, boimy się bo to jak przepowiednia. Samo mówienie o kryzysie jest kryzysogenne. Może lepiej więc przemilczeć sygnały płynące ze światowej gospodarki? Może lepiej ich nie dostrzegać, by nie wywołać katastrofy?

Celem rozdziału jest próba odpowiedzi na pytania: Czy faktycznie widoczne są zwiastuny nadchodzącego kryzysu? Jakie są potencjalne źródła czy zapalniki nowego kryzysu? Czy kolejny kryzys może zaszkodzić polskiej gospodarce i polskim firmom.

Odpowiedzi na te pytania Autorki szukają na tle przeglądu opinii eksperckich oraz na podstawie obiektywnych danych i informacji sygnałnych. Dlatego rozdział obejmuje trzy części: pierwsza traktuje o groźbie kryzysu na tle teorii cyklu koniunkturalnego, druga ukazuje pierwsze zwiastuny kryzysu w Polsce, trzecia z kolei to rodzaj raportu z badań własnych Auterek, dotyczących oczekiwań koniunkturalnych polskiej kadry menedżerskiej.

Tak skonstruowany rozdział, poza przypomnieniem o permanentności cyklu koniunkturalnego, ujawnia pierwsze ważne sygnały pogarszania się koniunktury na świecie i w Polsce. I chociaż zaprezentowana analiza sytuacji nie daje podstaw

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do kategorycznych stwierdzeń i tez, to ukazując mnogość ryzyk i zagrożeń, może spełniać funkcje ostrzegające przed ich ignorowaniem. Niestety aktualnie w Polsce dominuje fałszywe i wielce szkodliwe przekonanie, że gospodarka jest w znakomitej kondycji, a perspektywy jej wzrostu jeszcze lepsze. Trzeba zwrócić uwagę propagatorom takich scenariuszy, że jeśli w gospodarce światowej wydarzy się choć jedna z omawianych w prezentowanym artykule przesłanek, to również Polsce grozi mniej lub bardziej głęboki kryzys gospodarczy. W ocenie Autorów, dzisiaj ani rządzący gospodarką, ani firmy nie są przygotowani na taką ewentualność i co więcej nie antycypują wysoce prawdopodobnych zagrożeń.

## 2. Groźba kolejnego kryzysu na tle teorii cyklu koniunkturalnego

We wrześniu 2018 r. minęło 10 lat od ostatniego globalnego kryzysu finansowego, zapoczątkowanego spektakularnym upadkiem jednej z największych i najbogatszych instytucji finansowych – banku Lehman Brothers. Skala i natężenie dekonunktury z tego okresu mogą być porównywane tylko do zdarzeń z czasów Wielkiego Kryzysu Gospodarczego z lat 1929-1933, jak dotąd najpotężniejszego tąpnięcia światowej gospodarki. Szacuje się, że kryzys z 2008 roku przyniósł straty wartości ponad 15 bln (15 000 mld) dolarów, a w jego rezultacie zlikwidowano ok. 7 milionów miejsc pracy.

Dziesięć lat, po wielkim kryzysie finansowym, między ekspertami w zasadzie nie ma sporu co do prawdopodobieństwa nadejścia kolejnego kryzysu. Jeśli w ogóle można mówić o braku jednomyślności w tym zakresie, to dotyczy ona fazy cyklu koniunkturalnego, w którym aktualnie znajduje się gospodarka świata. Znakomita większość opinii jest zgodna i awizuje rychłe pogorszenie koniunktury [Tooze, 2018, ss. 220-266 i 415-442; Lagarde, 2016; Elliott, 2018; Ghosh, Durand, 2018; i inni]. Są jednak i tacy, którzy w aktualnym świecie widzą jedynie finał wyjścia z poprzedniego kryzysu [Rogoff, 2018]. W istocie, ostre załamanie gospodarki światowej na skutek kryzysu 2008 trwało przynajmniej trzy lata, ale notowane od początku 2011 r. wyraźne sygnały wyjścia z recesji zakłócane są do dzisiaj przez pełzające kryzysy zadłużeniowe wielu państw. Kryzys ten – choć w swojej istocie, przebiegu i morfologii odróżnia się od wcześniejszych – sam w sobie wywołał renesans tradycyjnych teorii cyklu koniunkturalnego, bazujących na obserwacji koniunktury gospodarki światowej.

Teoria cyklu koniunkturalnego, zakładająca „falowanie” gospodarki jest w teorii ekonomii szeroko rozwinięta, dogłębnie zbadana i zweryfikowana w oparciu o badania empiryczne prowadzone w długim horyzoncie czasowym. Koniunktura gospodarcza nie jest stanem stabilnym czy stałym. *Ex definitione* koniunktura ma związek z permanentnymi wahaniami aktywności gospodarczej, wyrażającymi się w ekspansji lub kurczeniu się tej aktywności wokół określonej

linii trendu. Wahania te mają charakter cykliczny, tzn. powtarzają się z pewną regularnością według podobnego schematu przebiegu [Pigou, 1913].

Najbardziej rozpowszechniona jest klasyczna koncepcja cyklu koniunkturalnego C. Juglara, zakładająca, że czterofazowy cykl koniunkturalny powtarza się w około 8-10 letnich interwałach i jest zjawiskiem na tyle obiektywnym, że stanowi wręcz permanentną cechę wzrostu gospodarczego. Do tego, zgodnie z koncepcją cyklu gospodarczego, najboleśniejse kryzysy biorą swój początek w fazie prosperity (tzw. przegrzanie gospodarki).

Współczesna definicja pojęcia „cykl koniunkturalny” pochodzi od dwóch amerykańskich badaczy A.F. Burns'a oraz W.C. Mitchella [Burns, Mitchell, 1946, s. 5]. W ich koncepcji cykle koniunkturalne są rodzajem wahań występujących w agregatach przedstawiających działalność gospodarczą narodów, organizujących swą produkcję przeważnie w przedsiębiorstwach. Cykle te składają się z okresów ekspansji, występujących w tym samym czasie w wielu działaniach gospodarczych, następujących po nich kryzysach, zastojach lub ożywieniach, które łączy się z fazą ekspansji następnego cyklu.

Zgodnie z teorią klasycznego cyklu koniunkturalnego, kryzys jest gwałtownym załamaniem gospodarczym, wynikającym z pojawienia się dysproporcji między globalną podażą a globalnym popytem. Fazą depresji w tym cyklu jest dno kryzysu, charakteryzujące się ograniczeniem podaży i towarzyszącym temu spadkiem cen. Etapem wyjścia z kryzysu jest faza ożywienia, w której ponownie następuje wzrost produkcji i odnowienie aparatu produkcyjnego poprzez wzrost inwestycji. Faza ożywienia przechodzi w fazę rozkwitu w efekcie dalszego dynamicznego wzrostu produkcji i zatrudnienia, co jest możliwe dzięki intensywnym inwestycjom z fazy ożywienia. W fazie rozkwitu rozmiary globalnej podaży osiągają rozmiary wyższe od podaży sprzed okresu kryzysowego. Istotną cechą morfologiczną klasycznego cyklu koniunkturalnego jest znaczna amplituda wahań głównych mierników ekonomicznych, takich jak: wartość produkcji przemysłowej, poziom cen (inflacja/deflacja), zatrudnienie, produkt krajowy brutto, inwestycje itp. [Kowalczyk, 1982, ss. 34-35].

Analiza fluktuacji wzrostu gospodarczego po II wojnie światowej, w zasadzie do dzisiaj wyraźnie wskazuje na łagodniejszy przebieg cyklu koniunkturalnego. Deformacja cyklu oznaczała istotne zmiany w jego morfologii: po pierwsze – spłylenie amplitudy wahań, po drugie – skrócenie faz kryzysowych i po trzecie – skrócenie czasu trwania całego cyklu. Deformacji uległa również klasyfikacja poszczególnych faz; w tym podejściu wyróżnia się często tylko dwie fazy – ożywienie i recesja, dla których punktami zwrotnymi są tzw. szczyt i dno cyklu.

Jeśli przyjąć, że teoremat cyklu koniunkturalnego dotyczący powtarzalności pewnego wzorca dynamiki wzrostu gospodarczego jest prawdziwy i nadal działa, to należy uznać, że światowa gospodarka zbliżając się do końca drugiej dekady



XXI wieku rejestruje wszelkie symptomy wejścia w przełomową fazę cyklu koniunkturalnego. Doniesienia o bardzo dobrej koniunkturze w USA, Europie, czy Azji, w latach 2017-2018 roku są coraz częściej opiniowane jako zwiastuny nadchodzącej fazy kryzysowej.

W istocie, obserwacja typowych wskaźników koniunktury globalnej w ostatnich 10 miesiącach pozwala skatalogować dziesięć najważniejszych zjawisk o charakterze potencjalnych zapalników kolejnego kryzysu. Są to [Zelek, 2018, ss. 39-40]:

1. Obiektywizm cyklu koniunkturalnego – zgodnie z koncepcją cyklu Juglara, skoro od ostatniego kryzysu mija 10 lat, to aktualnie należy oczekiwać wejścia w fazę spowolnienia, inicjująca kolejny cykl koniunkturalny;
2. Notowania PMI (powtarzające się w cyklicznym pomiarze spadki indeksu z rekordowych poziomów) wskazują na pierwsze objawy dekonunktury;
3. Skutki długookresowego luzowania polityki monetarnej, czyli pojawienie się silnej presji inflacyjnej (zarówno w USA, jak i w UE) zmuszają banki centralne do odrotu od polityki QE;
4. Słabnąca kondycja gospodarki w Chinach i niepokojący przyrost zadłużenia, ze względu na wolumenowe znaczenie Chin dla gospodarki globalnej to oczywiste i bardzo groźne zapalniki kryzysu gospodarczego;
5. Nadal pogłębiający się dług publiczny w krajach południa Europy sam w sobie nadal stanowi duże ryzyko wybuchu kryzysu finansowego w strefie Euro.
6. Wzrost atrakcyjności krótkoterminowych obligacji skarbowych jako efekt strategii inwestorskich “Cash is the King” powoduje destabilizację rynku długów państw;
7. Wzmocnienie kursu dolara amerykańskiego stanowi ryzyko wzrostu wartości zadłużenia gospodarek, które mają narastające długi denominowane w dolarze;
8. Izolacjonistyczna polityka handlowa (celna) D. Trumpa grozi perturbacjami dla gospodarek uzależnionych od eksportu do USA;
9. Sytuacja dotycząca kapitalizacji rynkowej spółek technologicznych rodzi zagrożenie pojawienia się kolejnej bańki kapitałowej.;
10. Poważne zagrożenia niewypłacalnością gospodarek o najsłabszej kondycji – Wenezuela, Argentyna, Turcja, prowadzić mogą do bankructw.

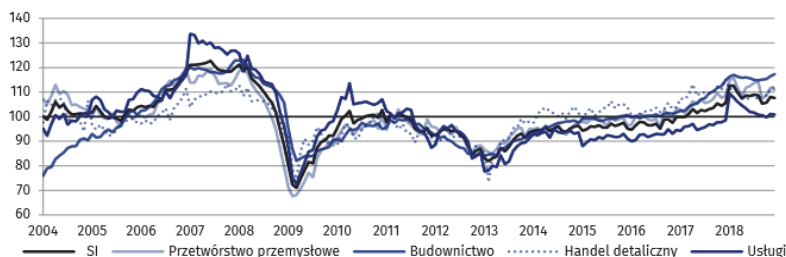
Choć intencją powyższego katalogu nie jest rangowanie omawianych ryzyk, ani wskazanie prawdopodobieństwa ich zdarzeń, to jednak należy podkreślić, że wskazane zagrożenia kształtują międzynarodowy kontekst funkcjonowania polskiej gospodarki i polskich podmiotów gospodarczych. Ich oddziaływanie na kondycję polskich firm towarzyszy pewnym wewnętrznym problemom krajowej gospodarki i implikuje pojawienie się widocznych już perturbacji w funkcjonowaniu polskich przedsiębiorstw.

### 3. Symptomy wygasającej koniunktury w Polsce

Pomimo dość entuzjastycznych doniesień o stanie polskiej gospodarki w 2018 roku i faktycznie stosunkowo wysokiego tempa wzrostu gospodarczego, zanotowanego w pierwszych trzech kwartałach tego roku, w polskiej gospodarce coraz wyraźniej odczuwane są objawy nadchodzącego spowolnienia gospodarczego. Na tle obiektywnych danych i obserwacji, wydaje się, że w połowie 2018 roku odnotowano rekordowo wysokie wskaźniki pomiaru koniunktury oznaczające prawdopodobnie szczyt ożywienia gospodarczego i awizujące jednocześnie odwrócenie progresywnych trendów.

#### Klimat i nastroje gospodarcze

W cyklicznych badaniach GUS dotyczących koniunktury gospodarczej w Polsce, pod koniec roku odnotowano słabsze wyniki. I tak, ogólny wskaźnik syntetyczny koniunktury gospodarczej GUS (SI)<sup>4</sup> w grudniu 2018 r. kształtował się na poziomie niższym od notowanego w listopadzie 2018 r., nadal jednak wyższym niż przed rokiem. Wskaźnik ten nadal przyjmuje wartości powyżej średniej długookresowej (od marca 2017 r.), jednak pod koniec 2018 zaznacza się wyraźne odwrócenie jego trendu (zob. rys. 1).



**Rys. 1.** Ogólny wskaźnik syntetyczny koniunktury gospodarczej GUS dla Polski (SI) i jego dekompozycja sektorowa

Źródło: [http://koniunktura\\_w\\_przemysle\\_budownictwie\\_handlu\\_uslugach\\_w\\_grudniu\\_2018.pdf](http://koniunktura_w_przemysle_budownictwie_handlu_uslugach_w_grudniu_2018.pdf) (dostęp: 27.12.2018 r.).

<sup>4</sup> Ogólny wskaźnik syntetyczny koniunktury gospodarczej od 1985 r. liczony jest jako wskaźnik złożony dla całej gospodarki każdego kraju członkowskiego Unii Europejskiej. Jest to tzw. wskaźnik odczuć ekonomicznych (Economic Sentiment Indicator – ESI), na który składają się: przetwórstwo przemysłowe – wskaźnik dotyczący bieżącego portfela zamówień (stanu), poziomu zapasów (z odwrotnym znakiem) oraz przewidywanej produkcji; budownictwo – wskaźnik dotyczący bieżącego portfela zamówień (stanu) i przewidywanego zatrudnienia; handel – wskaźnik dotyczący przeszłej i przyszłej sytuacji przedsiębiorstwa (lub sprzedaży) oraz poziomu zapasów (z odwrotnym znakiem); usługi – wskaźnik dotyczący ogólnej sytuacji jednostki w ostatnich trzech miesiącach, popytu w ostatnich trzech miesiącach oraz przewidywanego popytu. Szerzej: Business and Consumer Surveys, Komisja Europejska, DG ECFIN, [http://ec.europa.eu/ecnpmy\\_finance/db\\_indicators/surveys/index\\_en.htm](http://ec.europa.eu/ecnpmy_finance/db_indicators/surveys/index_en.htm)

Najpoważniejsze perturbacje w przebiegu wskaźnika SI odnoszą się do sektora przetwórstwa przemysłowego i budownictwa, podczas gdy w sektorach handlu i usług koniec roku 2018 jest nadal okresem dobrej koniunktury. Dane te potwierdzają tezy o tym, że polska gospodarka bazuje w ostatnich trzech latach na wysokiej dynamice wzrostu konsumpcji, przy obniżonej (a nawet ujemnej) dynamice wzrostu inwestycji. Sytuację w tym zakresie zdaje się potwierdzać pomiar ogólnego klimatu koniunktury<sup>5</sup> w podziale na sektory (zob. rys. 2).



**Rys. 2.** Ogólny klimat koniunktury gospodarczej dla Polski wg GUS (w listopadzie 2018 r.) i jego dekompozycja sektorowa

Źródło: [http://koniunktura\\_w\\_przemysle\\_budownictwie\\_handlu\\_uslugach\\_w\\_grudniu\\_2018.pdf](http://koniunktura_w_przemysle_budownictwie_handlu_uslugach_w_grudniu_2018.pdf) (dostęp: 27.12.2018 r.).

Zgodnie z interpretacją wskaźnika klimatu koniunktury, już w listopadzie 2018 r. widoczny jest istotny pesymizm w branży budowlanej, uznawanej za branżę o barometrycznym charakterze wobec trendów koniunkturalnych. Bardzo wysokie odczyty dotyczą z kolei handlu i usług (w tym usług telekomunikacyjnych i komunikacyjnych). Takie doniesienia awizują dalsze problemy z procesami inwestycyjnymi i wciąż optymistyczne, jednak już pogarszające się założenia co do dalszego wzrostu konsumpcji. Według GUS, bieżący wskaźnik ufności konsu-

<sup>5</sup> Wskaźnik ogólnego klimatu koniunktury to wskaźnik złożony odzwierciedlający stan gospodarki. Obliczany jest jako średnia arytmetyczna sald odpowiedzi na pytania z ankiety miesięcznej dotyczące bieżącej i przewidywanej sytuacji gospodarczej przedsiębiorstwa. Gdy wskaźnik jest większy od zera odnotowywany jest "dobry" klimat koniunktury. W przeciwnym wypadku klimat jest oceniany jako "zły". Szerzej: [https://stat.gov.pl/metainformacje/slownik-pojec/pojecia-stosowane-w-statystyce-publicznej/3181\\_pojecie.html](https://stat.gov.pl/metainformacje/slownik-pojec/pojecia-stosowane-w-statystyce-publicznej/3181_pojecie.html)

menckiej (BWUK), syntetycznie opisujący obecne tendencje konsumpcji indywidualnej, był niższy o 4,1 p. proc. w stosunku do poprzedniego miesiąca i ukształtował się na poziomie 1,1<sup>6</sup>. Również w porównaniu do grudnia 2017 r. obecna wartość BWUK była niższa o 1,0 p. proc.

Zacytowane dane zaprzeczają twierdzeniom o tym, że w stosunkowo krótkim okresie polska gospodarka może nadal silnie wzrastać siłą rosnącego popytu konsumpcyjnego. Wydaje się, że obok słabnących inwestycji, kolejnym problemem polskiej gospodarki w najbliższej perspektywie może być wyhamowanie tempa wzrostu konsumpcji.

### Wskaźniki PMI

Od końca 2017 r. w większości krajów świata, w tym szczególnie w krajach Europy spadają wskaźniki PMI. Są to tzw. wskaźniki wyprzedzające (inaczej zwane sygnałnymi), czyli przewidujące przyszłą koniunkturę. W praktyce analitycznej z zakresu badań koniunkturalnych najbardziej rozpowszechnionym jest pomiar indeksu PMI<sup>7</sup>.

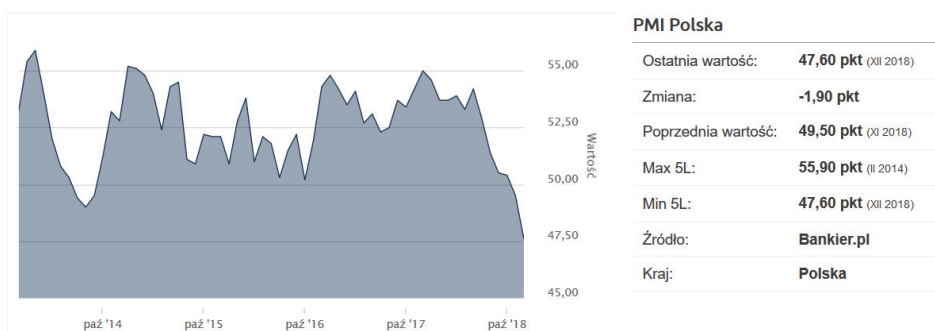
W aktualnych pomiarach wskaźniki PMI dla różnych regionów świata kształtują się na granicy 50 punktów lub bardzo nieznacznie powyżej 50 (czyli awizują raczej rozwój), jednak spadki ich poziomów są już wyraźne i znaczące. Co bardzo istotne dynamika spadków PMI jest znacznie szybsza niż przewidują analitycy. Również w Polsce już w listopadzie 2018 r. w odczycie indeksu PMI doszło do

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<sup>6</sup> Wszystkie składowe wskaźnika uzyskały wartości niższe niż przed miesiącem. Największe spadki odnotowano dla ocen przyszłej sytuacji ekonomicznej kraju i przyszłej sytuacji finansowej gospodarstwa domowego (spadki odpowiednio o 7,5 p. proc. i 5,0 p. proc.). Dla pozostałych składowych wskaźnika spadki kształtowały się następująco: 3,2 p. proc. dla oceny obecnej sytuacji finansowej gospodarstwa domowego, 3,1 p. proc. dla oceny możliwości dokonywania ważnych zakupów oraz 1,8 p. proc. dla oceny obecnej sytuacji ekonomicznej kraju. Szerzej: Koniunktura konsumencka. Grudzień 2018 roku, GUS, Warszawa 2018.

<sup>7</sup> Na indeks PMI składa się pięć subwskaźników, które są tworzone w oparciu o ankietę 400 menedżerów logistyki i zaopatrzenia z danego kraju. Menedżerowie odpowiadają na pytania dotyczące swojej branży, oceniając ją pod kątem nowych zamówień, poziomu produkcji, dostaw zapasów oraz poziomu zatrudnienia jako lepszą gorszą bądź taką samą. Ankieta PMI jest zestandaryzowana i weryfikuje zwykle pięć zmiennych: nowe zamówienia, produkcję, zatrudnienie, wielkość zapasów, cenę i portfel zamówień. Jednak metodologia szacowania syntetycznego indeksu jest różna dla różnych krajów, tak aby najdokładniej oddawać lokalną sytuację gospodarczą. Na wyrażaną w procentach wartość indeksu PMI składa się suma procentowego udziału osób, które określiły sytuację w branży jako lepszą i połowy procentowego udziału osób, które stwierdziły, że sytuacja w branży się nie zmienia. Przykładowo wskaźnik PMI na poziomie 50 oznacza, że taka sama liczba respondentów wskazuje na poprawę, jak i pogorszenie sytuacji w branży.

zaskoczenia – PMI Polska po okresie ponad czterech lat kształtowania się na poziomie ponad 50 punktów (rekordowo wysoki wskaźnik dotyczył końca 2014 r. i wyniósł blisko 56 punktów), po raz pierwszy spadł poniżej granicy 50 punktów. Jeszcze większe rozczarowanie przyniosły notowania za grudzień – indeks PMI na poziomie 47,60 stanowi najniższy wymiar od pięciu lat (zob. rys. 3 i 4.).



**Rys. 3.** Pomiar wskaźnika PMI dla Polski w latach 2014-2018

Źródło: <https://www.bankier.pl/gospodarka/wskazniki-makroekonomiczne/pmi-polska-pol> (dostęp: 2.01.2019 r.).



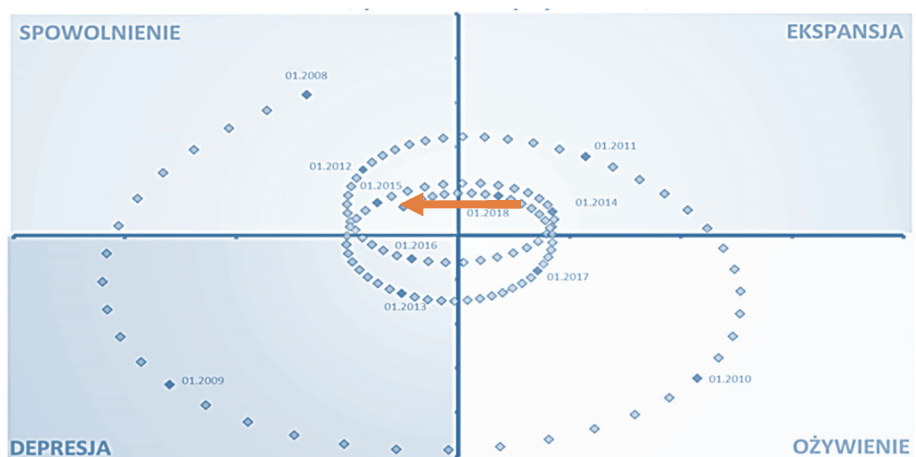
**Rys. 4.** Pomiar i prognoza wskaźnika PMI dla Polski w roku 2018

Źródło: <https://pl.tradingeconomics.com/poland/manufacturing-pmi> (dostęp: 2.01.2019 r.).

Odnutowany pod koniec roku spadek wskaźnika PMI odzwierciedla zarówno słabsze tempo wzrostu liczby nowych zamówień, produkcji, jak i zatrudnienia. Jeżeli – jak przewidują analitycy – trend spadku PMI się utrzyma, a nawet pogłębi w kolejnych miesiącach (zob. rys. 4), można będzie mówić o wyraźnych symptomach recesji gospodarczej.

## Spowolnienie na zegarze koniunktury

Doniesienia o słabnących wynikach w produkcji przemysłowej i – co za tym idzie – gorszych niż oczekiwania wynikach całej gospodarki zdają się potwierdzać również analizy koniunktury w eksperymentalnej metodyce GUS, tj. w pomiarach zegara koniunktury. Według danych z września 2018 r., w polskim przemyśle mamy do czynienia ze spowolnieniem już od początku II kwartału (zob. rys. 5). Równoległy zagregowany wskaźnik koniunktury gospodarczej (COINC)<sup>8</sup>, wskazuje przejście do strefy recesyjnej od kwietnia 2018 r. i wroży w najbliższej perspektywie mniej lub bardziej głęboki kryzys produkcji. Świadczy o tym analiza wyprzedzającego wskaźnika koniunktury gospodarczej (LEAD), wyraźnie zaznaczająca zbliżanie się do obszaru depresji<sup>9</sup>.



\*Uwaga: jako zmienną reprezentującą przebieg cyklu koniunkturalnego przyjęto komponent cykliczny realnej produkcji sprzedanej przemysłu.

**Rys. 5.** Równoległy zagregowany wskaźnik koniunktury gospodarczej (COINC) dla Polski – do września 2018 r.

Źródło: [http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5732/3/2/1/wskaznik\\_rownolegly\\_coinc.pdf](http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5732/3/2/1/wskaznik_rownolegly_coinc.pdf) (dostęp: 29.12.2018 r.).

Cykle i ich przebieg, zaobserwowane w pomiarze zegarowym w ostatnich pięciu latach dają podstawy do domniemania, że ewentualne „zejście” do obszaru depresji może się odbyć w ciągu najbliższych kilku, kilkunastu miesięcy. Warto

<sup>8</sup> W eksperymentalnej metodyce pomiaru zegarowego szacuje się równoległy (COINC) oraz wyprzedzający (LEAD) zagregowany wskaźnik koniunktury gospodarczej. Wskaźnik równoległy (jednoczesny) odzwierciedla bieżący stan koniunktury, natomiast wyprzedzający wskaźnik koniunktury przedstawia, z pewnym określonym wyprzedzeniem, przyszły stan koniunktury gospodarczej.

<sup>9</sup> Materiał dostępny na: [http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5732/3/2/1/wskaznik\\_wyprzedzajacy\\_lead.pdf](http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5732/3/2/1/wskaznik_wyprzedzajacy_lead.pdf)

zaznaczyć, że „wychodzenie” z fazy kryzysowej w kierunku ożywienia gospodarczego może zabrać kolejne kilka, kilkanaście miesięcy. Na tej podstawie, analitycy szacują, że perspektywa najbliższych 2-4 lat w polskiej gospodarce rysuje się niezbyt optymistycznie, co stoi w kontrze do aktualnego klimatu i przekonań co do stanu gospodarki.

#### **4. Kondycja przedsiębiorstw na progu kryzysu**

##### **Kondycja przemysłu i budownictwa**

Pozytywne oceny retrospektywne polskiej gospodarki w wymiarze makroekonomicznym kontrastują z faktyczną kondycją w sektorze przedsiębiorstw, w których w ostatnim roku zanotowano wiele niepokojących sygnałów. Doniesienia o słabnących wynikach w produkcji przemysłowej i budownictwa znajdują potwierdzenie w oficjalnych danych GUS, dotyczących dynamiki produkcji, zatrudnienia, płac i cen. Jak wynika z danych sygnałnych GUS, od listopada 2018 zauważa się trendy spadkowe w poziomach produkcji przemysłowej i budowlano – montażowej, którym towarzyszy nieznaczny spadek tempa wzrostu zatrudnienia (zob. rys. 6). Choć są to wyniki nadal lepsze niż pod koniec roku 2017, to jednak mogą one zapowiadać utrwalanie się negatywnych trendów. Tylko w przemyśle, dynamika wzrostu produkcji w listopadzie jest słabsza o ok. 2 pkt. proc., w budownictwie nawet o 4 pkt. wobec października. Utrzymywanie się w analizowanych branżach stosunkowo wysokiej dynamiki wzrostu wynagrodzeń w żadnym przypadku nie świadczy o dobrej kondycji firm, odwrotnie, wskazuje na silne niezrównoważenie rynku pracy i deficyt siły roboczej, narażając przedsiębiorstwa na istotną presję wzrostu kosztów.

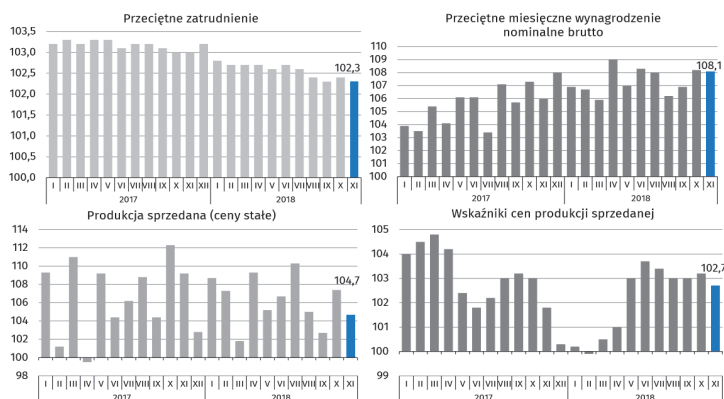
Analizując dane sektorów przemysłowego i budowlanego za ostatnie 2 lata, trzeba zaznaczyć, że wysokie wykorzystanie mocy produkcyjnych oraz silny popyt stymulowały przedsiębiorstwa do zwiększania mocy produkcyjnych. Co więcej, sprzyjające okresy w gospodarce sprowokowały powstanie nowych przedsiębiorstw, pomimo ogromnej konkurencji w tych branżach. Co oczywiste, omawiane tendencje mają istotne znaczenie dla kształtowania się wyników ekonomicznych firm. W roku 2018 bardzo silnie zaznaczyły się tendencje wzrostu kosztów pracy oraz kosztów surowcowych, co przyniosło efekt inflacyjny. Wzrost cen jednak nie nadąży ani za tempem wzrostu płac ani za wzrostem cen zaopatrzeniowych, skutkując pogarszaniem się kondycji finansowej firm.

Spółki często doświadczają wzrostu obrotów, przy poważnym spadku zysków. Ten ostatni problem determinuje z kolei pogorszenie się zdolności płatniczych i staje się realnym zagrożeniem dla wypłacalności firm. Według danych wywiadowni gospodarczej Euler Hermes, w roku 2018 zanotowano o 33 proc. więcej niewypłacalności firm niż w roku poprzednim. Aktualnie na problemy z zatorami skarży się 53 proc. przedsiębiorstw (w 2017 r. – 45 proc.). 30 proc.

małych przedsiębiorstw w Polsce jest z tego powodu na minusie, a dla ponad 5 proc. zwiększyły się ich zobowiązania wobec ich innych partnerów biznesowych. 18 proc. polskich firm musi ograniczyć swój rozwój, inwestycje i ekspansję na rynkach z powodu braku płatności od kontrahentów. Groźnych skutków zatorów płatniczych obawia się blisko 40 proc. Menedżerów<sup>10</sup>.

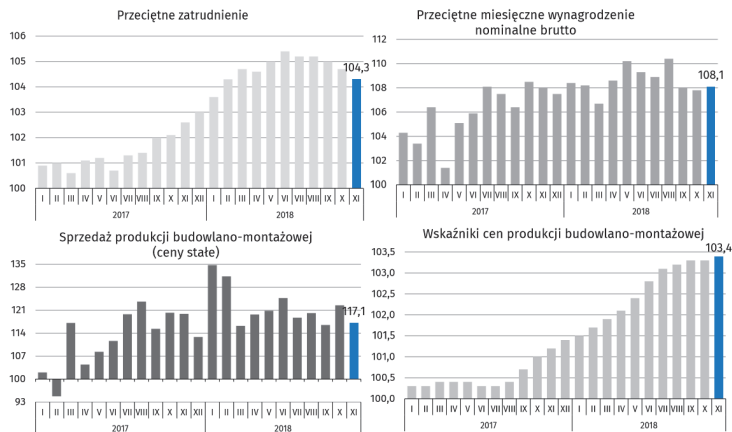
### Przemysł

(analogiczny okres roku poprzedniego=100)



### Budownictwo

(analogiczny okres roku poprzedniego=100)



**Rys. 6.** Główne dane ekonomiczne dla sektora przemysłu i budownictwa w Polsce w latach 2017-2018

Źródło: informacja o sytuacji społeczno-gospodarczej Polski w listopadzie 2018 r., GUS, <http://stat.gov.pl/prezentacje/informacje-sygnalne-21-12-2018-r-,60,5.html> Warszawa 2018, (dostęp: 29.12.2018 r.).

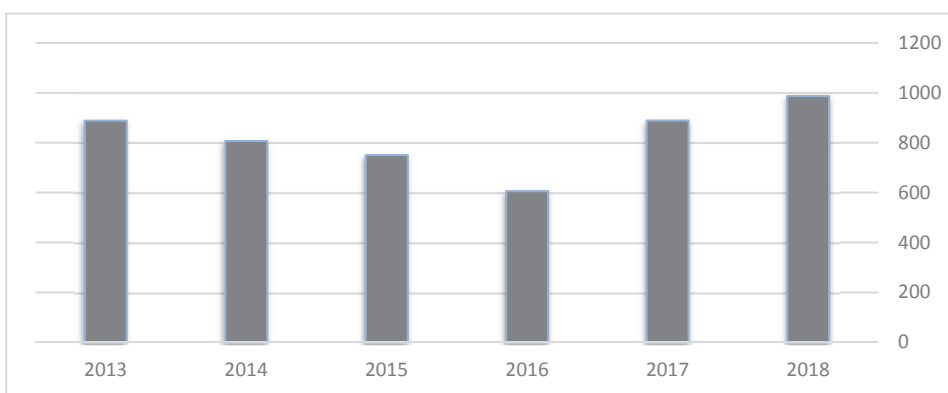
<sup>10</sup> Więcej na temat tych badań w: Rekord upadłości firm w Polsce. Małe i średnie firmy zabijane przez zatory płatnicze, GW, 18/04/19. <http://wyborcza.biz/biznes/7,147584,23252352,upadlosc-firm-zatory-platnicze-zabijaja-male-i-srednie-firmy.html> (dostęp: 22.11.2018 r.).



Innym problemem i bodaj najistotniejszą aktualnie barierą wzrostu są trudności w obsadzeniu wakatów, które stały się nie tylko przeszkodą dla działalności i potencjalnego rozwoju przedsiębiorstw, ale również czynnikiem utraty konkurencyjności, a nawet czynnikiem ryzyka utraty zdolności do przetrwania.

### Upadłości przedsiębiorstw coraz częstsze

Opisywane powyżej trudności płatnicze firm skutkują wzmożonymi procesami upadłościowymi. Według cyklicznych badań COFACE<sup>11</sup> liczba upadłości i restrukturyzacji firm w Polsce w 2018 roku to blisko 1000 przypadków i wzrosła o 20,2 proc. r/r. W roku 2019 – jak prognozuje COFACE nastąpi dalszy ich wzrost o 9,3% r/r.



**Rys. 7.** Liczba upadłości przedsiębiorstw w Polsce w latach 2013-2018

*Źródło: opracowanie własne na podstawie danych CODG i Euler Hermes.*

Dla ustalenia prawdziwego trendu należy jednak wziąć pod uwagę fakt, iż od stycznia 2016 r. firmy, które mają poważne problemy z płynnością i regulowaniem zobowiązań zamiast ogłaszać upadłość mogą rozpocząć postępowanie restrukturyzacyjne. Z danych Centralnego Ośrodka Danych Gospodarczych, takich postępowań do 30 września 2018 r. było 346 (w 2018 r. może być ich około 600), wobec 348 w 2017 r. i 212 w 2016 r.<sup>12</sup>

<sup>11</sup> Raport z badań dostępny pod adresem: <http://www.coface.pl/Aktualnosci-i-media/Publikacje/Upadlosci-w-Europie-Srodkowo-Wschodniej-Koniec-dobrej-passy> (dostęp z dnia: 22.11.2018 r.)

<sup>12</sup> Ustawą z dnia 15 maja 2015 r. Prawo restrukturyzacyjne wprowadzono nowy typ postępowania, którego celem jest uniknięcie ogłoszenia upadłości dłużnika przez umożliwienie mu restrukturyzacji w drodze zawarcia układu z wierzycielami, a w przypadku postępowania sanacyjnego – również przez przeprowadzenie działań sanacyjnych, przy zabezpieczeniu słusznych praw wierzycieli.

W ocenie ekspertów Euler Hermes, przyczyny zdecydowanej większości niewypłacalności polskich przedsiębiorstw mają charakter strukturalny, a nie koniunkturalny. Skoro tak, to trudno oczekiwać, aby ewentualny dalszy wzrost PKB, inwestycji czy konsumpcji w Polsce były w stanie w kolejnych miesiącach odwrócić trend znacznej jak na polskie warunki (100 i więcej niewypłacalności w skali miesiąca) i wciąż rosnącej liczby niewypłacalności. Jeszcze większe zagrożenie dla przetrwania przedsiębiorstw niesie ze sobą potencjalne osłabienie tempa wzrostu gospodarczego.

### **Obawy przedsiębiorców o przyszłość**

Nie tylko statystyki dotyczące upadłości przynoszą poważne obawy o najbliższą przyszłość. W ciągu ostatnich dwóch lat zmieniła się mapa największych ryzyk dostrzeganych przez polskich przedsiębiorców w prowadzeniu biznesu. Mimo iż część obaw pozostała niezmienna, tak jak wzrost konkurencji, zmiany regulacji prawnych czy spowolnienie gospodarcze to na znaczeniu zyskały takie ryzyka jak niestabilność polityczna czy brak odpowiedniej kadry na rynku. Według **najnowszego raportu Aon Polska (raport 2017)**<sup>13</sup>, kluczowe ryzyka, według polskich przedsiębiorców w prowadzeniu działalności (wg rangi ważności), to:

1. Wzrastająca konkurencja.
2. Zmiany regulacji prawnych.
3. Spowolnienie gospodarcze.
4. Ceny towarów.
5. Należności handlowe/płatności kontrahentów.
6. Wahania kursów walut.
7. Przepływy pieniężne/ryzyka płynności.
8. Brak odpowiedniej kadry na rynku.
9. Utrata reputacji.
10. Niestabilność polityczna.

W tej edycji badania w pierwszej dziesiątce kluczowych ryzyk pojawiło się kilka nowych ryzyk: przepływy pieniężne/ryzyka płynności, brak odpowiedniej kadry na rynku oraz niestabilność polityczna. Zdecydowanie największy skok w rankingu dotyczy niestabilności politycznej (19 pozycji do góry) oraz braku odpowiedniej kadry na rynku (8 pozycji do góry). Jednocześnie istnieją ryzyka, które w opinii przedsiębiorców straciły na znaczeniu, np. wahania cen surowców czy przerwa w działalności. Warto podkreślić, że aż sześć z dziesięciu ryzyk wskazanych jako najważniejsze przez polskie przedsiębiorstwa bezpośrednio lub pośrednio

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<sup>13</sup> Szerzej o raporcie Aon i badaniach, [w:] Czego najbardziej obawiają się polscy przedsiębiorcy?; <http://wyborcza.biz/biznes/7,147584,22568069,czego-najbardziej-obawiajasię-polscy-przedsiębiorcy-to-silna.html?disableRedirects=true> (dostęp: 12.12.2018).

dotyka obszaru finansów. Blisko połowa respondentów wskazała, że poniosła w ubiegłym roku straty wskutek np. braku płatności kontrahentów.

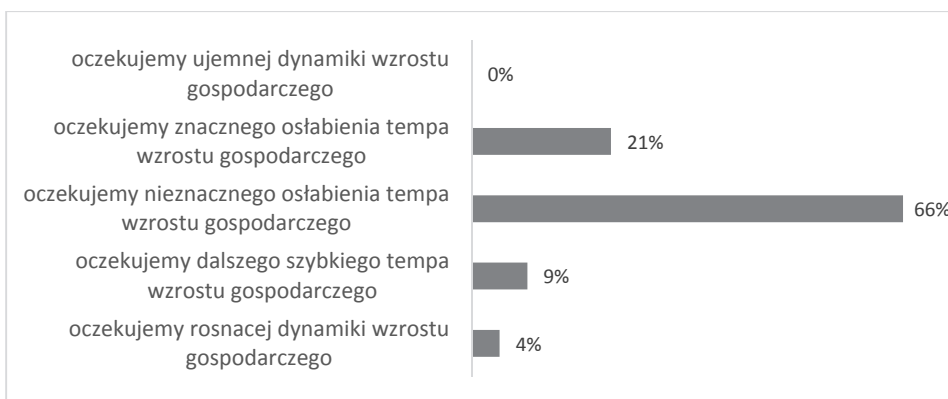
Warto zwrócić uwagę, że zgodnie z wynikami badania polscy przedsiębiorcy mają poczucie, że ich firmy nie są odpowiednio przygotowane na wystąpienie różnego rodzaju ryzyk. Deklarowany poziom przygotowania jest najniższy od 10 lat. Najwyższy odsetek badanych przyznaje, że spośród kluczowych ryzyk w największym stopniu jest przygotowany na wystąpienie ryzyka związanego z płynnością finansową, zaś w najmniejszym stopniu na ryzyko niestabilności politycznej.

Omawiane wyniki sondażu opinii polskich przedsiębiorców stanowią dobre tło porównawcze dla zaprezentowania wyników badań własnych Auterek, dotyczących oczekiwań koniunkturalnych przedsiębiorców z Pomorza Zachodniego, przeprowadzonych w okresie między wrześniem a grudniem 2018 r.<sup>14</sup> Głównym celem prezentowanego sondażu było uzyskanie informacji na temat antycypacji stanu koniunktury gospodarczej w perspektywie najbliższego / nadchodzącego roku, oraz określenie najistotniejszych ryzyk i czynników zagrażających funkcjonowaniu firm. W odpowiedzi na pierwsze pytanie, respondowani menedżerowie wykazują umiarkowany pesymizm (zob. rys. 8). Blisko 90 proc. z nich, w 2019 roku oczekuje osłabienia dynamiki wzrostu gospodarczego (w tym 2/3 myśli o nieznacznym spadku dynamiki), a 13 proc. wierzy w dalszy szybki wzrost. Jednocześnie, żaden z badanych menedżerów nie wskazuje na możliwość spadku wartości PKB, co można interpretować jako stosunkowo dobry sygnał i brak myślenia czarnoscenariuszowego.

Niestety nie więcej optymizmu wynika z analizy rozkładu odpowiedzi na pytanie o ewentualny kryzys gospodarczy i czas jego nadejścia (zob. rys. 9). W tym przypadku blisko 70 proc. powołanych do badania ekspertów za czas nadejścia dekonunktury uznaje najbliższe 2-4 lata, niemniej co piąty oddala tę perspektywę w czasie i oczekuje kryzysu nie wcześniej niż za 5 lat. Warto skomentować też fakt, że żaden z respondowanych menedżerów nie wierzy naiwnie w niedziałanie cyklu koniunkturalnego. Tylko dwie osoby nie potrafiły ocenić perspektywy czasowej następnego kryzysu, jednak zgadzają się z tezami o jego pewnym nadejściu.

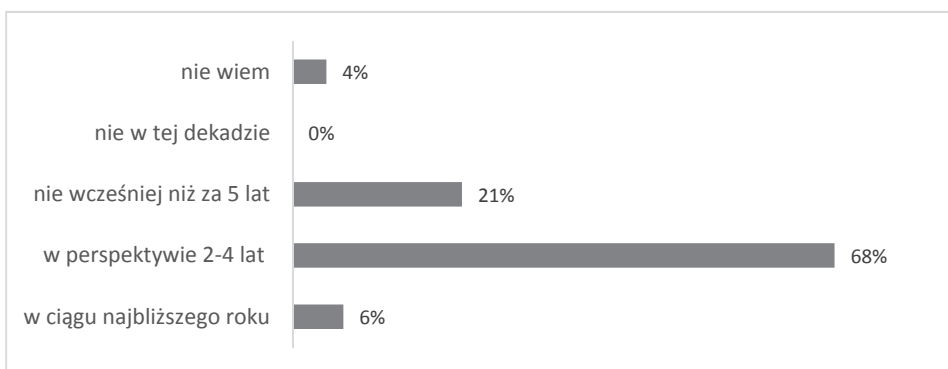
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<sup>14</sup> W sondażu opinii o charakterze panelu eksperckiego, wzięło udział 47 menedżerów wysokiego szczebla z przedsiębiorstw funkcjonujących w woj. zachodniopomorskim. Drobny próby nie jest reprezentatywny statystycznie, bowiem kryterium udziału w sondażu było zajmowane stanowisko kierownicze a nie rozmiar firmy, czy branża. Prezentowane wyniki mają charakter pilotażowy – projekt będzie miał swoją kontynuację w dwóch kolejnych edycjach (2019 i 2020).



**Rys. 8.** Rozkład odpowiedzi na pytanie o oczekiwania co do koniunktury gospodarczej w roku 2019

*Źródło: opracowanie własne na podstawie przeprowadzonego sondażu eksperckiego.*



**Rys. 9.** Rozkład odpowiedzi na pytanie o czas nadejścia kolejnego kryzysu gospodarczego w Polsce

*Źródło: opracowanie własne na podstawie przeprowadzonego sondażu eksperckiego.*

Prezentowane badania pozwoliły również na określenie czynników ryzyka i głównych zagrożeń<sup>1z</sup>, z jakimi mają do czynienia aktualnie menedżerowie (zob. rys. 10). Za główne czynniki o kryzysogennym oddziaływaniu na firmy uznają oni dzisiaj przede wszystkim problemy kadrowe i związane z tym eksplozywnie rosnące koszty pracy (na ten problem zwraca uwagę 94 proc. badanych). Równie istotnym mankamentem prowadzenia biznesu w Polsce jest niestabilność, niepewność i niecisłość przepisów prawa gospodarczego w szerokim rozumieniu (blisko 80 proc. wskazań). Co ciekawe, tylko co trzeci badany wskazuje problem globalnej koniunktury (spowolnienie gospodarki) za bardzo istotny czynnik rozwoju firmy.



**Rys. 10.** Rozkład odpowiedzi na pytanie o główne czynniki kryzysogenne dla firmy w roku 2019

*Źródło: opracowanie własne na podstawie przeprowadzonego sondażu eksperckiego.*

Zastanawia również stosunkowo niski odsetek odpowiedzi dotyczących problematyki wzrostu cen i kosztów. Rok 2018 obfitował już w bardzo istotne podwyżki cen, a kolejny rok daje dalsze zapowiedzi wzrostu cen o charakterze kosztotwórczym. Presja inflacyjna przestraszyła jednak tylko co trzeciego badanego menedżera.

Jeszcze mniej respondentów postrzega problemy presji konkurencyjnej za bardzo istotne ryzyko i potencjalny zapalnik kryzysu w firmie – tylko 14 proc. badanych zwraca na ten czynnik uwagę.

## Podsumowanie i wnioski

Kryzysy były, są i będą! Nie można mieć złudzeń. Dobra koniunktura nie może trwać bez końca. To nie tylko efekt cykliczności gospodarki, ale również skutek licznych błędów w polityce ekonomicznej na świecie. Już od roku eksperci i analitycy alarmują, że w gospodarce światowej widać pierwsze sygnały nadciągającego kryzysu gospodarczego. Na wartości tracą Bloomberg Commodity Index, Baltic Dry Index, indeksy PMI w niemal wszystkich gospodarkach świata. Nie mniejsze spadki dotyczą indeksów cen surowców na światowych rynkach. Do tego, w gospodarce światowej tlą się różne zapalniki kryzysu, takie jak narastające zadłużenie gospodarek, skutki długookresowego luzowania polityki monetarnej, słabnąca kondycja gospodarki w Chinach, wzmocnienie kursu dolara amerykańskiego, izolacjonistyczna polityka handlowa D. Trumpa, czy w końcu widma bankructw gospodarek o najsłabszej kondycji.

Tymczasem w Polsce utrzymuje się powszechne przekonanie o doskonałej koniunkturze gospodarczej, przekonanie fałszywe i szkodliwe. Atmosfera budowana wokół rzekomo świetnych perspektyw polskiej gospodarki usypia i może spowodować olbrzymie konsekwencje, tak dla gospodarki w skali makroekonomicznej, jak i dla poszczególnych podmiotów gospodarczych. Niestety analizy wyprzedzające koniunktury gospodarczej dość jednoznacznie wskazują na odwracanie się trendów wzrostowych. Jak wykazano w trzeciej części rozdziału, polskie PMI w końcówce 2018 r. dramatycznie spadło do poziomu najniższego od 5 lat, wskaźniki klimatu koniunktury słabną, pogarsza się kondycja sektora przemysłu i budownictwa. Również w optyce mikroekonomicznej nie brakuje sygnałów nadchodzącego kryzysu. Statystyki za rok 2018 podkreślają spadek zyskowności, osłabianie zdolności płatniczych firm, a także wzrost stopy bankructw i niewypłacalności. Na tym tle niepokój muszą budzić również doniesienia o nastrojach przedsiębiorców, którzy – wprawdzie nie prędko – ale jednak oczekują pogorszenia koniunktury gospodarczej. Ich pesymizm narasta i dysonuje z optymizmem rządzących. W ocenie przedsiębiorców, w perspektywie najbliższych 2-4 lat należy spodziewać się dość znacznego schłodzenia koniunktury. Jednocześnie, przedsiębiorcy rozpoznają poważne problemy funkcjonowania w czynnikach pośrednio związanych z koniunkturą w skali makroekonomicznej. Aktualnie za najbardziej istotne ryzyka swojej działalności uznają problemy wynikające z sytuacji na rynku pracy oraz problemy związane ze sferą regulacji gospodarki. To ostatnie doniesienie sugeruje bardzo ważną rolę polityki Państwa w budowaniu odporności na kryzys. Czy w Polsce można liczyć na mądre, racjonalne rządzenie w przededniu kolejnego kryzysu?

Wprawdzie, zaprezentowany rozdział nie udziela odpowiedzi na to ostatnie, retoryczne pytanie, to jednak zwraca uwagę na najważniejsze problemy i ryzyka, jakie stoją przed polską gospodarką i polskimi przedsiębiorstwami w 2019 r. i kolejnych kilku latach. Celem Autorek nie było epatowanie kryzysem, celem była antycypacja przyszłej koniunktury, zwrócenie uwagi na zwiastuny kryzysu i apel o ich nieignorowanie.

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## SUMMARY

The development of economic organizations as well as public and non-profit organizations marks a display of various features, forms conditions. Its sources lie both in the organizations' external, sectoral and immediate environment as well as in their internal potential. Therefore, the development processes may be of fairly continuous character, or they may adopt a step-change forms which reflect crisis situations. The development processes occurring in the organizations are strongly influenced by modern economy, which is characterized by significant technological progress and is often referred to as 4.0 industry or 4.0 revolution.

The monograph is devoted to various aspects of such development processes. It aims to identify, analyse and evaluate the selected development challenges faced by the employees, organizations and other entities in the modern economy.

The study consists of 11 chapters prepared by various authors. Michał Comporek highlights the financial aspect of stock exchange enterprises' development. He argues there is a significant sectoral differentiation in the extent and techniques of intentional net profit (loss) shaping in public enterprises.

Wojciech Głód focuses on the issue of transformation in health care units and indicates to what extent the adopted leadership style may enhance their operational efficiency.

The notion of change management process barriers in the pension system from the stakeholders' perspective is analysed by Małgorzata Gumola. The author claims the need for thorough pension systems reform results mainly from demographic and professional changes in modern societies as well as the labour market evolution. Last major pension system reforms took place many years ago and there is a need for further changes to be introduced. It is necessary to draw from private sector's experience and consider the roles of various pension systems stakeholders. In this context the barriers in the pension systems change management are identified.

Antonina Litinska discusses vital role of creativity in business. The author presents the issue of a close relationship between creativity and the company's organizational culture. The chapter also draws attention to challenges faced by modern business presented in the form of five types of changes.



The study by Edyta Marcinkiewicz deals with the use of employee pension programs in human resource management. The author points out that lowering pensions from public (compulsory) systems should be accompanied by increasing the role of individual savings and savings accumulated as part of employee pension schemes. Based on the subject literature analysis and the survey results from various countries, employee pension plans can be seen from the perspective of HRM as a remuneration component with deferred payment, an element of the incentive system or a tool used to increase the enterprise competitiveness on the labour market.

These issues are to some extent continued by Aleksandra Polak-Sopińska. The author focuses on the role of ergonomics in the process of age management during the fourth industrial revolution. Demographic and other changes taking place in contemporary societies cause the increase in the number of people with disabilities and the decline in the working population. Therefore, it is necessary to implement strategies and solutions in enterprises that rationalize work organization systems and replace people in production processes. The article indicates the great importance of ergonomic methods and tools that can support decision-making processes in the sphere of age management.

Pavel Pavlov, Elena Zashchitina and Sebastian Bakalarczyk in their study entitled "Successes and failures of modern companies in the 4.0 Industry" address the major problem of interaction between universities and enterprises in modern times. They concentrate on the role of those relations in human resources shaping. Based on quantitative and qualitative analyzes, the authors propose a model of cooperation between universities and business organizations. It allows to provide appropriate educational support when preparing future professional staff.

The next monograph chapter by Jarosław Ropega, concerns the issue of motivating entrepreneurs and sources of entrepreneurial behaviour that is fundamental to the economy and individual sectors and companies development. The entrepreneurs' motivation has a very large impact on the creation and continuation of business operations. The author distinguishes between two categories of entrepreneurs: those who set up business for the first time, and experienced (notorious) entrepreneurs who continue operations established by previous generations or run several companies or have previously failed in business and set up new enterprises.

The author focuses on the entrepreneurs who have already gained experience in unsuccessful businesses and take a new chance drawing from mistakes and failures in their previous attempts. Their approach and entrepreneurial behaviour is different and more mature, as shown in the research examples provided in this study. In Poland, this area is still poorly researched and hence the need for a deeper exploration of this entrepreneurship sphere.

Alicja Smolbik-Jęczmień with a team of three co-authors from the University of Economics in Wrocław analyze the issue of team viability in the view of challenges faced by contemporary enterprises. The theoretical part of the study presents various concepts of viability in the broader context of team performance. In the empirical part, the areas and determinants of team viability in the contemporary work environment are described.

The authors particularly concentrate on the analysis of external and internal factors determining the team (company) viability, such as e.g. leadership, multiculturalism, changes in the labour market, generational team diversity, employees' commitment and motivation. The managers who realize and understand these determinants can creatively shape and support teams in achieving business successes.

In the next chapter Hanna Soroka-Potrzebna considers the impact of the fourth industrial revolution on the selection of risk management methods and techniques in projects. According to the author, this is a poorly recognized area and hence there is a need to identify challenges facing project managers within 4.0 industry. This is particularly about the development of an appropriate project management methodology in the conditions of this industry.

The last chapter of the monograph by Aneta Zelek and Grażyna Maniak is entitled "The signs of the oncoming economic crisis and threats to Polish companies". The development of enterprises and other organizations is inseparably connected with crisis phenomena. In management sciences and economics crises are regarded as signals indicating the need for changes and further organization development and the ability to recover from crisis situations is one of the most important competences of contemporary managers.

In this chapter, the authors debate whether there are crisis threats in Polish economy and whether Polish companies are prepared to deal with them. The analyses conclusions are fairly sceptical with regards to the crises threats anticipation by Polish enterprises.

We express our hope that the short previews presented above will generate the interest in the problems of contemporary organizations development and the monograph will meet the readers' expectations.

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