

The Role of Business Process Management in Driving Digital Transformation: Insurance Company Case Study

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Abstract—Digital transformation is one of the latest trends on the global market. In order to maintain the competitive advantage and sustainability, increasing number of organizations are conducting digital transformation processes. Those organizations are changing their business processes and creating new business models with the help of digital technologies. In that sense, one should also observe the role of business process management (BPM) and its maturity in driving digital transformation. Therefore, the goal of this paper is to investigate the role of BPM in digital transformation process within one organization. Since experiences from practice show that organizations from financial sector could be observed as leaders in digital transformation, an insurance company has been selected to participate in the study. That company has been selected due to the high level of its BPM maturity and the fact that it has previously been through a digital transformation process. In order to fulfill the goals of the paper, several interviews, as well as questionnaires, have been conducted within the selected company. The results are presented in a form of a case study. Results indicate that digital transformation process within the observed company has been successful, with special focus on the development of digital strategy, BPM and change management. The role of BPM in the digital transformation of the observed company is further discussed in the paper.

Keywords—Business process management, case study, Croatia, digital transformation, insurance company.

I. INTRODUCTION

IN the last years, digital transformation as a term has gained great importance in most scientific and professional articles. The main reason why digital transformation has become important in both scientific and practical world stems from the ever-increasing technological advancement and its presence in all spheres of private and business life.

Today, due to the rapid development of digital innovations, organizations are constantly exposed to new technologies on the digital market that focus on increasing work efficiency, increasing organization's profitability, improving customer satisfaction, retaining competitive edge and finally gaining digital, adaptive and agility skills [1]. On the other hand, the

introduction and management of rapidly increasing digital innovation becomes a new challenge for many organizations. Since each organization's functioning is based on business processes and employees who are performing processes as well as on existing information technology supporting the processes, the introduction of new digital innovation strongly affects all three aspects of the organization.

The use of IT technology for the purpose of digital transformation of existing business processes has resulted in accelerated processes and improved quality of business process performance, which is crucial for achieving organizational success today [2]. Since BPM as a management concept is in charge for monitoring and setting business processes on the higher optimization level [3], the goal of this article is two-fold: (i) to explore the relationship between digital transformation and BPM (ii) to present how previous transformation of business processes is necessary for the conduction of digital transformation. Therefore, the article is organized as follows. The second section discusses the current state and trends within digital transformation and the importance of the role of BPM in the process of digital transformation, focusing on the financial sector. In third section, the research methodology is described, followed by the presentation and discussion of the results of the conducted interviews and surveys. The results are analyzed and discussed in a form of a case study. Finally, a short conclusion on BPM and digital transformation is given as well as limitations of this research and recommendations for further research in this area.

II. BPM AND DIGITAL TRANSFORMATION

A. State and Trends of Digital Transformation

According to the systematic overview of the conceptualization of digital transformation in business organizations, provided by [4], digital transformation can simply be described as integrating new digital technologies in business for better organizational performance or can be considered as a new strategy or radical process of change of the fundamental business processes within an organization.

Fig. 1 shows the research fields within the "Web of Science" (WoS) database in which articles and proceeding papers on the topic of digital transformation trends have been published or presented. As it is visible, the fields of computer science, business economics and engineering are the ones with the largest number of articles published in 2018 within the

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WoS database from the digital transformation field, which have been reviewed for the purpose of this paper.



Fig. 1 Research fields within the WoS database of published articles and proceedings papers in 2018 (source: Author's work according to the "WoS" database)

Articles and proceedings papers have been searched within the WoS database with the following combination of constraints: (TI = ("digital transformation" OR "Industry 4.0" AND "trend")) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article OR Proceedings Paper) AND Timespan: 2018. Given that in many articles the trend of digital transformation is compared with the term "Industry 4.0", the expression "Industry 4.0" has been also in the combination of the search keywords [5]-[7]. According to the above mentioned criteria, 23 articles and proceedings papers have been found.

Considering the number of papers published in the last two years (from 2016 to 2018), by mid-2018, the number of articles on digital transformation has already reached 65% of the total published articles in 2017. Those results point to the increasing interest of scientific circles in this topic and the possible greater number of published papers in this and upcoming years.

When it comes to technologies, nowadays, digital organizations mostly use Internet, mobile devices and services, big data, cloud computing, intellectual production ("brainfacturing"), Internet of Things (IoT), analytics, 3D printing as well as social media and social networks [6], [8]. According to [6], Digital Economy is a crucial trend in the field of digital transformation as well as Cyber-Physical Systems (CPSs), big data, analytics, cloud technologies, smart automation or the digital process chain are the main technologies for digital transformation.

A total of 23 studies have been published in 2018, out of which 4 have not been analyzed due to access restrictions, while 3 have been excluded since they have not met the conditions of the planned analysis. Articles, which have not been included into the analysis, dealt with the topic of digital transformation from a philosophical standpoint, within development perspectives, or served as a general guide for

managers in the process of establishing digital transformation. Therefore, in the remaining 16 articles, an analysis of industry sectors and technological trends of digital transformation has been made.

For the purpose of this research, business activities processed within the analyzed articles have been divided into 5 sectors, as defined by [9]: primary, secondary, tertiary, quaternary and quinary sector. By analyzing the selected 16 articles, it is noticed that no article deals with the topic of digital transformation in companies from the primary sector.

In the secondary sector, which covers all industries that are involved in transforming raw materials from primary sector to finish products such as mining, electricity supply, manufacturing, construction, etc. [9], technologies such as IoT technology (e.g. QR-codes and NFC tags), cloud-based platform, keying handwritten collection records into a database, accounting software, GPS tracker, in-house customer relations management (CRM) platform, Google Maps, Big Data Analytics, etc. are being used [10]-[13].

The tertiary sector includes traditional service activities and information and communication activities [9] which, according to conducted analysis, uses technologies such as cloud technologies, software as a service (SaaS) multcloud strategy, combination of applications and information systems (consulting tools), digital technologies and social and mobile tools, Enterprise Resource Planning (ERP) software, Big Data Analytics, mobile applications, IoT and CPSs, knowledge application, artificial intelligence (AI) techniques, various information systems, decision-making process, virtualization applications and virtualization technology, smart automation, digital process chain, augmented reality (AR) in logistics and process control, RFID/Sensor, robotics, etc. [6], [7], [12]-[17].

In addition to the financial sector and real estate business, the quaternary sector also includes professional, scientific, technical and administrative business activities [9], uses

technologies such as: combination of information systems (e.g. ERP software), digital technologies, social and mobile tools, cloud computing, Big Data Analytics, Industry 4.0 projects and mobile applications, etc. [12], [13].

The quinary sector, which consists of business activities primarily funded from the state budget [9], uses technologies such as: cloud computing, IoT technologies and platforms, platforms for in-house and home healthcare, AI systems, decision support systems, SaaS solutions, provider for connected health data flow, hospital information systems, data warehouse, remote patient monitoring, online pharmacy, social media and mobile tools, ERP software, Big Data Analytics, collaborative learning, integrated electronic medical record system (EMR), educational content management system, business intelligence (BI) and data visualization service, CRM module, online education, interactive web technologies, open Earth Observation (EO) data, EO applications, massive open online courses (MOOCs), open learning campus (OLC), on-the-move and "just-in-time" mobile learning, etc. [8], [12], [13], [18]-[21].

B. Role of BPM in Digital Transformation

Each organization has its business processes that can be specific in terms of the goals they want to achieve. Business processes are defined as set of activities associated within a logical sequence for the purpose of timely realization of the defined commercial objective of the organization [22]. Therefore, given that process efficiency, quality and agility are the key for business success [23], every organization should invest in quality of BPM. Namely, it is necessary to optimize the processes in order to respond more readily to the changes that are taking place in today's turbulent market [23]. According to [23], that can be achieved by adopting and using new information technology in the organization's business.

For a successful and easy implementation of new digital and other planned projects in the organization, it is necessary to automate the existing business processes by necessary data digitization, establish new business models and technology with the help of digitalization, and to further integrate and analyze the data [24]. Also, it is important to distinguish the term digitize from digitalization. According to [25] digitization is "the process of changing from analogue to digital form", while digitalization is "the use of digital technologies to improve the existing business model and create new revenue and value adding opportunities" [26]. Digital transformation must firstly rely on the creation of integrated, stable and reliable processes and structured data that are further drivers of flexibility and agility in the upcoming phases of establishing digital transformation [27].

According to [24], in addition to the integration of various technological innovations into business, previous automation and processes managed by the software within the BPM concept play an increasingly important role in preparing the "organization's territory" for the successful digital transformation implementation in the organization. Therefore, a lack of the process integration within the organization and the existing heterogeneity of technological infrastructure are

major challenges for organizations engaged in the digital transformation of their business [27]. According to the case studies conducted by [28], all three companies that have adopted and implemented new information technology, previously had to change existing and introduce new processes into their business activities, resulting in successful implementation of business digitalization and improved financial results.

In the education sector, according to the case study conducted by [29] with the purpose of analyzing digital transformation of traditional education system, all participants in new business processes must be considered, as well as the processes that arise as a result of newly established distance learning conditions. Therefore, when it comes to the role of BPM in the implementation of digitalization or the introduction of new technologies, apart from the technological impact on process changes, two other impacts should be considered, as presented in [30]: (i) the impact of data and (ii) the impact of human factors. During the digital transformation of organizations, named two impacts on business processes also have to be taken into the consideration since they generate three main areas of BPM trends in digitalization: (i) BPM influenced by data, (ii) BPM influenced by social factors and (iii) BPM based on process cases (process levels) [30].

C. Digital Transformation in Banking and Financial Sector

According to [24], along with logistic and manufacturing, the financial sector has been mostly influenced by BPM and digital transformation, or business improvement, with automated processes and processes managed through various kinds of software.

In the banking sector, the benefits of digital transformation are felt through introducing new e-banking projects in order to maintain and develop the competitive advantage, whose sustainability is an increasingly big challenge for those that have not made the decision to conduct digital transformation in their businesses [31].

Digital transformation of products and services is constantly being conducted within the organizations in financial sector. According to [32], some of the most recent trends in digital transformation that appear in the financial sector are:

- reducing physical branches for more frequent user transformation into digital transactions,
- improving customer transaction tracking and more effective fraud detection,
- using AI for the purpose of retaining users,
- phenomenon of blockchain and cryptovalutes, etc.

Given the importance of the financial sector in the European economy, which was reflected in the results achieved in 2016 when it was noted that there were 2.6 million employees in the financial sector [32], it is necessary to consider how this sector finds itself in the new conditions of digital transformation. On the other hand, a previously given brief literature review points out the literature gap regarding the latest digital transformation researches conducted within the organizations from banking and insurance sectors.

III. RESEARCH METHODOLOGY

A. Research Design and Data Collection

For the purpose of this research a case study methodology has been employed. In order to meet the stated goals of the study, several interviews have been conducted within an insurance company which is described later in this section of the paper. Previous to the interviews, there were surveys conducted within the selected insurance company as well, providing good starting points for the interviews and aiming a clear insight into the company's situation. The interviews, as well as the surveys, have been conducted in February 2016 and in May 2018 as part of two projects: (i) "Process and Business Intelligence for Business Excellence" project (PROSPER) funded by the Croatian Science Foundation, and (ii) "Digital Transformation of Croatian Companies" project funded by the University of Zagreb, Croatia. Within the selected company, Director of Department for organization and business process development, as well as Chief Digital Officer, has been interviewed.

B. Company Description

Having in mind the findings of the previously presented literature review, it has been decided to present and analyze the case study of an insurance company, aiming to contribute to shedding some light at the revealed literature gap regarding the digital transformation in companies from financial sector. Hence, this study presents a case of an insurance company, operating in Croatia. Presented company is the oldest insurance company in Croatia, operating on the Croatian financial market for more than 130 years. Moreover, having more than 2000 employees and a yearly turnover of more than 50 million euros, the presented company is one of the biggest insurance companies in Croatia. Within the selected company, BPM has been implemented more than 20 years ago, on the initiation of the company's CIO and therefore it can be understood as an early BPM adopter. Also, the company has previously been through a digital transformation process.

C. Research Instrument

This research is based on two research methods: (i) in-depth interviews and (ii) surveys. For the purpose of the survey research, aiming to assess the reached BPM maturity within a selected insurance company, a BPM maturity model named Process Performance Index (PPI) has been used, as previously developed by [33]. Table I presents BPM success factors and their definitions, as proposed by the PPI maturity model and presented in [34].

As presented by Table I, PPI consists of ten statements representing BPM success factors. Respondents are supposed to state the level of their agreement with each statement on the 5-point Likert scale where 1 represents total disagreement and 5 represents total agreement with certain statement. The Likert scores are then summed to express the PPI of an organization.

According to PPI, there are three levels of BPM maturity that can be reached, depending on the total PPI score. Those levels are, as stated in [33]:

1) process management initiation (PPI score from 10 to 25),

- 2) process management evolution (PPI score from 26 to 40),
- 3) process management mastery (PPI score from 41 to 50).

The initiation level of BPM maturity, according to [31], represents unstructured processes without measuring and focuses on traditional functions when observing jobs and organizational structures within an organization. Nevertheless, there is a desire to learn and implement BPM [34]. On the other hand, at the mastery level, BPM is a deep part of an organization and completely aligned with its strategy [34].

TABLE I
PROCESS PERFORMANCE INDEX [33], [34]

Success factor	Success factor definition
Alignment with strategy	Business processes are directly linked to the organization's strategy and critical success factors
Holistic approach	Enterprise business processes are defined before launching improvement initiatives (e.g. Six Sigma, CRM, etc.)
Process awareness by management and employees	Key players understand the role of process management in improving performance.
Portfolio of process management initiatives	Improvement efforts are prioritized according to the process "health" and linkage to current issues.
Process improvement methodology	Process management teams use a standard approach to navigate process analysis and design.
Process metrics	Process performance is measured at the individual, process and enterprise levels.
Customer focus	Process analysis and design efforts focus on delivering value to the customer.
Process management	Process owners monitor process metrics and continuous improvement efforts on a regular basis.
Information systems	Process is the "master" and information systems are "servants".
Change management	People and cultural issues are effectively addressed when process changes are introduced.

IV. RESULTS AND DISCUSSION

A. BPM within the Observed Company

The results of the survey regarding the BPM maturity within the selected insurance company reveal high level of BPM maturity in both observed years. However, although the level of BPM maturity in both years is the same, the situation regarding certain BPM success factors has changed over years. In 2016, the overall PPI of the observed insurance company was 45, indicating process management mastery level. According to the 2016 interviews conducted within the company, BPM has been first implemented into the company with the purpose of documenting and modeling business processes aiming to develop adequate information system. Later on, the developed information system has been based on processes. In 2016, the focus of process analysis and design has been put on value delivery to the clients. Moreover, process metrics have been monitored on a regular basis by the process owners. One of the reasons for such high PPI and BPM maturity level is the fact that business processes of the observed insurance company have been directly linked to the critical success factors and organizational strategy. Also, they have been defined prior to the launch of the improvement initiatives, which have been graded with the highest grade in the 2016 survey. Besides that, one of the highest graded BPM success factor has been the *portfolio of process management*

initiatives area, meaning that the efforts for improvement are being prioritized according to the health of the business processes and the linkage to the current issues within the organization. Although there has been an understanding of the role of process management in improving organizational

performance, this understanding still has not reached the highest level, being graded with the grade 4 out of 5. There has also been a room for improvement in the areas of *process improvement methodology* and *process metrics*.

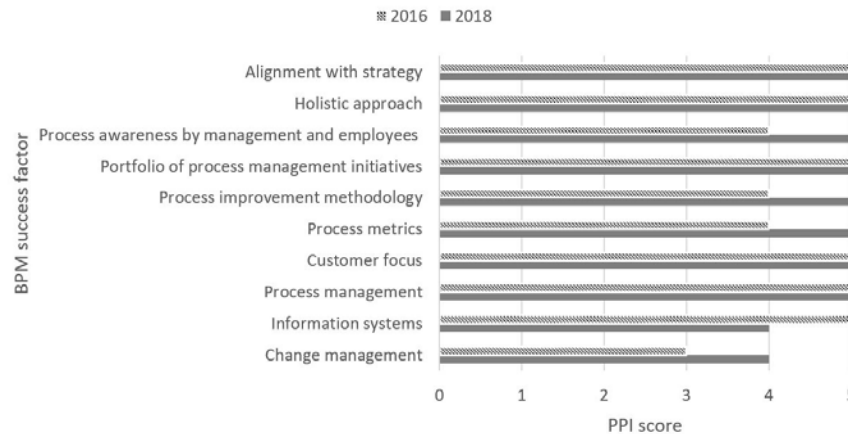


Fig. 2 PPI scores in 2016 and 2018 in the observed insurance company

Fig. 2 presents the comparison of the 2016 and 2018 survey results regarding BPM success factors. In 2018, the overall PPI of the selected company is 48 which is again the process management mastery level of BPM maturity. The only two BPM success factors which have not been rated the highest grade in 2018 survey results are *information systems* and *change management* area. If the results are compared to the 2016 survey, it is visible that *information systems* area has now received a lower grade, which means that current information system of the observed insurance company is lagging behind the current trends in relation to the 2016 situation. Other area which is not rated with the highest grade is the *change management*. However, in a comparison to the 2016 survey results, this area has improved, being rated 4 instead of 3 like in 2016. That means that when introducing process changes, people and cultural issues are still not handled as effectively as they should be. The process awareness of both management and employees in terms of understanding the role of BPM in performance improvement has also been improved in a comparison to 2016 survey results. Also, improvement is visible within the areas of *process improvement methodology* and *process metrics* as well, which are rated the highest grades in 2018 survey.

B. Role of BPM in Digital Transformation of the Observed Company

The role which BPM had in the digital transformation of the observed insurance company has been investigated through in-depth interviews. First question referred to the meaning and understanding of digital transformation for the respondents. According to the respondents, although the “backbone” of digital transformation is digital technology, they emphasize that managing business processes, transforming organizational structure and culture as well as understanding the needs and behaviors of both employees and clients are necessary for the

success of the digital transformation. Within the observed insurance company, the concept of “change management” has also been introduced aiming strengthening the employee's readiness and motivation for constant changes which are unavoidable in the process of digital transformation. Changes have been and are implemented through a series of projects, and are aligned with the business strategy as the umbrella strategy of the presented insurance company. Within the selected company, besides the permanent organizational structure which is intended for daily business operations, there is also a project organizational structure present. Project organizational structure is formed for each conducted project and last for the duration of the project. The projects are planned, approved, coordinated and monitored at a strategic level.

Within the observed company, a digital strategy has been defined in 2016. At the same time, the Digital transformation office has been established under the supervision of the Chief Digital Officer (CDO). Defined digital strategy is in line with all other strategies of the presented insurance company, focusing primarily on digitization of products and services, and partly on intensifying customer engagement. According to the respondents, digitizing products and services significantly influences business processes and changes them. At the same time, for a successful digitization of products and services, the company needs to have the information regarding the structure of the existing processes, the resources involved in them as well as their efficiency at any time. Therefore, the company has introduced a system of continuous monitoring of business process efficiency. Achieved business results are presented according to strategically defined process and financial performance indicators on the control panels located in the common premises of the insurance company building as well as within the subsidiary buildings.

Over the years, a lot has been done to digitize products and

services of the observed insurance company. Through digitization of those processes where there is a direct contact between employees and/or company representatives with clients, the observed insurance company has achieved excellent results. An example is the digitized sales process (e.g. insurance policy conclusion) and damage claims. Apart from the usual technologies such as mobile phones, tablets and portable point of sale (POS) devices, technologies such as the IoT and drones are also being used. Emphasis has been put on the speed and efficiency of business processes with very short defined deadlines for handling the clients' requests. An example is the damage claims payments within 2-3 days, regardless of the legally defined deadline of 15 days. Moreover, the plan of the observed insurance company is to intensify activities on the further development and integration of channels for communication with clients (developing and linking Web applications, mobile applications and social networks, strengthening the digital marketing) to achieve a higher level of customer engagement.

The presented company has implemented ERP, CRM and BI system and therefore has a very good operational backbone. Advanced analytics and prediction methods are used for risk analysis and estimation, insurance policy coverages and damage payouts. However, there is a need for upgrading and linking existing systems with digital technologies (e.g. mobile applications, cloud computing, social networks, IoT, security, AI, virtual reality) that will enable creation of "a seamless, omnichannel experience that makes it easy for customers to order, inquire, pay and receive support on a consistent basis from any channel at any time." According to [35], the core of digital transformation is the transformation of the customer experience forms, which can be achieved by implementing digital technologies such as social media, mobile computing, geolocalisation and analytics. Therefore, companies must implement technologies that will ensure the collection of customer experience data and, accordingly, tailor business processes according to the behavior, needs and requirements of customers. In that sense, presented insurance company plans to upgrade the existing BPM system. One of the ways of doing that is to implement a "customer journey" functionality. Basically, it is a functionality which provides the company's management with an overview of the entire customer journey, from starting point (e.g. sales) all the way to the customer service [36]. Moreover, it enables the management to have a clear overview of the overall experience which customers or clients have while interacting with the company's operations as well as the detailed overview of the customer or a client, providing information about touchpoints needed to conclude a deal [37]. Having that in mind, the presented insurance company can improve the automatism of interactions in each touch point in accordance to the customer journey, enhancing the customer engagement.

Within the presented company, there is a two-way relationship between BPM and digital transformation. Continuous efforts to optimize business processes often lead to digitization of products and services. Again, the

introduction of digital products and services, the inclusion of clients in company processes and the respect of their demands leads to change and adaptation of business processes.

V.CONCLUSION

This paper focused on investigating the role of BPM in the digital transformation by presenting a case study of an insurance company operating in Croatia. Observed insurance company is an early BPM adopter since it adopted BPM more than 20 years ago, which led to achieving the highest BPM maturity level in both 2016 and 2018 surveys. Moreover, the company has been through a successful digital transformation, which is presented in this paper.

Although this research extends the body of knowledge, there are limitations that need to be recognized. Since this study presents only one case, generalisation of the findings is limited and needs to be further researched. Hence, further research plans include expansion of this study to other companies, operating in other industry sectors, besides financial sector.

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