

DYNAMIC PROCESS IMPROVEMENT – THEORETICAL AND EMPIRICAL PERSPECTIVES

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Purpose: The paper's main objective is to fill the research gap by theoretically and empirically exploring current approaches to business process improvement issues. In particular, attention is paid to the internal factors of dynamic business process improvement.

Design/methodology/approach: The article is based on the results of a quantitative survey conducted using the CAWI technique. Respondents to the survey were middle managers representing companies in various industries where process improvement is taking place. Conclusions were drawn from a sample of 444 companies.

Findings: The research conducted here made it possible to investigate and clarify aspects of dynamic business process management. The main conclusions that emerge from the results of the study allow to indicate the main internal factors which play the most significant role in dynamic process improvement. It is important to state that organisations must have certain resources in order to be able to implement dynamic process changes. They must also have certain capabilities that allow these resources to produce the desired effects.

Research limitations/implications: The study targeted the perspective of middle managers, which was a key factor in selecting respondents for the study. Future research could move in the direction of expanding the pool of respondents to include other levels of management. Qualitative research, and in particular the case study method, could also prove useful in developing the topic further.

Practical implications: In line with dynamic capabilities, middle managers should be oriented towards identifying the individual factors determining the company's development, arriving at synthetic, current and reliable knowledge necessary for the decision-making process, and reacting quickly to changes occurring inside and outside the organisation.

Originality/value: The subject of this article is the issue of dynamic business process improvement. This is a topic that has not yet been sufficiently researched. The presented research area is interesting from a cognitive point of view and the perspective of management practice. It is part of the current research on the effectiveness of business process execution and, by extent, the effectiveness of entire organisations. It responds to the current need to react quickly to unpredictable, rapid environmental changes, which corresponds to the metaparadigm of dynamic reality.

Keywords: business process management, BPM, business process improvement, BPI, dynamic capabilities.

Category of the paper: Research paper.

1. Introduction

The reality in which organisations operate today is fraught with uncertainty that can hardly be compared to any situation in the past. Until recently, the frequency of change and the degree of radicality of change were considerably less, but now there is a marked acceleration in the pace of change and an increase in the demand for it (Hamel, Breen, 2007). Various phenomena and problems overlap, some of which have not been experienced before. Organisations are operating in a “new normal”, where previously unimaginable event scenarios become instantly inevitable (Taleb, 2008). In this situation, organisations need to make changes constantly in order to achieve the realistic goal of sustainability, as change has become a kind of “guarantor” of survival and the ability to face future challenges. Making changes in response to the impulses of the environment is realised by a broad (ever-expanding) spectrum of management concepts, approaches and tools – process management is one of them (Osbert-Pociecha, 2019). Business processes are central to an organisation's effectiveness and ability to implement its business strategy successfully, and achieve growth and development (Bakotic, Krnic, 2017). In order to cope with the dynamic complexities of the market, many organisations are forced to make changes to processes in real time. The main value of such an approach lies in innovation, creativity and individualisation (Szelaḡowski, Berniak-Woźny, 2020). As a result, there is a very high demand for dynamic business process improvement. Organisations are forced to look for opportunities to implement process changes constantly. Today, process improvement must be dynamic, based on continuous assessment, anticipation and adaptation to new trends that may become entrenched and affect the earning capacity of the business and also its viability. It is about being able to implement rapid and urgent change, which is very challenging for many organisations. This approach corresponds with the concept of dynamic capabilities, which has been promoted for some time and is considered one of the most relevant and influential topics in current research (Schilke, 2014; Vogel, Guttel, 2012). A review of national and international literature on business process management (BPM) in the context of business process improvement (BPM) shows that its redefinition was already seen as inevitable due to the need to cope with multiple changes caused by different things (Jeston, Nelis, 2014; Rosemann, vom Brocke, 2015; Badakhshan et al., 2019). Dynamic business process improvement can be regarded as a manifestation of organisational intelligence and a key competence, enabling rapid adaptation of processes to new, previously unknown market conditions. This topic, however, is not sufficiently researched as the changes that are currently

taking place are rapid and undefined. The paper's main objective is to fill the gap outlined above through a theoretical and empirical examination of current approaches to business process improvement issues. In particular, attention is paid to the presentation of the authors' empirical research results into the internal factors of dynamic business process improvement. Accordingly, a research problem was formulated in the form of the following question: which internal factors most influence an organisation's capacity for dynamic process improvement?

The article has a its structure. In the first part, reference is made to the improvement of business processes against the background of the concept of a company's dynamic capabilities. This is followed by the presentation of the research methodology, the results of the empirical study carried out, and a discussion which compares these results with those of other authors. The article concludes with a summary, indication of limitations, and directions for further research.

2. Business Process Improvement – literature review

Business processes are a natural component of every organisation, ensuring that they function and, as a result, deliver the objectives written in strategies and operational plans while simultaneously fulfilling customer orders and meeting their expectations (Nowosielski, 2014). Business Process Improvement is a special case of organisational improvement. It is a systematic approach to closing process performance gaps by reducing process execution time, identifying and eliminating causes of poor quality, reducing variability, and eliminating non-value-adding activities (businessdictionary.com).

The improvement activities undertaken aim to make changes to processes, and implement various types of innovative solutions (e.g. technological), often simplifying them but also influencing the interactions taking place between people, technology and all activities in such a way as to deliver the expected products/services to customers. It is argued that effective process change is characterised by correlating the key problems of the organisation, the people affected by those problems (and who will benefit from their solution), and the resources required to do so (Cannon, McGee, 2016). In line with the variability paradigm and assuming that an organisation is only as effective as its processes (Rummler, Brache, 2000, p. 76), it can be concluded that improving them should help companies adapt to new situations. Since the beginning of the twenty-first century, the “focus” in Business Process Management (BPM) has started to shift very strongly towards dynamic business process improvement (dynamic BPI) (Helfat, Winter, 2011; Anand et al., 2009; Szelałowski, 2019; Grajewski, 2013; Bitkowska, 2021). Response times to reported customer needs, process flexibility, and the identification of new internal sources of value growth, error reduction, inefficient material consumption, and associated costs have become more important.

The perception of BPM as a set of dynamic capabilities for adapting existing business processes and creating new ones to achieve alignment with the environment has also begun to come to the fore (Niehaves et al., 2011). Being proactive in this respect fits with the concept of dynamic capabilities (Teece et al., 1997; Eisenhardt, Martin, 2000; Helfat, Winter, 2011; Laaksonen, Peltoniemi, 2018) in terms of managing change in organisations and maintaining high levels of mobilisation (Kotter, 2008), and identifying challenges and seeking answers to them (Bridges, 2009). In an environment characterised by change and uncertainty, dynamic capabilities allow organisations to 'integrate, build and reconfigure internal and external competencies to meet a rapidly changing environment' (Teece, 2007). Today, as Teece (2018) argues, dynamic capabilities are essential not only for understanding competition in the face of rapid technological change but also for coping with the deep uncertainty of technological and market change.

Dynamic capabilities as a theoretical construct correspond very strongly with process management (Ortbach, 2012; Niehaves et al., 2011). Organisations today are required to use unconventional management approaches and technologies, and the obligation to maintain competitive advantage appears to be dynamic, never-ending, and highly individualised (Hanaysha et al., 2022; Alrawabdeh et al., 2022). Business process improvement is now seen as an opportunity to improve current efficiency and strategic growth (Rosemann, 2015; Hernaus et al., 2012). Forstner et al. (2014) and Trkman (2010) argue that by combining the perspectives of business process management with development capabilities, it can be concluded that processes can be identified with operational capabilities, with process improvement being a dynamic function of them.

Traditionally, process efficiency has been viewed from the perspective of time, cost, quality and flexibility (Reijers, Mansar, 2006). Nowadays, however, due to the ever-changing external environment resulting from the fact that the modern economy is subject to increasingly rapid, multi-dimensional change, another criterion comes to the fore, namely the ability to adapt to change. Dynamic business process management is an extension of the classic concept of process management and an attempt to harmonise process management with the learning organisation concept. This is achieved through the ongoing verification of acquired knowledge concerning customer needs by numerous process executors, which leads to the gradual accumulation of knowledge.

Justification is found in intelligent process management, which enables organisations to conduct their business activities efficiently and effectively by integrating analytical, social and mobile technologies into coordinated processes (Trocki, 2016). Business processes largely determine an organisation's quality, innovation and efficiency (Minonne, Turner, 2012). They are considered unique and critical assets that account for a significant proportion of an organisation's costs but, at the same time, offer significant opportunities to improve efficiency (Seethamraju, 2012). Due to its dynamic nature and flexibility, process management

enables organisations to adapt to changing global market conditions (Liu et al., 2009). It is also closely linked to developing a firm's capacity for dynamic change (Niehaves et al., 2014).

At the same time, referring to contingency theory, it can be argued that the development of business process management capabilities is intensified by external factors (Pauwaert, van Looy, 2014). Trkman (2010) argues that dynamic capability theory helps to understand the environment and provides a theoretical framework that contributes to a better fit between the business environment and the business processes implemented. Referring to the meta-capabilities proposed by Teece (2007), Bernardo et al. (2017) state that business processes enable the identification and access to market and technological resources. In their view, processes entail the adaptation of organisational resources to the needs of the environment and the systematic implementation of activities that contribute to continuous renewal.

The dynamic approach to process improvement leads to the need to move away from the classic process improvement cycle based on formalised procedures. These procedures overall significantly increase response times to customer expectations, require additional effort to involve higher hierarchical levels and discourage improvement activities. The process change procedure should, therefore, be flexible enough to adapt the importance and scope of the change to the intensity of the adjustment activities. In this situation, the focus of process implementation on creating customer value cannot be reduced to the routine, repetitive execution of activities in processes and attempts at optimisation from the point of view of different criteria, as customers' expectations, habits, sensitivities and capabilities are different and sometimes even contradictory (Grajewski, 2013). A dynamic approach to process improvement should allow for an appropriately rapid, and for critical situations, even immediate, response to changing relevant operating conditions, personalised customer requirements or competitive movements. The processes themselves should be defined and implemented in such a way that direct executors can make additions and even changes to their implementation. As such, knowledge is systematically uncovered, allowing the intellectual capital of the organisation to be utilised and processes to be improved as they are played out (Szelaḡowski, Berniak-Woźny, 2020).

3. Research methodology

The research methodology comprised three stages. In the first, a narrative literature review was conducted. This method was chosen to show the current knowledge of business process improvement. The choice of method was mainly dictated by the complexity of the phenomenon under study and the conceptual and methodological diversity in the approach to its exploration. The narrative literature review aims to bring together different studies to reinterpret and establish interrelationships in defining the context of the research problem (Baumeister, Leary,

1997). Among its advantages is the possibility of omitting studies whose relevance to the topic is marginal or which do not have a sufficiently high level of relevance and reliability.

The method includes a subjective element, which gives the researcher greater freedom to identify publications for review and discuss the results obtained. The review aimed to identify how the issue of dynamic business process improvement is portrayed in the literature. The literature review began with an examination of the WoS and Scopus academic databases, which offer peer-reviewed, up-to-date, high-quality academic journals published worldwide. The search was conducted between July and August 2019. The following phrases were considered: business process improvement, dynamic business process improvement, capacity to process improvement, capacity to dynamic process improvement, capability to process improvement, and capability to dynamic process improvement. The Scopus database was searched based on article title, abstract and keywords. The WoS database was searched by topic. The analyses covered scientific articles published up to mid-2019. In the initial phase of the study, the relevance of the articles was determined independently by all authors based on the abstracts. In this way, 94 scientific articles were retrieved. The authors then compared their findings and developed a final list of articles. In the next phase, 39 articles were subjected to in-depth full-text analysis. The full-text analysis was carried out independently by all authors. Based on the literature study, seven groups of internal factors were identified that showed a relationship with dynamic business process improvement:

- factors of a managerial nature,
- organisational and decision-making factors,
- Information factors,
- technological and IT factors,
- cultural factors,
- factors of a financial nature,
- factors relating to human resources (concerning persons in managerial and executive positions).

The second stage was based on the search results and consisted in developing a research questionnaire. Respondents were called to answer 68 survey questions on a proposed five-point Likert scale (a value of 1 meant low importance, and a value of 5 meant very high importance). The survey questions (ranging from five to eight questions) were tailored to the groups of factors listed above. The first part of the questionnaire contained questions relating to business process improvement dynamics and factors that may affect an organisation's ability to improve processes dynamically. The second part of the research questionnaire consisted of psychological tools (tests) to help identify which type of work engagement is most related to dynamic process improvement. The third part of the questionnaire was a metric that included questions about: industry, type of business, number of people employed, legal–organisational

form, capital, scope of operations, financial condition, gender of the respondent, number of years in the company, number of years in management, gross salary.

The third stage consisted of an empirical study using a survey technique. Its aim was to identify the key internal factors influencing an organisation's ability to make dynamic process improvements. The survey was conducted using the CAWI (Computer Assisted Web Interview) method. The authors' survey questionnaire was delivered electronically via a prepared web platform, and was targeted to middle management positions because it was considered that the middle management level is closest to emerging issues in process implementation, and that the onus is largely on them to initiate, monitor and evaluate the implementation of process improvement changes (Jørgensen et al., 2003). The survey began on 15 February 2020 and was completed on 3 April 2020. The selection of respondents was purposive, determined by the desire to reach companies that were quality-oriented in their management and had an ISO 9000-series QMS in place. Thus, it was considered that respondents should have experience in the area of business process improvement, as this is required by one of the principles of ISO 9001:2015, to which organisations implementing a QMS based on this standard are obliged to adhere. In the survey, the final selection of respondents depended on obtaining affirmative answers to all questions regarding:

1. whether the company has a QMS based on ISO 9001 guidelines,
2. carrying out business process improvement activities,
3. holding a middle management position.

A negative answer to any of the above questions eliminated participation in the survey. The planned sample size was 417 companies. This was statistically calculated based on the number of organisations with an ISO 9000 series-based certified QMS in 2018. The survey questionnaire, placed on the research platform, was completed by 674 respondents. After initial analysis, 231 questionnaires were rejected because they did not meet the selection criterion or were not fully completed. Overall, 444 complete questionnaires were analysed in depth.

4. Findings

A total of 444 middle managers from manufacturing, logistics, service and trading companies participated in the survey. Respondents represented more than 55% of large enterprises (with more than 250 employees) and 26% of medium-sized enterprises (50-249 employees), mainly limited liability companies (60%) and joint stock companies (21%). The survey covered enterprises located in Poland. Regarding the type of business conducted, the survey was dominated by manufacturing enterprises (355) and limited liability companies with 150-249 employees. The second significant group in terms of employment were companies employing more than 1000 people. For the most part, the range of activities

conducted by the surveyed entities was global. These enterprises also assessed their financial condition as good (183) and very good (153). Table 1 further elaborates on the characteristics of the surveyed enterprises.

Table 1.
Characteristics of the surveyed enterprises

METRICS											
Type of business		The number of people employed		Organisational and legal framework		Capital		Coverage		Financial condition	
Production	355 (80,14%)	10-49	25 (5,6%)	General partnership	8 (1,85%)	Polish	127 (28,67%)	Local	3 (0,68%)	Very good	153 (34,54%)
Trading	37 (8,35%)	50-149	53 (11,96%)	Limited partnership	8 (1,85%)	Foreign	284 (64,11%)	Regionl	3 (0,68%)	Good	183 (41,31%)
Services	95 (21,44%)	150-249	169 (38,15%)	Ltd.	313 (70,65%)	Mixed	31 (6,99%)	National	29 (6,55%)	Average	64 (14,45%)
Mixed activity	32 (7,22%)	250-1000	79 (17,83%)	Public corporation	105 (23,70%)			European	83 (18,74%)	Poor	18 (4,06%)
Another	13 (2,93%)	Over 1000	116 (26,19%)	Another ¹	9 (2,03%)			Global	325 (73,36%)	Bad	9 (2,03%)

¹ cooperative, sole trader, civil partnership.

Source: own study.

In the conducted survey, the majority were men, aged between 31 and 40, with relatively short seniority, having held a management position in the surveyed company for up to three years. These were mostly people whose gross salary was higher than the national average. Table 2 refers in detail to the characteristics of the respondents.

Table 2.
Characteristics of the surveyed respondents

Sex		Age		The Number of years of work in the company under study		The number of years in a managerial position in the surveyed company		Gross pay ¹	
								I don't want to answer	69 (15,58%)
Woman	184 (41,53%)	20-30	47 (10,61%)	0-3 years	167 (37,70%)	0-3 years	248 (55,98%)	Close to the national average	25 (5,64%)
Man	259 (58,47%)	31-40	242 (54,63%)	4-6 years	102 (23,02%)	4-6 years	108 (24,38%)	Is slightly below the national average	17 (3,84%)
		41-50	126 (28,44%)	7-10 years	47 (10,61%)	7-10 years	48 (10,84%)	Well below the national average	28 (6,32%)
		51-60	23 (5,19%)	11-15 years	61 (13,77%)	11-15 years	27 (6,09%)	Is higher than the national average	166 (37,47%)
		61-70	5 (1,13%)	over 15 years	64 (14,45%)	over 15 years	10 (2,26%)	Is well above the national average	138 (31,15%)

¹ According to the Central Statistical Office, in 2019 the average gross salary in Poland was PLN 5182.

Source: own study.

When completing the survey questionnaire, respondents rated the importance of the statements proposed in the survey. The resulting responses formed a statistical structure consisting of sets of observations. Aiming to search for latent relationships, relations and links

between subsets of observable variables, the exploratory factor analysis model (EFA)¹ was applied (Bartholomew et al., 2011). Using exploratory factor analysis, irrelevant questions were removed from the final set. The remaining questions were combined into subsets called factors. The study's authors focused on identifying the key factors that describe an organisation's ability to improve its processes dynamically. In the process of grouping questions into factors, an assessment of the model's internal consistency was also conducted using Cronbach's alpha parameter (Cronbach et al., 2004). The study assumed that values less than 0.6 were indicative of measurement reliability.

Table 3.

Values of EFA statistics for the model, including all variables

KMO measure	0,75
p-value Barlett's test	p = 0,0000
variance in model	77,5%
number of factors	18

Source: own study.

The results of the analysis allowed a preliminary distinction of 18 factors with a satisfactory level of variance. These had a good level of within-factor correlation. Also, at 77.5%, the KMO measure shows the existence of some clustering of variables. The analysis of the rotated component matrix in the model, however, shows that there is room for optimisation. The final form of the model was obtained after five steps. The values of the EFA statistics for the model in its final form allow us to conclude that the model is optimal, even though it has a slightly lower representation of total variability than the null variant. In the model, all alpha-Cronbach's alpha values are above the usually accepted level of 0.7.

Table 4.

Values of EFA statistics for the model in its final form

KMO measure	0,79
p-value Barlett's test	p = 0,000
variance in model	74,1%
number of factors	6

Source: own study.

Although 18 factors were identified, the scatter plot made it possible to assume that these could be reduced to six due to relevance. These were: actions taken by managers, the management concept used, the IT environment, relations with the market environment, the size of the budget, and employee competence.

¹ This method searches for latent dependencies, relations and relationships between subsets of observable variables. Although it is based on the correlation/covariance coefficient, it gives broader knowledge than the classical study of the correlation coefficient of pairs of variables. It makes it possible, so to speak, to separate groups of correlated variables in such a way that intergroup correlations are as low as possible. This way, certain variables called factors are formed based on the survey questions. It is assumed that these factors show the greatest relevance to the problem under investigation, and questions that are random, irrelevant, or which have no impact on the phenomenon under investigation are omitted.

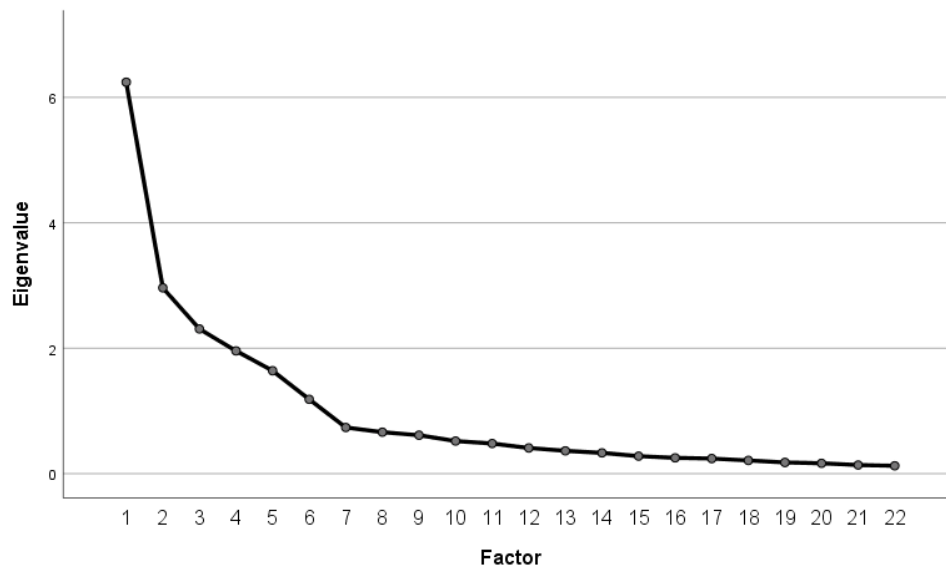


Figure 1. Scatterplot for the model.

Source: own study.

The results of the analysis allows us to conclude that the most significant and most strongly represented factor is the manager's role in adapting processes to new conditions. Statistically, this can be considered to have as much as a 19 percent share of the issue (percentage of variance explained), which can be interpreted as meaning that the actions taken by middle managers influence almost 20 percent of the organisation's ability to improve processes dynamically. Next in importance, the factor most influencing an organisation's ability to make dynamic process changes is implementing specific management concepts and IT tools to support these changes (significant in a total of 25%). Respondents pointed to the Lean Management, Six Sigma, and Kaizen concepts. The combination of these concepts with advanced IT solutions, a high degree of automation, and the introduction of digitalisation are crucial here. Slightly less important, as it influences the surveyed issue by 10 percent, is the industry in which the companies operate, particularly in the B2B sector. Also, 10% corresponds to the factor concerning the amount of budget available to managers for process improvements. Analytical skills and creative problem-solving by employees have an impact estimated at 8%.

At the same time, the factor analysis showed that due to the too-low coefficient of variation, factors such as a collaborative organisational culture and interdepartmental cooperation were less important for dynamic process improvement.

Concerning the characteristics of the respondents, no statistically significant relationships were found between gender, number of years at work, number of years in a managerial position, and any type of involvement in dynamic business process improvement.

At the same time the psychological tests used could determine behavioural, emotional and cognitive-pragmatic levels of commitment to dynamic process improvement. In the study conducted, this proved to be relatively even, with a slight tilt in favour of behavioural engagement, which manifests itself in specific behaviours.

5. Discussion

The analysis shows that the factor that plays the most significant role in dynamic process improvement is the actions taken by middle managers, such as making an ongoing assessment of the needs and possibilities for introducing changes to processes, coordinating the introduction of improvements, strongly emphasising the need to introduce changes to processes, systematically measuring the results of processes, and taking care of the development of knowledge and process competence among employees. The results of the psychological tests carried out correspond to the above. Although they indicate some level of balance, the behavioural commitment, manifested in the specific behaviours and actions of middle managers, is leading. Then, there is emotional involvement based on their strong interest in dynamic process improvement, a climate of understanding their needs, and positive emotions. This is followed by cognitive-pragmatic commitment, which is based on calculations as to whether participation in process improvement will bring specific benefits. Cognitive-pragmatic commitment refers to the theory of social contracts within companies and to interdependencies as seen from the perspective of exchange relationships. Central to this is the notion of reciprocity, i.e. the willingness to repay a present or future favour. When managers engage in dynamic process improvement, they do so in proportion to the resources, rewards or support they receive (Lewicka, Krot, 2015). Referring to Force-Field Theory for understanding what and why people do things in an organisation (Burnes, Cooke, 2013), the success of business process improvement activities is seen when the forces favouring improvement are greater than the forces constraining it (i.e. forces favouring improvement will weaken the forces that constrain it). This is because the improvements introduced in the process upset the existing equilibrium of the system. In this situation, it is important to identify the stimulating and inhibiting forces of change, and to take action to weaken the limiting forces by, among other things, overcoming resistance, and eliminating fears and anxieties.

The literature (Jørgensen et al., 2003; Fannon et al., 2022) emphasises that middle and lower-level managers directly impact the attitudes, behaviours and actions of employee process performers. The role of middle- and lower-level managers is to support improvement team leaders and employees in their efforts to make process improvements. In fact, it is difficult to talk about business process improvement without the strong involvement of managers (Radnor, Bucci, 2008). Middle managers filter, as it were, the organisation's priorities; with their

influence on process performers, they ensure that strategic goals are met. Their respective attitudes contribute to employee engagement and, indirectly, to product and process improvement (Soltani et al., 2005). Process improvement needs managers not as sole and infallible decision-makers but as coaches (Witt, Witt, 2010). They are required to delegate such authority to employees so that they can carry out their tasks with some freedom and improve them. At the same time, in line with dynamic capabilities, managers should be oriented towards identifying the individual factors determining the company's development, arriving at synthetic, current and reliable knowledge necessary for the decision-making process, and reacting quickly to changes occurring inside and outside the organisation.

The results also indicate the importance of contemporary management concepts such as Lean Management, Kaizen and Six Sigma. In their assumptions, they are process-oriented optimisation processes. At the same time, they recognise the important role of middle managers (Holmemo et al., 2016; Haikonen et al., 2004). The concept of Lean Management is based on analysing the processes in place and bringing improvement ideas quickly to the implementation stage. To this end, a value stream is identified to assess how much the individual activities in the process contribute to the value that the customer expects (Agyabeng-Mensah et al., 2020). With this in mind, it is not just about obtaining short-term results and quick gains but about the sustainability of the results and organisational learning, both so important in dynamic process improvement. In practice, the implementation and operation of Lean Management is often accompanied by the Kaizen method, which is treated as the main cultural basis for improvement. Kaizen involves process-oriented thinking, whose aim is to eliminate waste and improve the results obtained. It is, however, an evolutionary method that takes time, so its relationship to dynamic process improvement would need to be examined in more depth. As far as the Six Sigma method is concerned, process improvement is an important element and takes place as a result of improvement projects. Until recently, the positive impact of Six Sigma had been indicated only on operational issues, such as cost savings and defect reduction (Zhang et al., 2016). Recent research (Gutierrez-Gutierrez et al., 2020), however, confirms the positive association of Six Sigma with dynamic capabilities and operational and strategic flexibility. Thus, research shows that Six Sigma practices can lead to better adaptation of organisations to environmental changes.

It is noteworthy that, despite the selection of organisations in the research sample with an ISO 9001 quality management system in place, this concept was not indicated as a condition conducive to dynamic process improvement in the surveyed organisations. The absence of linking these two areas is surprising, especially when a continuous dynamic approach to processes affecting product and service quality is indicated. It is highlighted that, in relative terms, most information on the tool layer of continuous process improvement can be found in ISO 9001, among others (Cannon, McGee, 2016; Jeston, Nelis, 2014).

Another important factor relevant to dynamic process improvement is the degree to which IT tools are used in the operation of the companies surveyed. Rapid process change is possible when the information acquired is used correctly. Thus, it must be based on digital transformation, available IT and technology solutions and taking advantage of existing knowledge and experience. The use of information and information technology is now one of the main factors in development and competition. The literature provides evidence that contemporary process improvement relies heavily on contractor commitment and innovation, but also uses next-generation techniques, such as IT tools or the Internet (van Looy et al., 2011; Zuhaira, Ahmad, 2021). Increasingly, there is application of the Business Intelligence concept (Harmon, Garcia, 2020), which implies using management information, business intelligence and data analysis to respond flexibly to environmental changes. IT tools improve the fluidity of process execution, facilitate the recording and processing of process information, and standardise processes. The literature, however, also points out that excessive standardisation of work resulting from IT tools can adversely affect the improvement of business processes and the flexibility of operation needed in new situations (Potoczek, 2020).

Another factor influencing the process in question is doing business in the B2B sector. Successfully implemented process improvement tools in the supply chain contribute to mutually beneficial relationships between partners in the B2B market. This mainly relates to the requirements for guaranteeing the technical quality of purchased products, as well as the organisational efficiency relating to improving process effectiveness and ensuring delivery reliability. This translates, in many cases, to assistance provided to suppliers in implementing process improvement tools, which undoubtedly contributes to increasing their growth potential and meeting the ever-increasing expectations of buyers.

In contrast, analytical skills and creative problem-solving by employees had relatively little impact. Such a result may come as a surprise, since by enabling process executors to change their processes dynamically, the entire enterprise management system becomes open to creative initiatives from a wide range of employees. Implementing the principle of dynamic process management is a factor that strongly directs ambitious members of the organisation to learn new methods and ways of implementing activities. This leads to real, day-to-day improvement of business processes based on the cumulative knowledge of a wide range of employees, verified, on a continuous basis, by customers (Grajewski, 2013). According to Szelągowski (2019), the actual source of all new possibilities offered by dynamic business process management is the dynamism of knowledge workers. Not just their knowledge but also their willingness to work is decisive in terms of whether the course of performance will see agile, intelligent adaptations with the aim of tailoring process performance to the context of that performance, which stems from the experiences of the process performers themselves.

6. Conclusion

Strong capabilities for dynamic business process improvement are critical in many organisations today. They foster the organisational agility required in an uncertain, rapidly changing environment. They also determine the ability of companies to adapt and create change that benefits customers and disadvantages competitors. Identifying the internal drivers of dynamic business process improvement attempts to address the contemporary challenges and needs of many organisations. The presented article is part of the current research on the effectiveness of business process execution and, thus, the effectiveness of entire organisations. It deals with a rarely addressed topic, so the authors hope that it will contribute to a better understanding of research needs in the field of business process management. Organisations working to adapt to rapidly changing environments should recognise the importance of the factors identified. The main conclusions that emerge from the results of the study allow the formulation of the thesis that middle-level managers and the specific actions they undertake, such as making ongoing assessments of the needs and possibilities for introducing changes to processes, coordinating the introduction of improvements, strongly emphasising the need to introduce changes to processes, systematically measuring the results of processes, and also taking care of the development of knowledge and process competence among employees, play the most significant role in dynamic process improvement. The survey results presented, however, do not indicate the crucial importance of the ISO:9001 quality management system.

In conclusion, it is important to state that organisations must have certain resources in order to be able to implement dynamic process changes. They must also have certain capabilities that allow these resources to produce the desired effects.

Finally, one must also consider that the research process has limitations, which affect the generalisability of the results. The study targeted the perspective of middle managers, which was a key factor in selecting respondents for the study. Future research could move in the direction of expanding the pool of respondents to include other levels of management. Qualitative research, and in particular the case study method, could also prove useful in developing the topic further.

Acknowledgements

The paper has been realized in the scope of the project is financed by the Ministry of Science and Higher Education in Poland under the program “Regional Initiative of Excellence” 2019-2022 project number 015/RID/2018/19 total funding amount 10 721 040,00 PLN.

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