

ABSORPTIVE CAPACITY AS A PRECONDITION FOR BUSINESS PROCESS IMPROVEMENT

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ABSTRACT

Improving organizational performance by redesigning business processes and supporting them with a proper information system is a daunting challenge. We analyze the possibilities of business process management in general and in the healthcare sector in particular. The role of business process modeling as a way to increase an organization's absorptive capacity is analyzed. A longitudinal case study of a European public healthcare insurance company identifies the factors either increasing or hindering absorptive capacity. The case presents that the dilemma between radical and incremental approach to improve business processes is somehow artificial since the radicalness of changes depends on the difference between the absorptive capacity and the extent of the proposed changes. The paper shows that business process management projects should not merely focus on the development of methodologically correct models, but should be used as an opportunity to increase the absorptive capacity of an organization.

Keywords: business process management, modeling, healthcare, absorptive capacity, healthcare insurance company

INTRODUCTION

Business process management (BPM) has emerged as a consolidation of disciplines sharing the belief that a process-centered approach leads to substantial improvements in performance of a system. It can innovate and continuously transform businesses [1]. This is much needed in healthcare where technical progress, an ageing population and an increasing number of patients with chronic illnesses drive up healthcare costs [2]. Healthcare strategists thus need to enhance the value patients obtain for their healthcare expenditures while minimizing the inevitable trade-offs among various goals through well-considered policies [2]. Although technological improvements usually reduce costs in other sectors, improved healthcare technologies generally increase rather than reduce healthcare expenditures [3].

Reducing this rise in costs thus calls for a way to improve the efficiency of organizational procedures. The healthcare sector is particularly problematic in this respect as the efficiency is usually lower than desirable [4]. In relation to this, increasing efficiencies with BPM is a potentially promising way in responding to these challenges [5, 6].

The literature extensively analyzes the critical success factors of BPM [7-9] or the impact of technology on BPM [10], but lacks an analysis of the prerequisites for successfully implementing process changes. In order to achieve extensive support and wider acceptance, it is important to present the benefits of BPM to stakeholders [11] and to obtain their commitment to the project is important. A detailed study of how attitudes and commitment

change during the project and how this affects the success or failure of implementation is missing.

The paper's main contribution is therefore an analysis of the development of a company's absorptive capacity (AC) as an important prerequisite of implementing changes in its business processes and organizational structure. The potential role of business process modeling and introduction of other BPM principles in increasing AC is analyzed. In this respect, the rich body of literature on AC [12-14] provides a base for studying implementation success and/or failure. These concepts are analyzed in the case of a public health insurance company from central Europe.

The structure of the paper is as follows: the first section presents a literature review on BPM in general and the healthcare sector specifically. BPM and its role in increasing AC receive special attention. The case study and its analysis follow. Finally, the key findings and implications are discussed in the summary.

LITERATURE REVIEW

The importance of absorptive capacity for information systems development

AC has been initially defined as the ability of an organization to assimilate and apply knowledge from external sources [12] including the ability to imitate other processes and also to develop and use new information systems (IS) [15]. AC is particularly important for studying IS [16]. Even further, several studies have claimed that AC is an IS-driven capability [17, 18] since superior IS capabilities can simplify information acquisition, and therefore increase organizational AC [19]. Moreover, the recent literature review in *MIS Quarterly* has shown that AC has an important role in IS research related to business-IS knowledge, knowledge transfer and IS assimilation. The demonstration of the application of AC and its interaction with a variety of IS aspects is vital [16].

Several studies have examined the influence of AC on organizational performance including the impact on enterprise resource planning usage [20], the transfer of technological knowledge [21] and on new product development [22]. Further, AC was claimed to be important in efforts to develop understanding and using IS [23].

The AC was also used to link knowledge creation in supply chains with IS and business processes that support effective inter-organizational partnerships [18]. The study examined how enterprises organize their processes and information technology (IT) infrastructures to build AC to assimilate and exploit information resources. Inter-organizational process mechanisms can influence AC by enabling better acquisition and assimilation of information [24].

AC is fundamental also to establishing appropriate IT infrastructure and to integrating business intelligence systems [25]. Similarly, the influence of AC to customer relationship management has been examined claiming that a deliberate attempt to improve AC increases the utility of IS over time [26]. Therefore, AC does not bring only a straightforward improvement of performance but also develops into a valuable source over time by acting as a mechanism through which firms can attain innovation [27] and better develop IS to support the new processes.

Moreover, IS integration improves business performance only if managers simultaneously increase organizational AC [15]. To summarize, it is important for firms to make considerable investments in both IS and in developing AC [28]. Since IS integration projects are generally associated with redesign and change projects this suggests that greater process orientation and flexibility is needed simultaneously [15]. Thus the next subsection explores the role of BPM in improving them.

Business process management

BPM is a top-down set of organizational principles and methods designed to organize, manage and measure the organization based on its core business processes [29]. Interest in BPM is growing in both practice and research [30]. Globalization, recent economic turbulence, and regulatory body mandates for process compliance further enhance interest in BPM [31]. BPM is attractive since it includes methods from various different domains, such as management, engineering, IT and even sociology and thereby enables a more holistic vision of the organization [32].

However, this comprehensiveness also has a downside: BPM includes a wide array of practices without many guidelines regarding its optimal implementation [33]. Further, the lack of a theoretical basis underpins criticism of the emergence of business process reengineering [34, 35]. In addition, no academic agreement exists on a conceptual framework about what BPM actually constitutes [36], accompanied by a lack of publications clarifying the definitions and scope of basic BPM terminologies [37].

The rest of the paper mainly focuses on the implementation issues that are often the most problematic, leading to a large share of failed projects [38, 39]. As with most organizational transformations, the success of BPM depends on careful implementation and is influenced by a variety of organizational factors [40]. The need to approach BPM holistically and consider technical, managerial and especially people factors is well established [36, 41, 42].

Several BPM concepts have been found particularly important for implementing BPM principles in organizations. First of all, key business processes must be managed by process owners – high-level executives, accountable and responsible for the performance of the entire process that goes through different business functions [38, 43]. Larger organizations should develop a centrally established unit referred to as BPM Center of Excellence or a Business Process Office that is responsible for process modeling, suggesting improvements to process owners and coordinating business process improvement initiatives [42]. In addition, one of the most important critical success factors for a sustainable quality management system is the attitude of both the employees and management: “Mostly it’s about people; this includes top management and staff of the organization” [44]. Developing a prerequisite process mindset is thus a fundamental component of a BPM approach [45].

This is particularly the case with BPM in healthcare where improper business process redesign efforts may have detrimental effects not only on the efficiency of organization but on patients’ well-being as well. After presenting the specific challenges of BPM in healthcare, the focus in this paper is thus on the role of modeling as a facilitator of an increase in AC.

Business process management in healthcare

The healthcare sector is labor-intensive and therefore productivity is treated as a particularly important element of efficiency [46]. Besides, the sector encounters growing costs due to expensive new techniques, expensive drug development and patients’ demands for increasing service quality. Consequently, the healthcare sector has difficulties in satisfying demand and quality expectations, and therefore improving the effectiveness of healthcare systems is indispensable [47]. IS and technology are thus expected to have an important role in cost-effective provision of healthcare services [48, 49].

Healthcare processes are more complex and involve multidisciplinary teams since decision-making, communication and information-sharing engage multiple actors and health departments must also provide leadership for the whole public health system [50, 51]. Further, due to the human component involved, safety and efficiency issues are significantly more important compared to mere cost effectiveness [47]. Given its complexity, approaches focusing solely on improving service quality or cost effectiveness are unsuitable for healthcare. A multilevel approach that focuses on leadership, culture, the development of effective teams and use of IS for continuous improvement should be considered [52].

It is important to holistically implement BPM as most problems in healthcare derive from inefficiencies in managerial processes rather than medical ones [53]. Since clinicians have a significant influence in the healthcare sector, the key challenge of a business process redesign in healthcare is to persuade managers and clinicians to cooperate and work as a unified team [54]. Process management in healthcare is crucial as it enables the cooperation of different organizational units and medical disciplines. Insufficient communication and consequently missing information are one of the major factors of adverse events in medicine [55].

Process redesign in healthcare is thus challenging since process standardization is usually impossible; patients with the same conditions may be examined and treated differently [56]. These complex and non-trivial processes distinguish the healthcare sector from other sectors and hence industrial quality improvement approaches should not be applied to healthcare directly, although when properly and carefully selected they might be used to improve sub-processes [47].

Nevertheless, careful implementation of business process redesign may significantly contribute to healthcare where appropriate management capabilities are important for successful redesign implementation [57]. Redesigned projects may also reduce patient mortality and increase patient satisfaction [58], while process thinking can be effectively used to support innovative work methods and improve productivity [59]. It can be thus expected that business process redesign in healthcare will grow significantly in practice and academia [60].

Although business process redesign approaches appear to be promising, the results of case studies in healthcare and other sectors are still not convincing [46, 61] and the academic literature lacks papers on concrete improvements resulting from BPM [62].

Rigorous case studies to analyze the results of BPM programs in healthcare are therefore still needed.

Business process modeling

The modeling of business processes is usually a key component of BPM efforts and enables a common, comprehensive and easy understanding and analysis of a business process [63]. Consequently, an organization can be analyzed and integrated through its business processes [64]. The proper modeling of business processes enables an evaluation of their performance and experimenting with alternative configurations and process layouts [65].

Nevertheless, the literature lacks the contribution of modeling to process redesign success and the theoretical positions on business process modeling since BPM is controlled and driven more by practitioners and less by academics [66]. Practitioners or consultants develop their own methodologies, techniques, tools or attempt to improve the existing ones by tailoring them to their projects' needs [67].

Process modeling or process representation is particularly important in redesigning processes or assigning responsibilities where the main purpose of modeling is to support process improvement, facilitate users' understanding of the processes and support process management [68].

Despite the abovementioned benefits, business process modeling in large initiatives is time-consuming and costly, making the convincing of executive management of its benefits potentially difficult. Although substantial research exists in the area of process modeling, understanding the business value of process modeling in academia and practice is limited and remains the main challenge [31]. Another problem is that business process modeling should not be a one-off project; a necessary prerequisite for continuous improvement is to ensure business process models are up-to-date [9]. This depends more on employees' and management's preparedness to correct potential mistakes and document all further changes and not on the methodology or the modeling tool.

All these problems are even more present in healthcare where the processes are highly unstructured [69] and where detailed modeling and standardization is impossible. Mainstream modeling techniques often promote the modeling of processes with their usual order of execution. This is effective in standardized and production-oriented domains, but not in processes in which case-by-case variations and exceptions are the norm [70]. Many current healthcare processes are thus described only at a high level of generality and are often not defined completely and precisely.

Given the above, most previous papers neglect the important fact that process modeling is not just about the preparation of semantically and syntactically correct models but may bring other fringe benefits. These benefits may manifest specifically in terms of employees' ability to understand the work of others, propose new changes or accept the proposals of others; these all increase the AC. One of the few exceptions is the paper by Rosemann [71] arguing that the main benefit of business process modeling is often the discussions which occur while the employees model the current or future processes. These conversations can be extremely stimulating and an important learning experience. Modeling triggers a change reaction and increases process awareness, even if only those involved in the modeling will think differently about the processes and related organizational issues. The process of

modeling is most likely more important than the final models that emerge.

However, these fringe benefits are still not thoroughly theoretically analyzed. Thus, our paper seeks to establish the role of process modeling as a facilitator of an increase in the AC of business process redesign efforts. Business process modeling is thus not just a "drawing exercise" but can importantly increase an organization's capability to implement the changes suggested after the business analysis phase of such projects.

The absorptive capacity of a business process change

An important issue in studying business process improvement efforts in general and specially in public healthcare is why they are so often unsuccessful. They usually start with the best of intentions, with the help of experienced consultants following most of the methodological guidelines. However, even the best available information, tools or bought knowledge (by e.g. hiring consultants) are not enough. Organizational changes are never easy to implement; leadership, a dedicated innovation team and the alignment of financial incentives each contribute to the likelihood that the change will succeed [72].

Accordingly, success in identifying problems with current processes and devising the corrective actions depends on the methodological and organizational issues discussed above. However, the possibility to implement these changes to achieve the desired impact mainly depends on AC. To be more exact, AC depends on the alignment of the proposed changes with the AC of an organization as a whole and each of its parts at a given time moment. A high AC means organizations can learn how to make use of new knowledge within their processes and implement a change that improves their operations [15]. AC also determines how much an organization can actually learn from consultants and other partners in the improvement project [13].

The fact that organizations may be able to acquire new information and knowledge in domains in which they do not have much experience during a particular project cannot fully replace prior experience [73]. AC can thus only build over time; while changes within one medium-term project may be considerable they are usually not enough to enable the implementation of larger changes regardless of how well-thought they are. While AC can increase over time, unsuccessful legacy projects can also decrease AC; previous negative project experiences (e.g. a failed business process redesign project) reduce the willingness to learn new things and undertake further changes [74].

A certain level of AC has to be attained to improve end-to-end processes [75]. This need is amplified by the fact that processes are executed by different employees in different departments, and therefore these departments need a proper level of AC. This applies not only to employees but also to management. The AC of management is namely defined as its willingness and ability to pursue change [76]; the majority of authors identify top management support as the most critical success factors of business process improvement [9, 77].

Establishing communication channels is therefore important. This requires cross-functional teams, formal and informal meetings as a medium to communicate the potential of the process redesign to all stakeholders [78]. A significant increase in the level of an AC related to business process redesign namely needs common cognitive structures among employees from different functional areas [79]. This is usually problematic in healthcare where employees come from different backgrounds (e.g. medical,

business, law) with different perceptions of the priority of objectives. The differences in history, training and approach to care mean that doctors and other professions do not start from the same foundations [80]. A change in behavior usually requires comprehensive approaches tailored to specific settings and target groups [81]. The lack of attention to motivational issues was a factor in some well-publicized failures in the field of medical informatics [82].

The above shows why business process modeling involving the use of workshops including employees from different departments is particularly important. Employees' training alone is namely insufficient for successful implementation – prior experience and knowledge and its disseminations influence the desired organizational change [78]. Joint workshops can facilitate both knowledge dissemination and increased experience where process modeling has an important role in stimulating the communication and transferring that knowledge into process models [83]. The acceptance of any new approach is namely not as straightforward as it may seem. Health professionals do not simply apply abstract, disembodied facts rigidly to the situations around them, but collaborate in discussion [80].

If organization uses BPM as a top-down approach, healthcare staff will probably resist [47] since informal discussions and the building of the dedication to change/AC will be lacking. Many clinical professionals regard business process redesign as “a brutal and inappropriate technique” [84]. Sustainable improvement requires the active engagement of, and learning by, employees rather than grudging compliance with a management dictate [47]. Various best-practice approaches and the use of benchmarks can therefore hardly be successful. In general, none of the approaches is superior to all changes in all situations [81]. A careful analysis of the current state of AC should be undertaken to estimate the extent of changes an organization can take on at a given time.

CASE STUDY

Methodology

The main research question concerned which factors either influence or hinder an increase in AC during a business process management project. Further, the intention was to analyze the effect of proposing changes that increased the AC and the ways to further increase the AC.

A longitudinal case study was deemed a suitable methodological approach since a rich understanding of the context and specifics of the research question was needed. Given the scarcity of studies investigating the longitudinal effect of BPM in the public sector [30], this qualitative approach was considered suitable to enable contextualization and a vivid description [85]. Elements of ethnographic research were also included. Ethnography is the study of social interactions, behaviors, and perceptions that occur within groups, organizations, and communities. The central aim of ethnography is to provide rich, holistic insights into people's views and actions [86]. It enables a social perspective on system design and produces detailed descriptions of the workaday activities of social actors within specific contexts [87]. Researchers participate in the natural setting of the process being studied and gain insight into the participants' accounts of the process [88]. Because the researcher is at a research site for a long time - and sees what people are doing as well as what they say they are doing – an ethnographer obtains a deep understanding

of the people, the organization, and the broader context within which they work [89]. Ethnographic research is thus well suited to providing IS researchers with rich insights into the human, social, and organizational aspects of IS [89, 90].

A public health insurance company Healthco (the name is fictional although all the data and analysis are real) was chosen for several reasons. Healthco is a large organization that has not faced many organizational changes in the last 15 years. Lately Healthco has been facing decreasing revenues due to the economic crisis which has enhanced the need for change; all of this prompted quick changes in a relatively short time period of one year. Finally, a good connection with the company's management enabled broad access to confidential material, interviewees etc.

The usual techniques for case studies were applied [91, 92]. Internal documentation and previously developed process models were examined. Several interviews with key users, middle management and the executive board were conducted to model business processes, discuss these models and propose improvements. Interviewees were selected based on their role in the organization and the role in business processes. The findings were discussed in various meetings of strategic groups and workshops with top, middle management and consultants. Over 150 business process models along with a description of activities were prepared, involving over 1,500 pages of text. Models should provide a verifiable insight into underlying business processes [93]; this was assured by employees (including those who did not participate in modeling) and proposed process owners carefully checking and validating the developed models.

Case study description

The case study was conducted between May 2009 and July 2010 in Healthco, a central European public healthcare insurance company that provides obligatory healthcare insurance. Healthco has about 1,000 employees, a central unit, 10 regional units and 45 branch offices. The central unit's main role is to prepare regulations and coordinate the work of all regional units and branch offices. Each regional unit is organized as a separate business center with its own support business processes and is managed by a regional director, with the result that Healthco organization is weakly connected.

Healthco started a BPM project to improve the efficiency of its business processes. The distributed organizational structure needed to be geographically close to insureds which consequently led to the unstandard execution of business processes at different units. Healthco also wanted to simplify its organizational structure, reduce the number of employees and equalize the workload of employees in all regional units.

The created project team included five consultants and ten selected top and middle managers from Healthco, including the chief executive officer. About 50 other employees from central units and two selected regional units participated in the project, mainly in the modeling phase.

The project was divided into five phases. During the first phase (lasting one month) several workshops were conducted. The workshops' purpose was to present the project methodology to the employees, obtain their support and to identify key business processes. The following core processes were detected: C0 Development of the healthcare system and business performance; C1 Inclusion in the compulsory health insurance scheme; C2 Supplying healthcare services; and C3 Exercising the rights

deriving from compulsory health insurance. Support processes, for example, included human resource management, IS development and procurement.

In the second phase, interviews with several iterations were used to develop business process models. The representatives of all positions in the same process were brought to the same room and modeled the process immediately during the workshop. In such a way the model under development was seen by all participants. Further, employees from different departments learned about the job of each other in the same business process. It was very positive and improved cooperation among them and also immediately removed some minor inefficiency in the business processes.

The designed models were modified later if necessary. Core processes were modeled first and after that also support processes. After five months the models were confirmed by the participating employees. The majority of all interviews in the project were done in the second phase.

Most employees wanted to model the processes with vast amount of details to increase their perceived importance for Healthco due to larger number of activities. Management of support function (e.g. human resource management, accounting) also wanted to have very detailed models of support processes. It was also difficult to convince people, that not every their activity is a part of a process. As a result to detailed process models were developed and too many resources had been spent.

Some employees, mostly middle management and managers from regional units, started with negative attitude to the project and were unwilling to change the existing way of working. For example one of the managers of a regional unit that was involved in the project rejected process modeling all the time and did also not agree with the finding of analysis and proposals for changes in later phases of the project.

Sometimes employees also disagree about which version of the same process in different organizational units is the right one. For example, the procurement process had been performed differently in different departments, although they all used the same rule book.

In the third phase (lasting two months) the existing business processes were analyzed. The suggestions of employees noted during the modeling phase were also taken into account. The analysis was presented and confirmed by top management. The main discovered inefficiencies were that many times the same activities (e.g. informing somebody) were done twice because one department did not know what had already been done in other department. Processes were also not uniformly executed. Regional organizational structure did not enable the balancing of the workload with employees in larger regional units having much more work. Some people, mostly heads of smaller regional units, disagreed strongly with the results of the analysis and were strongly opposing the changes.

In the fourth phase (lasting five months) to-be process models were prepared on the basis of previous analyses and several additional interviews and workshops with top management and selected other employees. The main proposed changes were: (1) to simplify the organizational structure and change the structure to be more process and not functional oriented; (2) to appoint process owners; and (3) to establish a BPM Center of Excellence.

The key idea was that each core business process should have a process owner in the central unit to manage all employees working in this business process regardless of location and to become responsible for the performance of whole business

processes. Previously, they were responsible merely for preparing regulations. Process ownership may be a very efficient mechanism to enable further changes [94] in order to unite business processes in different regions, equalize workloads and improve services to insureds.

In this phase people resisted to changes strongly again. Heads of regional units did not want to lose their power on one hand and even more opposed to the changes in their established work. On the other hand managers in the central unit were previously only responsible for preparing regulations and not for efficiency of entire business processes. Now they should become process owners with a greater authority and responsibilities for the end-to-end process. However, only a few of them were prepared for greater challenges while most preferred more comfortable jobs with less responsibility in the existing system.

The fifth phase of the project (lasting two months) was supposed to be the implementation of the proposed changes. However, due to middle management resistance to the proposed changes the top management decided to end the project prematurely and instead implement the changes incrementally. The fiercest resistance from the directors of regional units and certain other middle managers came in response to the suggested changes in the organizational structure/process ownership. The problem was connected with AC and is analyzed below.

Case study analysis

Although the AC of the analyzed public health insurance company increased during the project, the AC did not achieve a sufficient level to allow implementation of the proposed changes. The case study reveals several factors that were either decreasing or increasing Healthco's AC.

Increasing absorptive capacity

During the project several factors increased Healthco's AC. Especially important was the initiation phase, namely the presentation of the methodology, correct identification of key business processes and emphasizing the importance of a process orientation since the latter is one of the most important factors for remaining competitive [95]. Obtaining the employees' commitment to change was important since such commitment prevents resistance to a redesign project, especially from those directly involved in the changed processes [96], and therefore interviewers explained the purpose of the project at the beginning of each interview. Throughout the project employees started to use process terminology (e.g. the names and codes of the processes and the terms such as "inputs" and "outputs"). Additional workshops for middle management and selected employees led to a significant rise in the AC to implement changes.

The AC rose considerably during the modeling phase with numerous employees being included in the interviews. These interviews brought employees from different business functions together and emphasized a process view. This slowly increased the participants' process thinking and the AC of the organization as a whole.

An important factor that significantly improved Healthco's AC was detailed modeling. Even though it was not planned to model the support processes in detail a decision to include them was made. The employees were anxious that non-inclusion of "their" processes in the modeling signals the lack of their personal importance. Consequently, several additional processes were

added to the modeling list during the project (e.g. transportation management, administrative support). Although the modeling and analyzing of support processes influenced the time and effort devoted to the project and increased the consultants' costs, the result was the increased goodwill of several employees regarding the project. The company's AC was immediately increased as different individuals became more willing to cooperate.

Obstacles to achieve greater absorptive capacity

The main obstacle was the specific feature of the public sector where it is difficult to eliminate or at least change non-value-adding processes. For example, several similar activities were performed differently among the various locations. Even though performing these activities in a standardized way would be significantly more efficient, persuading the employees to do so was extremely difficult. Employees namely believed that the existing way of working was the most appropriate and they were not prepared for changes.

Another problem with the public sector is its salary system and system of progression which reduces the company's AC. Healthco had a large number of departments since department heads were entitled to higher salaries and combining several similar departments was therefore difficult. Employees were aware of the possible degradation and salary decrease and were consequently *a priori* against changes.

The next problem was the characteristic of the healthcare sector whereby experts and not managers usually hold managerial positions [47, 97]. This characteristic reduced Healthco's AC due to the difficulty of preserving expert knowledge while managing processes. Experts were not prepared to delegate responsibilities to their subordinates as they did not trust them enough. Consequently, a reluctance to the process redesign emerged even though they had previously supported the proposed changes.

However, AC is not a monolith construct. Healthco included several important stakeholders groups whose AC was important for successful implementation of changes. For example, while the AC of participating employees at the central unit has increased the success of the project also depends on the attitudes of employees from regional units. To decrease the complexity of the project management only a few representative units, mostly those with a highest existing AC, were included in the modeling. The AC of the excluded subsidiaries was lower at the start and could thus not increase during the project. They were the *main force* against implementing changes in the fifth phase and pressured the executive committee to prevent their implementation.

Their skepticism was somewhat understandable due to the lack of a guarantee that the process organization would improve healthcare performance. Mere theoretical and practical evidence of successful business process changes in other companies or sectors was no guarantee of an improved performance in Healthco. Although some of the changes were not really radical, many perceived them as such due to the low AC (resulting from the lack of any organizational changes in the last 15 years).

While AC in Healthco has increased during the project, the proposed changes were still unfeasible in the short- and mid-term. The management, employees and other stakeholders of the organization had namely expected important improvements based on the relatively large amount of money and effort invested in the project. In the words of the CEO, "*We paid thousands of euros and*

worked for one year. I cannot present just some minor changes to the executive committee". Therefore the extent of the suggested changes in the fourth phase of the project was such that they could not be implemented. The project was therefore stopped at this point. When the AC increases sufficiently, Healthco will be able to implement additional proposed changes that could bring about larger cost reductions. One year after the project was completed, the Healthco again started to consider implementing proposed improvements, which confirms the importance of the time in increasing AC.

CONCLUSION

The paper shows that the dilemma between radical and incremental approach to improving business processes is somehow artificial. The radicalness of changes depends on the difference between the individual or organizational perception and the scope and extent of proposed changes. Thus, employees and management consider those changes that are significantly higher than an organization's AC as radical. Any change considered as radical usually encounters fierce resistance.

In terms of business process modeling, the paper shows that such projects should not focus merely on the development of appropriate and methodologically correct models. Instead, formal and informal contacts with both external consultants and between employees should be used as an opportunity to increase the AC of an organization.

In healthcare terms, the paper shows the potential problems of modeling and redesign in the healthcare insurance sector; specifically, several decisions are complex, unique and often relate to the tacit knowledge of experts. The result is that the modeling of such unstructured processes cannot be done in sufficient detail; consequently making the analysis of the models and the evaluations of the employees' performance harder.

In terms of AC, the paper contributes mainly to understanding how AC can increase over time; most of the previous research only studied AC in a certain time period whereas the longitudinal study enabled an analysis of the development of the AC. While the focus of the case study is on healthcare processes our findings apply to other industries with unstructured and knowledge-intensive processes.

The paper has some limitations. The most important is that, since AC is still a relatively vague term the measurement of AC is not based on validated questionnaires but on the expert evaluation of the authors of the paper. An important topic for further research is the development and validation of an instrument to measure both individual and organizational AC and apply it in different process redesign projects. For this purpose, the questionnaire in Flatten et al. [98] is an important starting point. Second, the impact of the proposed changes (e.g. naming the process owners) cannot be reliably estimated since they remain mostly unimplemented during the project.

Further research should include a more detailed study of the relationship between an individual AC and the AC of an organization as a whole. They may differ considerably. The use of actor network theory [99, 100] could be particularly interesting to study how various actors form networks either support or inhibit the implementation of changes. In line with Armstrong and Bernstein [101] further research could examine how conceptions of politics, actors, goals, and strategies influence the change of AC of various groups within organization over time. Such studies can serve the organizations to carefully plan the implementation of

changes to match their AC. In such a way academic research can help practitioners to find out what is really ailing the companies at various point of the BPM journey [102] and therefore considerably improve the likelihood of successful implementation.

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