

The Link Between the Business Process Management Capabilities and the Benefits Created by Robotic Process Automation in an Organisation

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Abstract. In the context of the Fourth Industrial Revolution, as organisations are increasingly confronted with unclear and complex business environments, digital technologies are being used to acquire and maintain dynamism, innovation, responsiveness to changing societal needs, and agility, which are essential in this time of changes. In the current competitive environment, organising the performance of an organisation solely on the basis of functions and assignments is no longer appropriate. There is a growing interest in the concept of the process-oriented organisation (Szelagowski, & Berniak-Woźny 2020) and a growing focus on the digitalisation of operations and business processes (Kirchmer 2017; Siderska 2020). This article aims to define the link between the essential aspects of the Business Process Management capabilities and the benefit generated by Robotic Process Automation based on theoretical insights.

Keywords: *Business process management, Business process management capabilities, Robotic process automation*

Introduction

Relevance of the research

In the context of the Fourth Industrial Revolution, as organisations are increasingly confronted with unclear and complex business environments, digital technologies are being used to acquire and maintain dynamism, innovation, responsiveness to changing societal needs, and agility, which are essential in this time of changes. Digital transformation is a precondition for the creation of new sectors (e.g., data science) and new business models (e.g., platform type), for the transformation of business models, their products, processes, and corporate structures, and for initiating new corporate roles. This leads to fundamental changes in the corporate environment, enabling new ways of operating (Brocke, Maaß, Buxmann, Maedche, Leimeister, & Pecht, 2018; Thomas 2020; Antonucci, Fortune, & Kirchmer 2021).

However, despite the rapid adoption of new technologies, the planned success of organisations is not always guaranteed (Brocke et al., 2018). The management processes for the successful application and implementation of these technologies are still unclear (Martinez, 2019). On the one hand, organisations seek to improve efficiency and customer satisfaction by digitising processes. On the other hand, this is often hindered by the lack of expertise and financial resources available to organisations (Ubiparić, Matković, Marić, & Tumbas, 2020). Rapidly changing market requirements and the dynamic development of IT contribute significantly to the evolution of modern management concepts that use IT. Business and digital technology management gradually become interlinked and gain special importance (Thomas, 2020).

Processes are an arterial system in organisations and inter-organisational supply networks (Dumas, La Rosa, Mendling, & Reijers, 2018) and a strategic asset of an organisation (McCormack, & Johnson, 2001). Nowadays, they have become increasingly important in the context of digital innovation (Van Looy, 2021). For this reason, Business Process Management (further - BPM) is in the spotlight (Pereira, Maximiano, & Bido 2019). There is a growing interest in the concept of the process-oriented organisation (Szelagowski, & Berniak-Woźny, 2020) and an increasing focus on digitalising activities and business processes (Kirchmer, 2017; Siderska, 2020).

This article investigates one particular digital technology, Robotic Process Automation (further - RPA), which enables the automation of repetitive business processes. RPA is one of the most important, fastest evolving, and latest concepts (Siderska, 2020) and a highly influential tool for digital transformation (Fernandez, & Aman, 2021).

Level of problem investigation

Contemporary BPM research is no longer solely concerned with process modelling or management methods, procedures, or tools. It is also focused on assessing and improving the BPM capabilities within an organisation (Niehaves, Poeppelbuss, Plattfaut, & Becker, 2014). Scientific sources reveal that the

dominant investigations into the link between BPM and RPA are qualitative studies using case analysis and interview methods. The link between BPM and RPA is a novel topic that needs to be developed in future research.

Scientific problem. The scientific problem focuses on the fundamental question at the theoretical level: what is the link between the essential aspects of the BPM capabilities and the benefit created by RPA?

The object of the article is the link between the BPM capabilities and the benefit created by RPA.

The article aims to define the link between the essential aspects of the BPM capabilities and the benefit created by RPA based on theoretical insights.

Objectives of the article:

- 1) to define the concepts of BPM and the BPM capabilities,
- 2) to define the concept of RPA and identify the benefits of RPA for an organisation,
- 3) to identify the link between the BPM capabilities and the RPA benefits for an organisation.

The research methods include a literature review and a critical analysis of the scientific sources on the issue. The synthesis method was used to investigate and formulate the BPM capabilities and the benefit generated by RPA for an organisation.

1. The link between the BPM capabilities and the benefit created by RPA for an organisation

1.1. Definition of BPM and the BPM capabilities

In the current competitive environment, organising the performance of an organisation on the basis of functions and assignments is no longer appropriate. It is essential to view the performance of an organisation not in terms of functions, units, or products but business processes. BPM is related to managing the whole range of events, activities, and decisions that ultimately add value to the organisation and its customers. These chains of events, activities, and solutions are called processes, and they are the focal point of BPM (Dumas et al., 2018).

BPM is seen as the capability of an organisation, which puts this management discipline on the same level as other management disciplines such as risk management or human resource management (Dumas et al., 2018). In addition to the traditional BPM concept based on executing efficient and stable daily processes/practices, organisations also require a dynamic BPM concept based on non-standard processes, evolving and proactive corporate behaviour management, and rapid reactions to customers' changing needs (Urbach, & Röglinger, 2019).

The BPM discipline investigates the organisation's ability to achieve the advantages such as operational effectiveness, efficiency, quality, innovation, and compliance (Dumas et al., 2018). As a holistic management discipline, BPM as the capability of an organisation is not just performing tasks across the lifecycle. This approach requires an organisation-wide perspective and key capability areas relevant for the successful BPM (Harmon, 2010). Thus, in addition to lifecycle models, BPM is generally structured through capability frameworks, which describe and consolidate the capability areas relevant to implementing process orientation in organisations. The logic of these capabilities is that the institutionalised BPM capabilities enable effective and efficient business processes, which in turn lead to the success of organisations (Kerpedzhiev, König, Röglinger, & Rosemann, 2021). Capability areas are sets of related competencies that need to be assessed and improved to achieve business/process excellence. Capabilities are otherwise also referred to as essential success factors or simply factors (Rosemann, & De Bruin, 2005; Van Looy, De Backer, & Poels, 2014).

Processes themselves focus more on the 'how', i.e., how work is done in the organisation (the work done in a business process transforms physical or informational inputs into outputs), whereas capabilities focus on 'what'. In a business context, capability refers to what an organisation is capable of doing, while a process describes the content of the expression of those capabilities. Capability does not describe how an organisation does it; it states that the organisation can generate a relevant outcome if the right process is adopted (Harmon, 2019; Kerpedzhiev et al., 2021). Thus, the capability is the capacity to generate an outcome. Capabilities exist between the processes that describe how work is done and the outputs that define what is produced by the process (Harmon, 2019). Capability is thus the

ability or competency (e.g., knowledge and skills) of an organisation to achieve anticipated outcomes through certain processes or process areas. Regarding capabilities, it is important for the organisation to be mature enough to retain them (Van Looy, De Backer, & Poel, 2011).

From a theoretical perspective, BPM can be seen as a set of dynamic capabilities for adapting the existing business processes and creating new ones, thereby achieving compliance with the corporate environment. Dynamic capability is defined as the ability of an organisation to create, integrate, and reconfigure operational capability to comply with the market environment (Niehaves, Plattfaut, & Becker, 2013). Operational capabilities include executing day-to-day activities (e.g., providing a service or producing a product) and essentially refer to corporate value-creating business processes. Business processes refer to operational capabilities, which are shaped by the dynamic capability of BPM. According to Wong, Tseng, & Tan (2014), the BPM capability is defined as the ability to coordinate multiple production skills and integrate several technology flows with other resources and capabilities. Thus, in this context, BPM is perceived as a dynamic capability that refers to techniques intended to integrate, create, protect, and reconfigure corporate business processes in changing environments (Niehaves et al., 2014).

One of the key aspects of BPM, relevant to the outcomes of the performance of an organisation, is the maturity of BPM, where maturity models are used to assess and measure the quality of corporate business processes and BPM initiatives (Fischer, Imgrund, Janiesch, & Winkelmann, 2019). Maturity models have received increasing attention among the various approaches supporting BPM (Szelagowski, & Berniak-Woźny, 2020), especially in recent years. Maturity as a measure to assess the BPM capabilities of an organisation has become particularly popular since the development of the Capability Maturity Model (CMM).

BPM capability frameworks are the basis for the maturity models that focus on how capabilities can be developed in a predictable, desirable, or logical way (Kerpedzhiev et al., 2021). The aim of 'maturity' is to systematically improve the capabilities of the business process and the organisation to achieve better results over time (Rosemann, & De Bruin, 2005; Hammer, 2007). The BPM maturity models are evolutionary tools for assessing and improving capabilities (i.e., skills or competencies) consistently to achieve excellence in business/processes. For instance, the BPM maturity models can assess how well an organisation is capable of modelling or executing its processes flawlessly (Van Looy, De Backer, Poels, & Snoeck, 2013).

Considering the importance of mature business processes, the proliferation of maturity models in recent decades was inevitable. It started with the systems intended to manage the software crisis in 1970-1980 and later applied to all types of business processes (Szelagowski, & Berniak-Woźny, 2020). Over the last two decades, researchers and practitioners in the field of BPM have proposed dozens of maturity models of varying breadth and depth. Some of the most popular are Process Performance Index (PPI) (Rummler and Brache 1990); BPM Maturity Model (BPMMM) (Rosemann, & De Bruin, 2005); Process and Enterprise Maturity Model (PEMM) (Hammer, 2007); Process Maturity Ladder (Harmon, 2007); Business Process Maturity Model (BPMM Lee) (Lee et al., 2007); BPO Maturity Model (BPOMM) (McCormack, 2007; McCormack, 2009); Business Process Maturity Model (OMG) (Weber et al., 2008; Szelagowski, & Berniak-Woźny, 2020).

One of the most recent validated instruments for measuring BPM capabilities, also defined as a maturity assessment model, is the BPM Capability Model proposed by Van Looy (2020). The researcher has developed and validated a measurement instrument that helps organisations take advantage of the BPM benefits. The proposed BPM Capability Measurement Model *includes four core capability areas, 13 sub-areas, and 62 measurement units used to manage business processes properly*. The areas distinguished are **life cycle, managerial, cultural, and structural** (Looy, 2020).

The literature review suggests that many BPM capability frameworks and maturity models have been proposed. However, they all differ in their comprehensiveness, scientific validity, and presentation of the measurement instrument. To sum up, the BPM capabilities and their structures, which serve as the basis for the BPM maturity models (i.e., the essential part of BPM maturity models), are crucial for improving corporate performance, as the achievement of a higher level of the BPM maturity also stimulates higher levels of corporate performance.

1.1. Definition of RPA and the benefits created by RPA in an organisation

RPA is a software robot that replicates human activities by performing processes related to structured data, clear rules of action, and unambiguous results (Osmundsen, Iden, & Bygstad, 2019). RPA technology should be treated as a facilitator of the Fourth Industrial Revolution and digital transformation, as it supports business process transformation, product development, and newly emerging business models. The relevance and need for this technology in the business and public sector are growing rapidly nowadays because it allows for improved operational efficiency and significant cost savings. This digital value co-creation in service businesses and networks determines the value to the end-customer's experience through more efficient processes based on the use of modern technologies (Madakam, Holmukhe, & Jaiswal, 2019; Siderska, 2020; Syed et al., 2020).

RPA is gaining increasing interest in the context of digital transformation. This highly advanced technology automates human behaviour and promises great opportunities (Flechsigg, Anslinger, & Lasch, 2021). Therefore, RPA is a new technical approach to process automation with the potential to facilitate technology-driven digital transformation (Schmitz, Dietze, & Czarnecki, 2019). RPA can be perceived narrowly and broadly. From a narrow perspective, it is rapidly evolving software intended to develop software robots. From a broader perspective, RPA is treated as an organisational and technological change leading to the emergence of hybrid corporate environments where humans and robots cooperate with each other (Sobczak, 2019). The discipline originated from the real problems of companies and the fact that they have long tried to automate routine tasks and business processes, often without an adequate return on investment (ROI) (Šimek, & Šperka, 2019).

RPA can be seen as a virtual, digital workforce, bridging manual processes and full automation. It is a virtual robotic workforce cooperating with employees to eliminate almost all manual process activities and tasks to achieve greater efficiency. An RPA robot is not a physical robot. It is a software robot or an analogous virtual assistant that centres on human characteristics and replaces human actions in administrative activities. Some RPA robots replace approximately 1 employee, some more than 5. Classical business process automation was meant to help human participants in the processes and owners. In contrast, RPA potentially targets the redeployment of the entire human workforce. However, currently, RPA is not capable of replacing human work completely. This technology focuses on automating simple, completely predictable tasks, while complex assignments are still left to humans (Lacity, Willcocks, & Craig, 2015; Šimek, & Šperka, 2019; Siderska, 2020; Maček, Murg, & Čič, 2021; Choi, R'bigui, & Cho, 2021).

The ultimate goal of digital business transformation is to add value to the business. However, the introduction of multiple digital technologies into an organisation will not in itself bring the expected benefits (Ubiparić et al., 2020). Thus, the key issue for an organisation adopting robotic technologies is the value they generate for it.

Based on academic and other sources, the benefits generated by RPA to an organisation can be identified (Table 1).

Table 1

RPA-generated benefits for the organisation: dimensions, criteria, and indicators

Dimensions	Indicators of RPA benefits	Source
Direct benefits	<p><i>Increased operational efficiency:</i></p> <ol style="list-style-type: none"> <i>Reduction of human resources, redirecting them towards creating more value in the organisation.</i> <i>Reduction of financial resources.</i> <i>Reduction of time resources (cycle time, etc.).</i> 	BarNir, Gallagher, & Auger (2003); Lacity et al. (2015); Madakam et al. (2019); Šimek, & Šperka (2019); Schmitz, Dietze, & Czarnecki (2019); Syed, et. al. (2020); Antonucci, et. al. (2021); Maček et. al. (2021); Choi et al. (2021).
	<p><i>Improved operational effectiveness:</i></p> <ol style="list-style-type: none"> <i>Attainment of strategic objectives.</i> <i>Improved performance quality (ensured reliability, improved compliance).</i> <i>Increase in revenue.</i> 	BarNir et al. (2003); Lacity et al. (2015); Osmundsen et al. (2019); Madakam et al. (2019); Schmitz et al. (2019); Syed et al. (2020); Antonucci et al. (2021); Maček et al. (2021).

<i>Indirect benefits</i>	<ol style="list-style-type: none"> 1. <i>New products/services (innovations) created.</i> 2. <i>Innovation in the functioning of management (creation and development of new processes, ways of working, positions).</i> 	Osmundsen et al. (2019); Madakam et al. (2019); Šimek, & Šperka (2019); Schmitz et al. (2019); Siderska (2020); Syed et al. (2020); Antonucci et al. (2021); Maček et al. (2021).
	<ol style="list-style-type: none"> 1. <i>Increased internal customers' satisfaction (employees' well-being, motivation).</i> 2. <i>Increased external customers' satisfaction (24-hour accessibility, no queues, etc.).</i> 	Schmitz et al. (2019); Šimek, & Šperka (2019); Choi et al. (2021).
	<ol style="list-style-type: none"> 1. <i>Contribution to increasing competitive advantage.</i> 2. <i>Contribution to the continuity of corporate performance.</i> 	Šimek, & Šperka (2019); Antonucci et al. (2021); Maček et al. (2021); Choi et al. (2021).

Source: created by the author.

The literature analysis has shown that RPA is a revolutionising workplace technology that generates multi-dimensional benefits for the organisation. The benefits (value) generated by RPA for the organisation are twofold: direct and indirect. The direct benefits are measured by the following criteria: (1) increased operational efficiency (reduction of human, financial and time resources; redirection of human resources towards the generation of higher value); (2) improved operational effectiveness (attainment of strategic objectives, increase in revenue, improved quality of performance). Indirect benefits are measured in terms of the following criteria: (1) innovation and development; (2) increase in internal and external customers' satisfaction; (3) increase in competitive advantage and assurance of the continuity of performance.

1.2. The link between the BPM capabilities and the benefits created by RPA in an organisation

In the context of digitalisation, BPM acquires a new mission (Harmon, 2019), as a digital organisation requires understanding how business models can be implemented and how digitalisation changes the way organisations are managed (Legner et al., 2017). Digitisation is associated with developing new organisational capabilities that lead to a variety of benefits generated by digitisation (BarNir et al., 2003).

BPM can increase the feasibility of digitisation processes. An organisation can benefit from BPM mechanisms and frameworks and start its digitisation processes with BPM initiatives (Imgrund, Fischer, Janiesch, & Winkelmann, 2018). Syed et al. (2020) performed a structured study of 125 articles on the topic of RPA. They concluded that even though the benefits generated to the organisation by implementing RPA can be well documented, it is not a given that the implementation of RPA will definitely lead to the acquisition of these benefits. Benefit generation depends on several key factors, such as the readiness of the organisation for RPA, the capacity of the RPA technology to be deployed, and the implementation and provision of the RPA solution. In other words, it is the issue of the BPM capability of the organisation that is important.

Sliš (2019) draws on researchers' insights to formulate a thesis that implementing BPM has a positive impact on RPA. To fairly benefit from the implementation of RPA, an organisation needs to identify which business processes or which processes have the highest level of standardisation. In turn, this needs to be identified, formalised, and measured. The researcher assessed the potential of process automation in the Polish labour market and noted that in case RPA is defined as a tool to improve business processes, the emphasis should be laid on the fact that, from the perspective of process maturity models, this is possible at the fourth or fifth level of process maturity in an organisation. Meanwhile, in their study, D. Šimek and R. Šperka (2019) provide an insight that for RPA, the BPM maturity or previous experience is not necessary when it is 'only' an automation tool (Šimek, & Šperka 2019). The conclusions of the research conducted by Antonucci et al. (2021) revealed that higher BPM capabilities lead to an increased value through digitisation. Future research could further explore the new or evolving BPM capabilities and empirically investigate the impact of new and evolving BPM capability areas or frameworks concerning different benefits of digitisation (Antonucci et al., 2021).

In today's age of change, processes need to be context-sensitive and comply with external requirements. It is often stressed, both in academic literature and in practice, that, over time, employees' make personal activities a routine, which shapes their habits of doing things one way rather than another. Therefore, changes in processes become difficult to achieve, and there is considerable resistance from

employees. To sum up, it can be noted that the BPM capacity impacts the benefits generated by RPA in the organisation.

Conclusions

1. The BPM methodology involves designing (or redesigning) the logic of the corporate performance; modelling the execution; the actual execution; management, monitoring, and changes to maximise the satisfaction of customers' demand. The BPM capabilities and their frameworks, as the basis for the BPM maturity models, are crucial for improving the outcomes of corporate performance, as reaching a higher level of the BPM maturity stimulates higher levels of the performance of an organisation.
2. RPA is a software robot that simulates human activities by executing processes characterised by structured data and clear rules of actions leading to unambiguous results. The benefits generated by RPA for an organisation can be defined as direct and indirect. The direct benefits include increased operational efficiency (reduction of human, financial and time resources; redirection of human resources towards generating higher value) and improved operational effectiveness (achievement of strategic objectives, revenue growth, improved quality of operations). The indirect benefits include innovation and development, increased satisfaction of internal and external customers, increased competitive advantage and business continuity.
3. The BPM capacity of an organisation is linked to the benefits generated by RPA. While organisations have learned to understand the importance of developing BPM capabilities, digitalisation (including RPA) now transforms business processes and introduces new challenges.

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