

Business Process Management Systems and Cloud Computing – The Perspective of Polish Banks and Insurance Companies

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Abstract

Business Process Management Systems (BPMS) provide the most mature and advanced support for Business Process Management (BPM). The use of cloud computing eliminates barriers faced by BPM and increases its potential. The analysis of BPMS and cloud computing systems is particularly interesting in the context of companies rendering banking and insurance services. The goal of this paper is to present the results of surveys concerned with BPM and cloud computing, conducted among selected 7 banks and 5 insurance companies operating in Poland. The article presents short discussion, conclusions and directions for further development of business processes management approaches with the use of cloud computing.

Keywords: business process management, bpm, cloud computing, business process management systems, bpms

1. Introduction

Business Process Management Systems (BPMS) provide the most mature and advanced support, covering all aspects of Business Process Management (BPM). According to Gunawan et al., cloud computing-based approach to process management is an emerging paradigm that serves as an architecture for managing the high degree of complexity of business processes in modern enterprises [2]. The banking industry is considered to be the most technologically advanced service sector in Poland [1]. On the other hand, the insurance sector is undergoing a dynamic digital transformation aiming to optimize the related business processes [7]. The importance of cloud computing for the banking and insurance sectors is confirmed by guidelines and recommendations published by the Polish Financial Supervision Authority and the Polish Insurance Chamber [6,8]. This serves as a basis for defining the following research questions: RQ1: What are the conditions, benefits and restrictions associated with BPM approaches adopted by banks and insurance companies? RQ2: What are the conditions, benefits and restrictions associated the use of BPMS in banks and insurance companies? RQ3: What are the conditions, benefits and restrictions associated with the use of cloud computing in banks and insurance companies? RQ4: What are the conditions, benefits and guidelines associated with managing business processes and using cloud-based BPMS models in banks and insurance companies? The research question have been addressed by surveys conducted among a selected group of 7 banks and 5 insurance companies operating in Poland. The article presents the results of the surveys performed, the conclusions and the directions for further development of BPM approaches with the use of cloud computing.

2. Survey methodology

The surveys have been performed in order to obtain data and information needed to answer the research questions stated above. No other surveys of a similar scope have been

identified in the literature. The surveys have been designed and carried out in accordance with the following scenario: 1) Definition of the scope of the survey and its target group; 2) Selection and preparation of the survey tool; 3) Distribution of the survey tool, performance of the survey; 4) Summary and analysis of results; 5) Formulation of conclusions. The surveys were performed in 2021 and 2022, within a group of 12 companies representing the banking and insurance services sector, including: 7 out of 25 banks operating in Poland (28%); 5 insurance groups, comprising 14 out of 59 insurance companies operating in Poland (24%) [4,5]. Experts who took part in the surveys served as IT area managing directors, IT and business solution architects, as well as directors managing selected business areas and processes. All were characterized by having up-to-date knowledge of the state of BPM, the use of cloud computing and the related plans. Due to confidentiality rules agreed upon with individual companies before the survey was carried out, the names and other identifiable data of the companies could not be presented in the article.

A tool in the form of an online interview questionnaire was relied upon to perform the survey. The choice of this tool was based on the fact that it allowed to interview experts, clarify the answers provided, learn their motivations and identify other applicable circumstances. The questionnaire consisted of 25 questions. When answering each question, the experts were given the opportunity to select one from a catalog of answers or formulate their own answer. The first part included questions 1-4 concerning the management of business processes in the companies under investigation (RQ1). In the second section (questions 5-12), an attempt has been made to identify the IT tools they use regarding BPM (RQ2). The third section (questions 13-18) was concerned with cloud computing. Experts were expected to provide information on the scope and context related to their use of cloud computing (RQ3). In section four (questions 19-25), the questions were concerned with the degree of interest in synergies stemming from BPM, cloud computing, as well as with the related requirements and guidelines. The aim was to determine whether organizations notice the potential of cloud computing-based BPM (RQ4). The asked questions were: Q1: Does the organization apply a structured approach to BPM, understood as repeated modeling, optimization, implementation and monitoring of processes? Q2: What are the benefits of applying the process-based management approach? Q3: What difficulties, constraints, challenges are related to the application of a process-based management approach? Q4: What are the organization's plans regarding the process-based approach to management for the next 3 years? Q5: Are the modeled processes implemented (automated) in IT systems? Q6: Are the systems in which processes are implemented operating in a stable and efficient manner and meet applicable expectations? Q7: Are the systems in which the processes are implemented capable of being modified in a quick and dynamic manner? Q8: May changes affecting the processes and the manner in which they are performed be made by business users? Q9: Is it important for the organization to be able to quickly change its processes and the manner they are implemented in specific in systems, to scale up the number of system users, and to prototype processes prior to their implementation and launch? Q10: Are the systems that support the implementation of specific processes simple and user-friendly (from the point of view of their users)? Q11: What functionalities of IT systems are important from the process management point of view? Q12: Which characteristics of IT systems are important from the process management point of view? Q13: Does the organization use cloud computing? Q14: Does the organization use cloud computing-based systems for modeling, simulating, implementing and monitoring its processes? Q15: What model of cloud computing does the organization rely on? Q16: What type of cloud services do the organization rely on? Q17: What benefits does cloud computing offer? Q18: What are the problems and restrictions related to the use of the cloud computing? Q19: Does the organization perceive cloud computing as a solution that may potentially optimize its business processes? Q20: Does the organization perceive cloud computing as a solution that may potentially optimize its implementation of new and introduce changes to existing business processes? Q21: What are the organization's expectations regarding solutions made available in the cloud, in particular those allowing to BPM? Q22: Is it more advantageous from the company's point of view to use one or a higher number of services supporting BPM? Q23: Is there a need to have a pattern, an operating method, a set of guidelines or good practices, i.e. a specific model in the context of managing business processes using cloud computing? Q24: Does the company plan to use business

processes offered as cloud computing-based services (BPaaS model) in the next 3 years? Q25: What are the strategic plans of the organization regarding the use of cloud computing over the next 3 years?

Due to the limitations of the content of the article, the answers provided to selected questions, along with applicable comments, are presented in the following sections of the paper.

3. Survey results

Regarding the Question 1, more than half of all companies rely on (33%), are in the process of implementing (17%) or planning (17%) a structured approach to BPM (Table 1). The implementation of BPM cycles is declared by 57% of banks. As far as insurance companies are concerned, 40% of them did not take any decision in this regard, another 40% were in the process of planning their implementations, while 20% were in the implementation phase. The reasons justifying why only 33% of companies manage processes in an orderly manner were analyzed in Question 3. It was important from the point of view of the survey that companies which currently fail to manage their processes in an organized and comprehensive manner and are not in the process of implementing or planning the implementation of such an approach, do not rule out its future application – on the contrary, they claim that such a state of affairs results from some limitations and/or other priorities.

Table 1. The answers for Questions: 1, 14, 19

<i>Question 1: Does the organization apply a structured approach to BPM, understood as repeated modeling, optimization, implementation and monitoring of processes?</i>			
Answers	All companies	Banks	Insurance companies
Yes	33%	57%	0%
No, the decision has not been made	33%	29%	40%
No, implementation is in progress	17%	14%	20%
No, planning is in progress	17%	0%	40%
<i>Question 14: Does the organization use cloud computing-based systems for modeling, simulating, implementing and monitoring its processes?</i>			
No	100%	100%	100%
Yes	0%	0%	0%
<i>Question 19: Does the organization perceive cloud computing as a solution that may potentially optimize its business processes?</i>			
Yes	83%	86%	80%
No	17%	14%	20%

None of the companies (100%) currently use BPMS class systems that would be based on the cloud model. This is proven by answers provided to Question 14 (Table 1). This does not result from their reluctance to use cloud-based BPMS solutions, but from their current level and scope of utilization of such systems and from their adaptation-related priorities. Some of the organizations are preparing to deploy cloud-based BPMS solutions. For one of the companies, such preparations are the core of its strategic adaptation. Market analyses show that BPM is one of the key areas in which cloud computing systems are used. In the case banks, cloud is a strategic element of the process of digitizing their processes [8,9].

Question 19 verified the experts' approach to the use of cloud in the context of process optimization (Table 1). Most companies (83%) perceive cloud computing as a solution that may potentially optimize their business processes. Thanks to the use of cloud computing, processes may potentially be implemented in a faster, cheaper and more convenient manner (both from the point of view of the company's employees and customers). Those process may also be more flexible, simpler to manage and maintain, with their costs being more predictable as well. Experts who have not answered this question in a positive way do not rule out the possibility of using cloud computing to improve processes, but currently do not find any use for such an approach in their organizations. This position is influenced by many factors, including the company's operational culture, its strategy, specific nature of processes or IT strategy. Improvement of processes is the lead idea and, simultaneously, one of the key activities related to BPM. The interest in using cloud computing for BPM purposes was also expressed by 47% of the companies analyzed in the *State of the BPM Market - 2020* report [3].

4. Summary

The objective of the study has been achieved, and all research problems have been addressed. In the context of RQ1, the results of the survey performed indicate that the banks and insurance companies participating in the study are aware of the business processes they perform. They are also modeling and managing them in a methodical manner, while relying on applicable standards and professional tools. One in three audited organizations manages its processes in a structured and orderly manner. Optimizing time and costs, improving the efficiency of management processes and increasing customer satisfaction were identified as key benefits of the process-based approach to management. The main limitations are seen in the dynamics of the organization and the environment, the duration of the period required to analyze and implement processes, and the lack of adequate competence. In the context of RQ2, the organizations surveyed rely on BPM-supporting systems and state that these need to be improved in order to enable dynamic implementation of process changes. The most important functionalities of the systems in question include process control, integration with other solutions as well as design and implementation of specific user interfaces. In the context of RQ3, most companies are currently using cloud computing and all are planning to continue their development in this field over the period of the next three years. The PaaS model is the most popular solution used. Its key benefits, as identified by banks and insurers, include scalability, flexibility and ability to match resource use with costs. The main constraints are related to legal regulations and data security. In the context of RQ4, individual companies expect BPM-supporting solutions relying on the cloud computing model to be able to quickly implement and launch specific processes, control process management within the organization, integrate with other IT solutions and use ready-made predefined processes. Most companies prefer to use a single, centralized BPM service. Every other organization intends to commence using the BPaaS model within the next three years. Almost all experts have expressed the need to use a BPM model that relies on cloud computing.

To recapitulate, one may state that the results of the surveys performed show that the organizations are interested in: 1) applying the process-based approach to management; 2) using BPMS class systems; 3) using cloud computing; 4) taking advantage of the synergies offered by combining process-based management with the use of cloud computing-based BPMS solutions. This proves that additional research concerned with the BPM model relying on cloud computing, the related tools and methods, the approach to migrating business processes to cloud and the testing of organization's maturity in the field of cloud-based process management is required.

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