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The critical success factors of business process management

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ABSTRACT

Although business process management ('BPM') is a popular concept, it has not yet been properly theoretically grounded. This leads to problems in identifying both generic and case-specific critical success factors of BPM programs. The paper proposes an underlying theoretical framework with the utilization of three theories: contingency, dynamic capabilities and task–technology fit. The main premise is that primarily the fit between the business environment and business processes is needed. Then both continuous improvement and the proper fit between business process tasks and information systems must exist. The underlying theory is used to identify critical success factors on a case study from the banking sector.

1. Introduction

For 40 years the issue of fit between an organization and its strategy, structure, processes, technology and environment has been a basis for theory construction and research (Kanellis, Lycett, & Paul, 1999). The changing economic environment has led to an increasing interest in improving organizational business processes to enhance performance (McCormack et al., in press; Ranganathan & Dhaliwal, 2001). One of the fields dealing with these challenges is business process management (BPM) and there has been a surge of papers and practitioners interest in this area for more than a decade (Rhee et al., in press; Vergidis, Tiwari, & Majeed, 2008).

BPM is defined for the purpose of the paper as all efforts in an organization to analyze and continually improve fundamental activities such as manufacturing, marketing, communications and other major elements of company's operations (adapted from Zairi, 1997). A business process is a complete, dynamically coordinated set of activities or logically related tasks that must be performed to deliver value to customers or to fulfill other strategic goals (Guha & Kettinger, 1993; Strnadl, 2006).

Although various empirical researches indicate that there is a positive correlation between process management and business success (McCormack & Johnson, 2001; McCormack et al., in press; Skerlavaj, Indihar Stemberger, Skrinjar, & Dimovski, 2007) no comprehensive and substantial benefits that can justify the hype around the concept have been identified (Vergidis et al., 2008). Since the practical experience showed a large number of failed projects and programs, several papers tried to identify critical success factors ('CSF') of BPM (e.g. Ariyachandra & Frolick, 2008; Bandara, Gable, & Rosemann, 2005). However, most of those papers failed to put their research within a theoretical framework. Therefore BPM still remains largely atheoretical (Karim, Somers, & Bhattacherjee, 2007; Melão & Pidd, 2000).

As a consequence, the field of research is currently disorganized, without a possibility to classify and/or compare such studies. BPM has mostly remained in the fad phase and papers still mainly describe what BPM actually means; what it constitutes; how it should be used etc. Management consultants and academics write similar papers on those topics (Dale, Elkjaer, van der Wiele, & Williams, 2001). Some even claim that BPM was just a repackaging of old ideas to fit a new context, and that this was ultimately used to drive growth in the consulting industry (Newell, Swan, & Galliers, 2000; Terziovski, Fitzpatrick, & O'Neill, 2003).

Therefore the main contribution of this paper is to provide a theoretical basis for the field. A novel combination of three underlying theories, namely contingency, dynamic capabilities and task–technology theory is proposed. It establishes a basis for the explanation of (un)successfulness of BPM efforts. This basis can then be used to study CSFs in general and can be applied to analyze CSFs in each particular example.

The structure of the paper is as follows: First, the need to further examine the CSFs for BPM is established. Then the approach is theoretically grounded and explained with the combination of three underlying theories. A case study of the bank that uses a theoretical framework to identify CSFs in their BPM efforts is presented. Finally, main implications and further research possibilities are discussed.

2. The need of CSFs for BPM and IT use

Since several different terms (e.g. business process reengineering, business process change etc.) are often used to describe similar concepts, the papers using different "buzzwords" are summarized together as long as their definition matches the one used in this

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paper. The term BPM is used consistently to describe the previously defined concept.

While there has been much research on process modeling techniques and corresponding tools, there has been little empirical research into the success factors and the post hoc evaluation of its success (Bandara et al., 2005). Before investigating CSF even further, the "success" of BPM must be properly defined; this often lacked in earlier studies. Since BPM can be initiated for a variety of different reasons and the definition of success may differ by unit of analysis (e.g. project, organization) a very general definition of success is proposed: BPM is successful if it continuously meets predetermined goals, both within a single project scope and over a longer period of time.

Despite considerable investment in the area, most reviews report as many as 60–80% of BPM initiatives having been unsuccessful (Abdolvand, Albadvi, & Ferdowsi, 2008; Karim et al., 2007; Macintosh & Maclean, 1999). It is therefore not surprising that the service industry is not convinced that a business process approach could bring significant tangible and measurable benefits (Vergidis et al., 2008) and that the risky nature of BPM has motivated a detailed investigation of its critical success and failure factors (Abdolvand et al., 2008).

CSFs in general have been one of the earliest and most actively researched topics (Lee & Ahn, 2008). They can be defined as a limited number of areas, in which results, if they are satisfactory, will assure successful performance (Rockart, 1979). The literature mainly offers fairly similar and rather general CSFs for BPM. The following are almost always included in the list: top management support, project management, project champions, communication and inter-departmental cooperation, and end-user training (Ariyachandra & Frolick, 2008; Bandara et al., 2005; Karim et al., 2007). Top management is often considered to be the most important—it must initiate and support BPM efforts (Ranganathan & Dhaliwal, 2001). Obviously other familiar factors that are often cited in traditional information systems management like leadership, investment, communication and training apply to BPM as well (Lu, Huang, & Heng, 2006).

In addition, identified CSFs for BPM are often case-specific. Whether the CSFs of companies operating in one country or one industry can apply to those operating in other countries is rarely confirmed (Lu et al., 2006). Usually no theoretical explanation or another reason for the choice of a specific type of organization is given. In such way, neither generalized findings nor the potential differences among industries can be extracted. The systemic approach to organizational change and improvement seems to be missing (Naslund, 2008).

A closely related topic is the assurance of success of IT investments, since IT is usually both the enabler and facilitator of changes identified in BPM projects (Attaran, 2004; Groznik, Kovačič, & Trkman, 2008; Hung, 2006; Trkman, Indihar Štemberger, Jaklič, & Groznik, 2007). However, much debate has centered on the business value of IT and the effect of IT on business performance has often been contested (Brynjolfsson, 1993; Carr, 2003; Scheepers & Scheepers, 2008). Therefore the process-oriented perspective offers a better identification of various ways of IT use to provide business value (Karim et al., 2007). The value of IT should therefore be measured at the activity/process level, where the prime effects are expected to be realized (Melville, Kraemer, & Gurbaxani, 2004; Ray, Muhanna, & Barney, 2007). The proposed underlying theory in this paper attempts to provide further insights by investigating the relation between IT investment and BPM programs.

3. Theoretical background

Interestingly though, none of the studied papers tried to either develop a new theory or to base their thinking into the existing ones. This may derive from the inherent complexity of the field, since BPM challenges span from organizational, managerial, information systems and even social problems. However, the consequence is that the field of research is still in its infancy (Hung, 2006) and theoretical explanation and consequently analysis and categorization of both research and practitioners efforts is missing. In fact, misunderstanding of the BPM concept and misapplication of the term is one of the most often cited reasons for BPM failure (Attaran, 2004).

Therefore the proposition of this paper is that BPM and consequently its CSFs can be explained with the combination of three theories, namely contingency theory; dynamic capabilities ('DCs') theory and task–technology fit ('TTF'). The use of this combination follows the fact that it is difficult to examine research questions in management using a single theoretical framework. Increasingly, researchers are integrating multiple theoretical frameworks to explain complex strategic issues (Hoskisson, Hitt, Wan, & Yiu, 1999).

The CSFs in this paper are identified out of the premise that firstly the fit between the business environment and business processes is needed (as claimed by the contingency theory). Then proper organization and continuous improvement efforts are needed to assure sustained benefits from BPM (as stipulated by DCs theory). Also, the proper fit between the tasks in the business processes and information technology/systems must exist (as found by task–technology fit theory).

Therefore, BPM should translate a firm's strategy into specific needs and enable the execution of the strategy. Any isolated consideration of the above mentioned aspects will yield suboptimal results. The sole focus on processes in the context of other equally important factors (e.g. technology) being ignored (or vice versa) is one of the main causes of failure (Grant, 2002). The main reason for unsuccessfulness of BPM projects can thus lie in the failure to consider one or more of those linkages. Therefore, the findings/CSFs from each of the three proposed theories should not be studied in isolation but rather as an inter-connected set (as also outlined in the continuation of this paper).

3.1. Fit between the business environment and business processes

Contingency theory contends that there is no best way of organizing and that an organizational style that is effective in some situations may not be successful in others (Fiedler, 1964). Organizations must effectively align their strategy and structure with the competitive environment if they are to perform effectively (Rogers, Miller, & Judge, 1999). In other words: the optimal organization style is contingent upon various internal and external constraints and there is no universal or best way to manage. The design of an organization must 'fit' with the environment and effective organizations and not only have a proper 'fit' with the environment but also between its subsystems (Iivari, 1992).

The theory was chosen, since the research interest has begun to shift from the justification of the value of BPM and similar practices to the understanding of the contextual conditions, under which they are effective (Sousa & Voss, 2008). The fit between the characteristics of the adopting organization and the standardized business process designs embedded in the adopted system affects the likelihood of implementation success or failure (Morton & Hu, 2008).

This shows that best-practice approaches (see e.g. Reijers & Mansar, 2005 as an example of this type) towards BPM may help avoid some of the common pitfalls. However, it is very dangerous to assume that simply copying either the business processes or the approach towards their improvement from one successful case to another will bring the same benefits. Therefore each organization should carefully study their contingencies and appropriately align their BPM programs. Finally, the adoption of a well-understood

and replicable 'best' practice is not likely to constitute a dynamic capability (Winter, 2003), which is discussed in the next section.

3.2. Continuous improvement efforts to assure sustained benefits from BPM

The quest for the achievement of sustainable competitive advantage from BPM can best be described by the DCs' theory. This theory attempts to bridge the shortcoming of a resource-based view by adopting a process approach. DCs are a buffer between firm resources and the changing business environment and help a firm to adjust its resource mix and thereby maintain the sustainability of the firm's competitive advantage (Vaidyanathan & Devaraj, 2008).

An important aspect is the identification of difficult-to-imitate internal and external competencies most likely to support valuable products and services (Teece, 2007). Business processes are often considered to be such a competence (Hafeez, Zhang, & Malak, 2002; Möller, 2006) and the effectiveness of business processes has often been adopted as the dependent variable to measure performance (Ray, Barney, & Muhanna, 2004; Scheepers & Scheepers, 2008). Although DCs may not be sufficient to guarantee performance enhancement, they are a necessary prerequisite (Sher & Lee, 2004).

From a process perspective, BPM is often regarded as a best-practice management principle to help companies sustain competitive advantage (Hung, 2006). In this case DC can be defined as a set of specific and identifiable processes, such as product development, strategic decision-making, and alliances (Sher & Lee, 2004). The process view allows analysis, design, management, and optimization of the dynamic structure of a business (Strnadl, 2006).

Many problems are related to the evolution of business processes and their variability. This means that BPM is not a one-time project but should be a continuous effort within an organization with constant improvement in business processes. Consequently, a constant assurance of the fit between business processes and technology is also needed. Both the renovation of the processes and their continuous improvement require proper informatization.

3.3. The fit between business processes and technology

The role of technology in BPM can be best described with the use of the TTF theory. The TTF theory holds that IT is more likely to have a positive impact on individual performance and be used if the capabilities of IT match the tasks that the user must perform (Goodhue & Thompson, 1995). IT will be used if, and only if, the functions available to the user support (fit) his or her activities (Dishaw & Strong, 1999).

In order to explain the lack of success from IT investment, the TTF concepts are expanded to the organizational level; namely IT will only have a positive impact on organizational performance if it matches the business processes (Karim et al., 2007). Ensuring that organizational IT is in alignment with and provides support for organization's business strategy is critical to business success (Bleistein, Cox, Verner, & Phalp, 2006). In such way this theory is used to underline the often claimed: "IT does not matter, business processes do" (Smith & Fingar, 2003). The corporate IT function must be tightly coupled to enterprise processes and the organization's information needs (Strnadl, 2006).

Namely, it has been difficult to prove a positive gain from IT and more cases of failed implementations than of success have been reported (Dhillon, 2008). A well-known claim is that IT is becoming a commodity that cannot bring a sustainable competitive advantage (Carr, 2003). Despite significant investments in IT a considerable number of firms have not been able to derive full benefits due to their inability to effectively deploy IT in their business strategies (Karim et al., 2007).

The findings from TTF theory have to be closely connected with the concepts of DC theory outlined in the previous section. Past experience showed frequent failures of a software system due to poor management of processes (Barjis, 2008), while on the other hand BPM must begin to apply the capabilities of IT (Attaran, 2004). Frequent process changes then require a continuous adaptation of the supporting IS (Mutschler, Reichert, & Bumiller, 2008). A real fit between technology and business processes must be established and maintained, otherwise the users and managers may circumvent information systems (Bendoly & Cotteleer, 2008).

4. Case study

4.1. Justification of the case study

A case study has been used as a research method to underline the theoretical findings set out in the previous sections, i.e. to show how the combination of three underlying theories can be used to identify CSFs and to improve the likelihood of a successful outcome of BPM efforts. The purpose of the case study is not to prepare a definitive list of CSFs but to show the connection of three underlying theories in the identification of case-specific CSFs. Nevertheless, the proposed CSFs are thoroughly theoretically grounded to assure external validity/generalizability of the findings.

A case-study approach was chosen since it has a distinct advantage in situations when 'how' or 'why' questions are asked about a contemporary set of events over which the investigator has little or no control (Yin, 2003). Case studies typically combine data collection methods such as interviews, questionnaires and observations (Eisenhardt, 1989). Finally, case-study research is used to tackle areas that are still in the understanding, discovery and description stage and is a recommended way to research an emerging area (Bandara et al., 2005; Stuart, McCutcheon, Handfield, McLachlin, & Samson, 2002; Yin, 2003).

Banking industry was chosen as an example. Several reasons make this sector a particularly good example. It is a competitive environment, where BPM is constantly needed to improve the performance of business activities and to enable enterprise-wide monitoring and coordination. (Nikolaidou, Anagnostopoulos, & Tsalgatidou, 2001). Banks often disaggregate their value chain into independently operable functional units, which amplifies the importance of BPM (Homann, Rill, & Wimmer, 2004). Banks reap the benefits of effective BPM due to the impact of process performance on business performance (Davamanirajan, Kauffman, Kriebel, & Mukhopadhyayd, 2006; Rhee et al., in press).

Further, the acquisition and the treatment of information is a central activity in banking and the impact of process innovations in IT is likely to be larger than in other industries (Casolaro & Gobbi, 2007) and banks namely critically require IT to coordinate huge volumes of information (Beckett, 2004). IT investments are perceived as a necessity to pursue the rationalization and cost management due to intensified competition and crisis in the financial sector (De Bandt & Davis, 2000). While BPM is very important in banking where the division of work between the back and front offices is often strong and traditionally rooted (Tas & Sunder, 2004), the main points can also be generalized to other service or even manufacturing sectors.

4.2. Methodology

The case study was conducted between June 2007 and March 2008 in a middle-sized Slovenian bank (hereinafter referred to as Skybank; the name is fictional, all other data are real). The case was conducted following a well-established methodological approach for such projects (Indihar Stemberger & Jaklic, 2007;

Table 1
Classification of CSFs.

Theory	Main idea	Critical success factors at Skybank
Contingency theory	Fit between the business environment and business processes	Strategic alignment, level of it investment, performance measurement, level of employee's specialization
Dynamic capabilities	Continuous improvement to assure sustained benefits from bpm	Organizational changes, appointment of process owners, implementation of proposed changes (quick-win strategy), use of a continuous improvement system
Task–technology fit	Fit between it and business processes	Standardization of processes, informatization, automation, training and empowerment of employees

Kovačič & Bosilj-Vukšić, 2005). In order to assure reliability case-study protocol was prepared, including research question, methods and procedures for data collection and data analysis guidelines. All interviews, documentation, developed business process models, analysis results etc. were noted in a case-study database.

A project team composed of researchers and selected managers from Skybank was created. Then a workshop for middle management/key informants was conducted. The main concepts of BPM were presented and the initial list of business processes was prepared. The list was then refined within the project team.

The identified processes were distributed into two groups based on the definition of the business process (Melão & Pidd, 2000). The core processes are those that deliver value to the customers; the following were identified: account management, credit approval (individuals and organization), savings management, investment banking, and documentary operation. On the other hand the processes without a direct value for customers but with an important strategic value (called support processes in the case study) were: liquidity management, new services development, risk management and human resource management.

For each process semi-structured interviews with banks' employees were used for the preparation of detailed business process models and descriptions of individual tasks. IGrafx Process software was used for the preparation of business process models. Banks' documents, legislative/regulatory framework and reference models from previous similar projects were used to triangulate the findings. The models were corrected and refined based on comments of employees performing the tasks. The developed business models were validated by banks' employees (both the executer of tasks and the middle management).

All models were analyzed in the cooperation with bank employees, middle and senior management assisted by an external consultant. The suggestions of employees noted during the modeling phase were also taken account of in the analysis. The postulations of all three theories were considered. The identified CSFs were presented and discussed in a workshop, attended by senior and middle management, who further validated the proposed approach and the list of factors. The main CSFs are listed in Table 1 and thoroughly presented in the rest of the paper. Currently, Skybank makes further corrections to the models and some of the proposed improvements are under way.

4.3. CSFs based on contingency theory

4.3.1. Strategic alignment

In order to reach long-term success and improved performance, BPM must be linked to the organizational strategy. Understanding the strategic context of a BPM program is essential to maximize the value from process improvement (Hung, 2006) and close strategic linkage between competitive strategy and the operations function is crucial (Rhee & Mehra, 2006).

The most significant predictor of BPM success is namely proactive implementation of BPM as part of organization's business strategy coupled with focused BPM efforts on core-customer business processes (Rhee & Mehra, 2006). On the other hand the lack of connectivity between strategy and BPM projects was found to be one of the main reasons for failures (Bandara, Indulska, Chong, & Sadiq, 2007). Additionally, IT strategic alignment, broadly concerned with the correspondence and compatibility of IT and business strategy within an organization must also be reached (as discussed in the next section).

Since Skybank can be classified in the prospector category, it should use BPM to improve its competitive position (Rhee & Mehra, 2006). Several important issues in relation to the Skybank strategy arise. For example the main question of the new services development process is whether Skybank should actively encourage employee's innovativeness or should it rather focus on cost reductions. The main question of account management process is whether all activities of this process should be provided at each branch or whether smaller branches should become specialized based on local market specifics. A similar dilemma is whether investment banking process should focus on basic services or should it also offer "advanced" service (e.g. derivatives). BPM cannot provide a comprehensive answer to such questions; most of those issues should be tackled in the strategy formation phase. It is namely well established that the strategy of the firm is contingent on broader economic variables, industry structure, market, suppliers and customers variables and organizational characteristics (see e.g. Hoffer, 1975).

4.3.2. Level of IT investment

The importance of aligning IT strategy with business strategy to successfully face the competitive market place has been well established (Ariyachandra & Frolick, 2008). The finding there is no association between the level of IT spending and relative customer service performance (Ray et al., 2007) indicates that companies should not form a mistaken belief that IT by itself will bring about competitive advantage (Chae, Yen, & Sheu, 2005). In fact firms utilizing the most recent technological inputs have market returns significantly below the mean (Heeley & Jacobson, 2008).

A proper level of IT investment is contingent on company's strategy, other organizational resources, which interact with IT and on the external environment (Duh, Chow, & Chen, 2006; Melville et al., 2004). Additionally, IT itself does not bring about any competitive advantage; managers must reengineer their core processes from a customer perspective (Terziovski et al., 2003). This amplifies the fact that the environment of an organization is an important contingent variable in the determination of the level of IT investment.

However, the impact of different types of IT investment (hardware, software and services) on banks' performances is mixed (Beccalli, 2007). Similar surveys have found a low or non-existing influence of IT on the efficiency and performance of banks (Terziovski et al., 2003), while other studies (e.g. Casolaro & Gobbi, 2007; Shu & Strassmann, 2005) have found a significant influence of IT accumulation on banks' productivity and profitability. The main reason for these differences may lie in the difficulty to measure the impact of IT and the fact that IT can have both positive and negative consequences; we argue that this often depends on efficient connection between BPM and strategy.

IT investments are perceived as a necessity to pursue the rationalization and cost management due to intensified competition and crisis in the financial sector (De Bandt & Davis, 2000). Therefore, Skybank needs to determine both the level of IT investment and the projects that will be supported within the limited budget. The current financial crisis has even further increased the importance of sound decisions. In the words of the project leader from Skybank:"it may often be cheaper to perform certain activities in Excel than to informatize every possible exception". Process owners are deemed responsible to choose an optimal level and mix of IT investments—those that will contribute most to the improvement of business processes.

4.3.3. Performance measurement

Performance measurement is crucial for achieving sustainable improvement. The reluctance to invest in an organizational change often stems from the lack of consistent and effective ways to document and track the nature and extent of its impact (Lee & Ahn, 2008). It is important that it is measured at the activity/process level where the prime effects are expected. Applications tend to be process-specific and the profits may not be reflected in its aggregate performance (Leem, Yoon, & Park, 2004; Ray et al., 2007).

New processes must be measured for time, costs, productivity, quality, and capital, then compared to the processes they replaced (Guha & Kettinger, 1993). Usually though, the provision of uniform, easily understood measures can be a greater challenge than originally anticipated (Wareham, Bjoern-Andersen, & Neergaard, 1998). All key processes should be tracked with in-process and results measures taken at critical steps in the process to meet customer requirements, prevent errors, reduce variability, improve cycle time and increase productivity (Lee & Dale, 1998). However, as claimed by contingency theory the selection and relative importance of each measure is contingent on strategic priorities (Hoque, 2004).

New metrics for measurement efficiency/successfulness of each process at Skybank were proposed (e.g. the average/maximum time for credit approval) and quantified. Since the strategic focus of Skybank is on customer service/satisfaction the main focus of the measures is to assure quick and quality execution of customer services. The results of process improvement should form a feedback loop in order to ignite continuous improvements (as found by DCs theory). The results/achievement of those objectives can be used as a basis for employees' reward system, but initial employees' reluctance to such changes may be expected.

4.3.4. Level of employee's specialization

Another important contingent variable is the trade-off between the use of specialist and generalist employees for conducting the activities in each process. A specialist is able to perform exactly one task, while a generalist is able to perform more of them (Mulyar & van der Aalst, 2005). Specialists build up routine more quickly and may have a more profound knowledge than a generalist. As a result they work more quickly and delivers higher quality. On the other hand, the availability of generalists adds more flexibility to the process (Reijers & Mansar, 2005). The optimal ratio of specialists and generalists in a process has to be found (Mulyar & van der Aalst, 2005) and resources may be turned from specialists into generalists or the other way round (Reijers & Mansar, 2005).

A typical question at Skybank is whether specialized employees are needed to prepare contracts in the process of credit approval (the so-called middle office in addition to the front and back offices). A similar question is whether each branch should provide a complete service or only specific services based on local market specifics. Since the process owner for the process in question was not named at that time, the final question to this dilemma could not be provided. The answer is namely contingent on the strategy and desired performance outcomes.

4.4. CSFs based on dynamic capabilities

4.4.1. Organizational changes

BPM involves a thorough analysis of the organization and often a change in an organizational structure (Guha & Kettinger, 1993). Unfortunately, many banks and other organizations have a culture that may be inconsistent with the desire to organize around the customer, and a set of processes that are siloed along product lines instead of customer lines. Different departments within an organization often operate as silos and consequently horizontal end-to-end customer processes are not well understood (Peppard, 2000).

The potential problems of process organization include duplication of functional expertise and increased operational complexity which can result in an escalation of costs, the emergence of horizontal silos, inconsistency in the execution of functional decisions between processes, and general erosion of the efficiency (Silvestro & Westley, 2002). Such organization means that most professionals have multiple bosses, which is often problematic and many organizations have failed in an attempt to establish process-oriented organization; however, several successful examples were also reported (Ross, 1999).

At Skybank a creation of business process office was suggested. It should offer a methodological support for continuous improvement of business processes and coordinate those activities. A proper definition of tasks, competence and required knowledge of its employees is needed. Eventually the business process office should grow into a department with responsibilities for business processes, IT and organization, since those three areas are closely connected. The creation of such organizational unit requires a new division of responsibilities and clarification of the roles of employees at Skybank. Most employees participate in multiple business processes which could cause confusion about lines of reporting.

4.4.2. Appointment of process owners

The most visible difference between a process enterprise and a traditional organization is the existence of process owners (Hammer & Stanton, 1999). All processes should have a clearly defined owner who reviews process performance and is responsible for its continuous improvement (Lee & Dale, 1998). Well-progressed organizations seem to name a higher proportion of process owners who are more often at both a senior executive and supervisory/frontline level (Pritchard & Armistead, 1999). To succeed, a process owner must be a permanent role with real responsibility for and authority over designing the process, measuring its performance, and training the frontline workers who perform it (Hammer & Stanton, 1999).

In addition, the continuous review and update of performance measurement system should also be constituted as a process with a defined process owner, who is in charge of development of the required skills (Kuwaiti, 2004). In such way process owners are in charge of assuring the dynamic improvement of the capabilities of business processes.

Appointment of process owners can also increase the inclusion and commitment of middle management to BPM. The reluctance of middle management is namely one of the main reasons for unsuccessfulness of such projects (Terziovski et al., 2003). The buy-in and consequently active support from middle management is crucial for their support and involvement in the continuous improvement efforts. They should have enough freedom to test/select new strategic initiatives through the autonomous process before converting them to the discipline of the induced process (Burgelman & Grove, 2007).

The main challenge of appointing process owners at Skybank was both the identification of suitable persons and the overcoming of the reluctance of employees and middle management. Several of them proposed appointing one person for each department involved in the process; this is exactly the opposite of the goal; namely it would even increase the siloed nature of an organization.

4.4.3. Implementation of proposed changes

The success in implementing organizational changes is dependent on the quality of the implementation process. It requires a joint effort between a manager and a ≫change agent≪ (in our case both the middle management and the employees conducting tasks in the process) (Ives & Olson, 1984). While the uncertainty in the pre-implementation stage focuses on the strategic concept of the change, it later mainly relates to the appropriate procedures to implement changes. Middle managers' uncertainty management is important in assisting their employees in the change transition (Herzig & Jimmieson, 2006). The usual focus is therefore on a small number of key processes, since simultaneous renovation projects for all identified processes are bound to fail (Davenport & Stoddard, 1994). Nevertheless, the nature and causes of organizational changes are not yet understood and further research to help determine how to implement and manage a major change is needed (Almaraz, 1994).

Obviously, both the initial quick-wins and long-term solution should be sought at Skybank. Since its previous attempts to introduce BPM have failed, the main suggestion was that at least a portion of proposed changes is implemented as quickly as possible to show first results of the program. In this way it would be easier to attain a continuous support from top, middle management and other employees. Another proposal was the preparation of an action plan that would specify improvement priorities (based on the frequency of each process, its contribution to Skybank efficiency and also the willingness of employees to participate) and approximate time schedule.

4.4.4. Use of a continuous improvement system

The main proposition of DC theory is that continuous improvements are necessary and that both the organizational culture and formal structures should encourage it. Change management is crucial both in BPM programs and to assure the payoff of IT investment (Guha, Grover, Kettinger, & Teng, 1997) but few companies succeed in achieving continuous improvement (Ahmed, Zairi, & Loh, 1999). A proper system therefore needs to be designed with the integration of different quality and process-oriented improvement approaches (Davenport & Stoddard, 1994). The top management must be the authoritative key supporters while middle management/process owners (see also Section 4.4.2) should be the key driving forces to popularize the concept (Savolainen, 1999).

At Skybank both formal and informal encouragement for employees' innovativeness was proposed (various praise-based and financial benefits). The suggestion process should be partly formalized and each employee should receive a response to his or her suggestion from the process owner. In addition, all employees should have access to the current versions of business process models. The models should be constantly reviewed in order to assure that they remain up-to-date despite constant improvements.

4.5. CSFs based on task–technology fit theory

4.5.1. Standardization of processes

At a minimum, in order for something to qualify as a capability, it must work in a reliable manner (Helfat & Peteraf, 2003). Therefore process standardization is desirable and, particularly in service industries, offers technical interchangeability, compliance with regulations, and improved customer confidence (Wüllenweber, Beimborn, Weitzel, & König, 2008). Only the standardized processes bring standardized tasks that can be supported by a proper technological solution (as stipulated by TTF). BPM systems can theoretically lead to an increase in standardization, since the processes are executed in a way that is consistent with specifications and rules (Küng & Hagen, 2007). However, many processes are more art than science. Imposing rigid rules on them squashes innovation, reduces accountability, and harms performance. Companies should avoid the over-standardization of such artistic processes (Benner & Tushman, 2003; Hall & Johnson, 2009).

At Skybank the same process is often conducted differently in different branch offices. A typical example is distribution of credit cards to clients. While some branch offices send them by post, others inform the clients by telephone that they can pick the card in the branch office. Others simply archive the cards and wait for the client to arrive. The developed models can be used as a tool to ease standardization; all employees should have access to the models that concern their activities, along with preceding and successive activities in the process. The main challenge of standardization is the preservation of needed flexibility, which is currently one of the competitive advantages of Skybank.

4.5.2. Informatization

The finding there is no association between the level of IT spending and relative customer service performance (Ray et al., 2007) indicates that companies should not form a mistaken belief that IT by itself will bring about competitive advantage (Chae et al., 2005). As deducted from the TTF theory; both the technology and the process need to be renovated in order to reap the desired benefits (Trkman et al., 2007). The same applies to software adoption - a certain level of process renovation should be involved, as the packaged software may be incompatible with the current needs and business processes of the organization (Ngai, Law, & Wat, 2008). However, a careful cost-benefit analysis has to be conducted to estimate the economic viability of informatization, to obtain top management and financial support (Hur, Mabert, & Hartley, 2007) and to assure the benefits are indeed attained (Love, Irani, Standing, Lin, & Burn, 2005). Further savings are possible in the communications with customers; e.g. IT can eliminate the costs of printing and sending of each bill, which amounts to USD 2–5 (Dunlap, 2005).

Several Skybank BPM problems arise from inadequate support from IT. A typical example is a credit card approval sub-process. The cashier has to check the credit map (stored on paper) since the whole credit rating of the client is not evident in the information system. Several usual problems were identified in the scope of the case study, such as client-bank communication (sending account statements by post) and insufficient support for certain tasks which are still conducted manually. In addition an implementation of human resource management system was suggested. It would improve the overview of available knowledge and easier career planning.

4.5.3. Automation

Closely connected to informatization is process automation, which refers to the use of IT to assist or replace employees in the performance of a business process (Harmon, 2003). Many routine tasks can be automated while others may still need human involvements. In general, tasks can be fully/semi-automated or manual (Shi, Lee, & Kuruku, 2008). Business process modeling and their automation improve the performance of business activities and enables enterprise-wide monitoring and coordination (Nikolaidou et al., 2001). Automated can be executed faster, with less cost, and with a better result. An obvious disadvantage is that the development of such system can be very costly and sometimes the required automation is not even possible due to inherent limitations of technology (Erl, 2005; Reijers & Mansar, 2005).

At Skybank, the business process modeling and analysis revealed several un-automated tasks, where business logic does not require human intervention. Those procedures could be coded as independent atomic software components and fully automated (Shi et al., 2008). The introduction of a workflow management system (WFMS) (Mentzas, Halaris, & Kavadias, 2001; van der Aalst, Weske, & Grünbauer, 2005) to support the enactment of improved processes was also suggested. Several tasks could be fully automated, while semi-automated tasks can be supported with WFMS, which can warn an employee of his or her pending tasks (e.g. approve the document). Earlier research found that WFMS can bring considerable business process improvement in terms of lead time, service time, wait time, and resource utilization (Reijers & van der Aalst, 2005)

Another suggestion was the replacement of specially prepared reports (e.g. in pdf or xls format) with the possibility of accessing information "on the fly". Another finding was that succeeding business processes at Skybank (e.g. the opening of bank account and process of granting a credit) were not seamlessly integrated, which lead to the entry of the same data twice. Automation (coupled with Section 4.5.2) would free Skybank's employees from routine work and enable them to improve customers' service and experience. An earlier research showed that up to 40% of the total employee time is spent on answering simple customers' queries (Beckett, 2004).

4.5.4. Training and empowerment of employees

The final identified CSF was the need to invest more funds and time into the training and consequently empowerment of employees. Technology namely changes services in commodities; if the bank wants to be distinctive it has to invest into people (Durkin & Howcroft, 2003). Previous research confirmed a positive correlation between banks' investment into training and their business performance (Beccalli, 2007). In addition, employees' training is increasingly considered to be a prerequisite for a success of BPM (Pritchard & Armistead, 1999). The quality of employee's interaction with the clients is namely a main determinant of clients' loyalty to the bank (Ndubisi, Wah, & Ndubisi, 2007).

Further, in traditional business processes, substantial time may be spent on authorizing work that has been done by others. When workers are empowered to take decisions independently, it may result in smoother operations with lower throughput times. The reduction of middle management from the business process also reduces the labor cost spent on the processing of orders (Reijers & Mansar, 2005; Trkman & McCormack, in press).

Skybank has an appropriate level of knowledge about its business processes, yet it is not properly disseminated among employees. Additional training about services, market situation and business process execution is needed. Several previous training programs did not bring sufficient results due to the lack of employees' motivation. A training sub-process (within the human resource management process) has to be explicitly defined and monitored.

Employees should then be empowered with the simplification of the complicated approval system. Only one approval level should be used except for very important transactions, e.g. large loans. A typical suggestion was an increase in the threshold for credit approval by middle management (without the need of approval from top management). Obviously, this process should be carefully monitored in order to mitigate possible risks due to mistakes or fraud by employees.

5. Discussion and conclusion

Several interesting findings and considerations for the information systems field arise from the proposed theoretical framework and the case study. First, the paper has proposed a unique combination of three theories to respond to the question of the nature of competitive advantage and the role of BPM in it. Both the literature review and the presented case-study support the premise that a similar combination is needed to explain the complex interactions of various aspects, such as business processes, IT and continuous adaptations to a variety of contingent variables.

The paper offered new considerations regarding the question of whether consistency or change is better. The company should embrace change to enhance its competitive advantage; however, it should carefully align its business processes (supported with the proper implementation of IT) with its environment and assure the flexibility and continuous adaptations of its core processes. It should therefore establish which business processes are key processes and contribute to the competitive advantage. It should also specify which business processes should be standardized and where employee may have certain flexibility.

Closely connected with that is the need for organizational changes in order to assure the "infrastructure" needed to support such changes. Process organization seems a promising way to overcome functional silos that can create barriers to effective information flow, constrain the value that can be generated by the enterprise and can also lead to isolated systems development (Gibb, Buchanan, & Shah, 2006). In the silo organization "problems have to go to the top to get sorted" (Coughlan, Lycett, & Macredie, 2005, p. 310). However, several problems were also identified such as the duplication of authority. Therefore, in order for such an organizational form to succeed a difficult balance between the studied CSFs should be established and maintained.

The paper also presented a partial answer to the eternal question of the return/evaluation of IT investments which has been a challenge in the last four decades (Renkema & Berghout, 1997). Only IT applied in such a way to both match the current state of business processes (as stipulated by TTF theory) and to enable DCs can fully contribute to a sustainable strategic advantage. The search for an increase of flexibility of ISs to match the changes in turbulent environments is thus one of the main challenges of research in this area.

Several limitations of BPM as a concept were also outlined. Companies should not mistakenly believe that the adoption of BPM alone will bring any contribution to either their operational or strategic goals. Namely, even the best BPM program (following the recommendations in this and other similar papers) cannot offer answers to the question of the proper focus of an organization. BPM can help in the execution of a strategic program by enabling a better match between the organizational strategy (that is a contingent variable in our proposed framework) and a company's business processes.

Therefore, the paper proposed a much needed underlying theoretical framework for BPM and used it for identifying case-specific CSFs. This is crucial for BPM to move out of the hype phase and to enable the scientific exploration of the role of BPM in attaining a competitive advantage. Consequently, the CSFs of such initiatives can be explored in a much more systematic manner. The study showed that a success of BPM originates in identifying the contingent variables that largely influence both the strategy of the company and the most critical areas for success. Then it should enable continuous improvement (rather than serving as a one-time project), while assuring the fit between business processes and the information systems used. Both are namely crucial for success—BPM should also trigger the necessary organizational changes needed for the increased likelihood of continuous success. Most of such improvements are supported by IT. IT, however, should not be considered a panacea but rather as a tool to support improved processes.

As shown by the case study, the implications of all three theories and consequently their identified CSFs are closely inter-related. For

example, organizational changes (appointment of process owners) and performance measurement are a prerequisite for assuring a proper level and mix of IT investments. Hence the identified CSFs should not be taken in successive order (as reported in the paper) but as a set of inter-related pointers that should be considered simultaneously.

The proposed theoretical framework is intentionally quite general. Due to the several contingent variables involved any attempt to provide a definitive list of generic CSFs is bound to fail. The proposed theoretical guidelines can be applied to different organizations from various industries in order to identify case-specific CSFs. The case study confirmed the appropriateness of the proposed framework for identifying the CSFs in a case of a middle-sized Slovenian bank. At Skybank further efforts are currently being made to assure the long-time success of BPM. CSFs can namely change over time due to changes in the environment (the clearest example is obviously the current financial crisis; consequently, the priority may shift to a reduction of costs).

The paper has several practical applications. Firstly, it points to several open questions in the preparation and conduction of BPM. Without the theoretical foundation companies and their managers are often left with no guidance and left to either trust the outside consultants or not. The paper highlighted several issues which should be considered by the managers, such as the need of top manager involvement, connection between BPM and organizations' strategy and careful connection of IT and business strategy. A necessary prerequisite for continuous improvement is the assurance of up-to-datedness of business process models.

The paper has several limitations. The underlying theoretical framework was applied to a single case study. While it shows that the theoretical framework is sufficient for identification of CSFs, specific CSFs may vary from case to case and similar exercises should be repeated. Further, the "success" of BPM was defined rather broadly; further research into the criteria for measuring success is needed. This is particularly challenging, since it is obvious that success is not a dichotomous variable, but may vary both in magnitude and over time. A statistical analysis of the influence of CSFs, identified based on each of the theories, on BPM success would also be beneficial.

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