An application of the BPCM model in an e-business driven transformation agenda – Assessing resource implications for an European automotive Multinational Corporation (MNC)

Abstract

Purpose – The purpose of this paper is to evaluate e-business driven organisational transformation and its resource implications for an European automotive Multinational Corporation (MNC). The application of Business Process Change Model (BPCM) was used to investigate throughout the five developmental stages of transformation and the associated resource implications in business-to-business and Extranet applications.

Design/methodology/approach – Based on a case study design, business-to-business and Extranet applications were selected. A triangulated research approach was used to capture the resource implications upon transformation incorporating a participant observation and interviews.

Findings – The findings indicate that the resource implications change in a transformation process based on individual e-business applications as well as the developmental stages of BPCM. Throughout the transformation only resource investment remained present in both applications. The change in resource implications and iterations between the BPCM stages in the case of "process redefinition", "continuous improvement" underline why organizational transformation in similar settings could indicate variances in organisations' transformation results.

Research limitations/implications – The paper offers an insight into the resource implications in an e-business enabled transformation and underpins the importance of using developmental stages to bridge the divide between planning and application. The resource impact has been evaluated within the automotive sector using BPCM, future empirical research is needed to test the BPCM in other industrial e-business enabled transformation settings.

Practical implications – Organisations should take a developmental approach to transformation that assesses resources implications. This also raises the need for using models such as the BPCM to fine-tune the transformation effort, through the inclusion of a more interactive iteration between BPCM stages.

Originality/value – In this paper, we present an analysis of an e-business related, organisational transformation project, including an assessment of its ultimate effectiveness. This is the first case study, which focuses on resource implications solely and utilizes the BPCM framework to understand the evolution of transformation effort and its resource implications.

Keywords - Organisational transformation, Business Process Change Model (BPCM), Resource Implications, e-business.

Paper type - Research paper

1. Introduction

Information technology has the capacity to transform an organisation's process to an efficient one (Scott-Morton, 1991; Wilson, 1994; Blumenthal, 2009; Bose and Luo, 2011). For example, in Holweg and Pil's study in 2001 on BMW reported a decrease of order delivery times on average by 20 days, through 55 million $ (USD) investment for its European-wide online procurement system. The benefits of e-business applications for organisations in literature have ranged from cost savings, to an increase in performance and collaboration, which encouraged and justified further funding of e-business applications (Bagchi and Skjott-Larsen, 2005, Ireland, 1999, Nyaga et al., 2010; Langer, 2010; Wiengarten et al. 2010). Hence, organisational transformation can be a valuable asset for any organisation (Gregor et al. 2007) with a profound and radical change, one that encourages an organisation towards a new direction (Bak, 2012). This in return increasingly pressured organisations to adapt new technologies (Abraham and Junglas, 2011; Bohmer, 2010; Blumenthal, 2009; Cady and Hardalupas, 1999; Moreton, 1995). However, despite the comparable nature of e-business applications, the resultant transformation of organisations has shown a variety across and within organisations (Abraham and Jungs, 2011; Doherty and King, 2001; Orlikowski, 2000; Igira and Aanestad, 2009). The variance in e-business

impact in organisational transformation have been linked to the organisation's resources (Walton and Gupta, 1999). Besson and Rowe (2012) note that the underlying reasons would require a multidisciplinary analysis. In transformation assessment, the multidisciplinary analysis and developmental perspective has been particularly problematic (Igira and Aanestad, 2009; Avgerou and McGrath, 2007, Abraham and Jungs, 2011). This may relate to the fact that transformation is hard to observe in productivity statistics (Gregor et al. 2006) due to the fact of a time lag between investment taking place and the associated changes observed (Brynjolfsson, 1993). Another reason may be also the relative importance paid to transformation success or failure; which makes the transformation stages difficult to assess and hence its implications on resources. Similarly, Star and Ruhleder (1996:112) remarked, "it is unacceptable to have universal niches, [as] one person's standards is in fact another's chaos", and it may be that "organisational transformation has been too immense to realize" (Besson and Rowe, 2012:104), presenting a challenge for organisations to assess their transformation (Button and Sharrock, 1994; Merali et al. 2012).

Transformation corresponds to a break, a shift and a change in an organisation's practice, which requires the organisation to move from its old ways of doing things (Noble, 1995; Aldrich, 2001). In the organisational transformation literature the discussion evolved, from how organisations transform, to what extent transformation takes place, and whether it is beneficial at all (Abraham and Jungs, 2011; Igira and Aanestad, 2009). Models have been developed to assess organisational transformation. In 1996 Vollmann's work assessed the transformation imperative including leading multinational companies, as well as the International Institute of Management Development (IMD Switzerland). The research investigated not solely the resource implications, but eight dimensions of transformation, ranging from organisation's strategic intent, strategic response, learning, competencies, capabilities, resources to outputs. In 2001, MacKenzie assessed transformation with process–based relationship modelling (PBRM), and social network analysis (SNA) techniques where informal relationships revealed a connection which "generated the same transformed bundle of resources, that is, they hold a common output" (Grandori and Soda, 2006:154). Although all former research agendas have perceived transformation as situational, Abraham and Jungs (2011) highlighted the evolutionary nature of

transformation, and using the Business Process Change Model (BPCM) could provide "one of the most comprehensive frames steeply couched in the organisational transformation literature" (Abraham and Jungs, 2011:177). The developmental stages of transformation are best suited to observe the changes in the resource impact. The BPCM framework presents five stages of transformation: (1) linking with strategy, (2) planning the change, (3) analyzing the problems within the process, (4) regenerating the processes and (5) continuous improvement (Kettinger et al, 1994, Kettinger and Teng 2000; Abraham and Jungs 2011).

The resource implications analysis of the transformation is a significant and integral component of the analysis. This analysis allows an organisation to address its challenges and problems. The literature on transformation and its analysis is limited to analysis of; developmental stages and resource implications, with most of the case studies ratherfocusing on success and failure case studies (Igira and Aanestad, 2009; Avgerou and McGrath, 2007, Abraham and Jungs, 2011). This may relate to the fact that transformation is hard to observe in productivity statistics (Gregor et al. 2006) due to the fact of a time lag between investment taking place and the associated changes observed (Brynjolfsson, 1993). Hallikainen et al. (2009) views resource analysis as a tool that possesses the capability of closing and identifying the strategic gap between resources available and required. The BPCM stages introduces a developmental and dynamic view into organisational transformation and its evaluation. This is beneficial where researchers do not yet sufficiently understand the interaction between BPCM stages and what each stage would mean for resource implications. Previous research efforts in implementing BPCM have focused on the process of either an organisation or a project. The purpose of the study, in our case, BPCM is implicitly to assess the resource implications within two e-business applications in its developmental stages. Hence, as the developmental view is central to this paper, the next section we focus on the impact of transformation upon resources in organisations and identify the five BPCM stages and its associated impact on resources. In section three we introduce the research setting and purpose within the wider strategic management frame. In part four we explore a transformation agenda with two applications (B2B and Extranet) and their resource implications, and in section five we articulate the nature and resource implications

based on the transformation taking place, to highlight whether there are any differences across the e-business applications.

2. Linking BCPM stages to resource implications

Resources in itself are an organization's total assets, capabilities, processes and attribute information and knowledge (Barney, 1991). Resource investments are integral to the transformation and means investment for a device, a system, skilled personnel, or a convention between distinct units and operations (Bak, 2012). Resources can be in many cases, tangible as well as intangible (Mukherjee et al. 2007). The intangible resources may depend on subjective resources of know-how, networks, organizational culture, and the reputation of product and company which can also range from the intellectual property rights of patents, trademarks, copyright and registered design through contracts (Hall, 1992). Hence, one of the challenges in the transformation is facing is the analysis of resource implications. In many cases the boundaries between organization's departments, strategic business units are not clearly defined by conflicting systems which inhibits and may have the potential to inhibit the development and implementation of integrated systems (Igira and Aanestad, 2009; Star and Ruhleder, 1996). These difficulties in transformation context have been also addressed in calls for research (Avgerou and McGrath, 2007, Abraham and Jungs, 2011).The resource implications upon transformation can be observed in several stages (Igira and Aanestad, 2009). Hence, the BPCM model allows the organisation to trace and plan transformation (Abraham and Jungs, 2011), which would be otherwise problematic to assess due to the dynamic nature of transformation (Avgerou and McGrath, 2007).

The first stage in BPCM starts with linking strategy, beginning with the organisation's transformation agenda. Transformation has been regarded as a resource intensive process (Bak, 2012), wherein organisations evaluate its current position and "[to] choose to compete, [in] where it sees itself going over the long run in the light of industry contexts" (Vollmann, 1996:95). This entails a vision of how the new system will look, the processes, and an assessment of resources necessary to complete the transformation process. To do this, the first phase of BPCM involves linking strategy to the change agenda, whereby it identifies an organisation's resource strategy.

Pfeffer and Salancik (1978) found that strategy, particularly as drawn from its stakeholders, has the power to influence resources, as they are critical in organisations. The participants of transformation in the IS literature is divided in two fronts, the so called thought partners, which can be the initiators, senior management, and shareholders and the front line users who actually are affected by the transformation directly (Abraham and Junglas, 2011). Linking with strategy is imperative for an organisation as the slightest disruption and a change in strategic direction can cause a damaging consequence (Abraham and Junglas, 2011). Lin and Hsieh (2000) similarly noted that organisationalcontext and strategy can have a different impact on the system. Hence, the context specific view becomes important when linking strategy to the transformation agenda.

The second stage of BPCM concerns planning the change process to fulfil the resource strategy within the organisation. The close relationship between resources and resource requirement analysis is termed as resource planning (Mackay et al. 2000). The second stage of the BPCM, resource planning, includes the identification and assessment of resources, meaning identification of resources that are available or missing, and/or resources which need to be transformed. The resource planning in organisations' can be relevant to information, technology and people (Vollmann 1996). It can entail a revision, an update and/or replacement of an existing resource. In such instances, replacement of existing resources can be viewed as compulsory to enable for the technological shift, requiring coordination across heterogeneous business units and databases.

However well planned and carried out, there may be problems during the transformation as it is a dynamic and complex resource planning process. The actions necessary for transformation including how the people work, can prove to be difficult and in some cases also become a threat for employees. In some fronts it will necessitate a unique process depending on an organisation's transformation nature and scope (McGrath, 2007, Abraham and Jungs, 2011). To overcome the context specific challenges, transformation of resources may necessitate incentives; Phlipp and McKweon, (2004) referred to this as so called sweeteners for employees in terms of better pay and rewards, beneficial conditions, and developmental opportunities including enhanced career prospects.

Hence it is important to see how process regeneration entails the facilitation for new resources (Andreu and Ciborra, 1996). In order to create a smooth shift., flexibility is needed to tailor according to an organisation's needs whilst implementing a new system (Hanseth et al. 1996). Whereas the three phases were important in understanding the resource orientation for an organisation's transformation process and its participants, this stage focused on regeneration of the process to create an integrated transformation process. The regeneration process for resources helps to determine where the resource investment needs to be made. After the identification of resource implications, it is hoped that the e-business driven transformation will be running smoothly. Egyedi (2001) argues that change needs to address local adaptation and implementation issues, as it may increase its ability of integration across heterogeneous platforms, environments and organisations.

De Haes and Van Grambergen (2004) noted that most processes are monitored against some (baseline) metrics; in order to formalize the replaced processes and practices and a continuous improvement process needs to be, it may be necessary for employees to get training and to update their skills so they can follow the process standards and are able to adapt and apply them In the regeneration stage this flexibility and adaptability are needed as it is difficult to assess the unintended consequences of the transformation process. The results of the former stage can be measured, however in the final BPCM stage linking continuous improvement to resources is difficult to achieve. Any variation from the new regenerated process or its management needs to be acted upon by senior management. In the final stage the transformation and the impact upon resources will be finalized.

Despite all the BPCM stages, we find that the literature seldom focuses on the standalone impact upon resources in participating in such transformation in the information systems discipline. A synthesis of the resource impact based on individual BPCM stages as identified in the existing literature (Table 1) can be organized around the five stages based on resource implications.

Stage	Change Scope	Resource implications

Stage 1	Linking strategy	(i) Assessment of resources (ii) Stakeholder impact (iii) Information technology impact (iv) Resource Intensiveness
Stage 2	Planning the change	(i) Planning for resource adjustment and/or replacement (ii) Change of technology (iii) Planning for a reward system for employees (iv) Planning the complexity of the change agenda (scope and nature) (v) Resource Intensiveness
Stage 3	Analyzing the problems	(i) Closing the strategic gap between skills and resources (ii) Interdepartmental coordination and integration (iii) Organisational Boundaries
Stage 4	Regenerating the processes	(i) Experimentation of new resources (ii) Separation of thought partners and front line users (iii) Flexibility (iv) Adaptability
Stage 5	Continuous improvement	(i) Training (ii) Standardization of process and procedures (iii) Assessment of new process and technology (iv) Improvement of processes and skills

Table 1: A summary of BPCM and identification of resource implications:

3. Research design and method

This study utilized a case study which is an empirical inquiry that investigates a real-life context where boundaries between phenomenon and context are not clearly evident and multiple sources of evidence are needed (Yin, 2009). Gaining insight into the phenomena is especially important for researchers as it may be context specific. In this case focusing on a specific industry assisted the control of extraneous industry factors that could confound the analysis and its findings (Zhu, 2004). In the area of e-business transformation, this study involved participant observations that allowed the researcher to become familiar with the phenomenon and its contextual setting, including the events over time (Orlikowski, 1991; Walsham, 1993, 1995; Klein and Myers, 1999). In this case study the strength of the case study was gained through the insights of two e-business applications simultaneously applied in the context of one automotive MNC as well as its verification across stakeholders (consultants, front line employees, software developer), which allowed comparison across the case, in return increasing the validity of the research. Hence, the choice of the case was dependent upon the validation, triangulation and resources available. This is in line with Yin`s (2009) discussion on analytical generalization rather than “sample of cases” or the “small sample size of cases”. Similarly Stake (1995) confirms that the case selected

for the study should not rely solely on its representativeness for the given population, but it should rather rely on maximizing learning from it.

3.1. Data Collection and Analysis:

Data was collected from multiple sources: participant observation, interviews with key actors and collections of company documents (meeting notes, presentations, training notes, internal memos and institutional documents, as well as external documents such as feasibility reports internal and external). In particular, the data collection focused on gathering data about actual facts and events happening in and around the transformation impact on B2B and Extranet in a multinational automotive corporation. Data was gathered from three sources: primary, secondary and tertiary in stages based on BPCM:

Case company	**Linkage to BPCM framework phase**	**Data Sources**
(1) Establishing market research on automotive companies and technologies utilised and evaluation of necessary resources	Link with strategy • Management responsiveness to industry changes • Evaluation of possibilities for further IS resource investments	Primary data • Semi-structured Interviews with department heads • Participant observation Secondary data • Company in-house data Tertiary data • Feasibility study conducted by Planning department
(2) Assigning the steering group to implement the decision	Plan the change • Existing resources have been compared with the resources needed in terms of people, technology and infrastructure. • Widening the strategy and embedding its participants in the plan • Division of project timelines • Project planning	Primary data • Semi-structured Interviews with steering group members • Participant observation Secondary data • In-house consultants report Tertiary data • Company in-house data
(3) Steering group – process design, development and implementation	Definition of problem areas in terms of current resources • Devising a common strategy with the software developer • Designation of IT infrastructure and its impact area • Revisiting learning/unlearning strategy	Primary data • Semi-structured Interviews with employees • In-house training session • Participant observation
(4) Rolling-out the systems	Process re-generation • Roll-on of the applications	Primary data • Semi-structured Interviews with

	alongside existing systems • Analyse problems in and restructure	employees • Participant observation
(5)Post-implementation	Continuous improvement • Definition of responsibilities and new titles for existing employees to reflect areas of liability for updates and problem recognition • Establishing regular meetings for the first year to measure performance and assess problems	Primary data • Semi-structured Interviews with employees • Semi-structured Interviews with steering group members • Participant observation

Table 2 : Data collection methods

The data was transcribed, coded and analyzed with N7 software. The participant observation of the research lasted for a four-and-a-half month period. Over the period the researcher was able to gain access to the transformation agenda, involved in meetings and discussions, and had access to reports to the management about the transformation process activities. In constructing semi-structured interview questions, the issue of resources in the transformation process was the main focal point. As transformation concerns mainly employees, project team to senior management (McGrath, 2007, Abraham and Jungs, 2011, Vollmann, 1996), the interviews involved employees, project team members and management in the organisation. To ensure a better representation of all the stakeholders in the interviews, the interviewees were selected purposefully on the basis of their involvement in the transformation their job type, managerial position, and length of service. The interviewees were located mainly in the organisation. After approaching around 15 prospective participants, 8 of them agreed to be interviewed, which showed a balance of employees, software providers, project team members and managers among the participants, who had diverse backgrounds. The interviews took place in the organisation. Depending on the interviewees' preference, the location and rooming were selected and the interviews ran around 60-90 minutes on average. Interviews were recorded with the consent of the interviewees. These questions were often followed up with more in-depth inquiries about the causes and reasons behind the issues raised by the interviewees. The qualitative approach and the follow-up questions enabled us to better understand the context in which issues were experienced.

4. Results

The automotive industry is an early adapter in the field of e-business technologies. This may be a result of the fact that the automotive industry is one of the most important manufacturing industries in Europe with a 31 per cent share of global production (Wiengarten et al. 2010), hence integration through e-business technologies allow streamlined operations. The e-business impact of transformation in this case contributed to the e-business enabled transformation literature in understanding how transformation impacts an organisations' resources and whether the individual applications have a different impact on the transformation of resources based on (i) linking with strategy, (ii) planning the change, (iii) analysing the problem, (iv) process regeneration and finally (v) continuous improvement.

The following results are built upon BPCM's five stages. The developmental view of this model allowed to assess the impact on resources within five distinctive development stages. The transformation in this case was based on two e-business applications, business-to-business (B2B) and Extranet in a European multinational car manufacturer.

4.1. Linking with strategy

The decision to implement the B2B was driven by senior management; this is similar to the findings of Pfeffer and Salancik (1978), who observed a relationship between the stakeholder impact on the transformation. In this case study context, the senior management decision was built on the premise that integration was becoming a norm in the automotive industry. Therefore, the implementation decision was a proactive one, meaning before the organisation had to move it was done proactively. The next step was to include their partners such as suppliers and distributors, without whose support it would be difficult to transform, as the system would require integration across the organisational boundaries..

During the case study analysis the linkage with the strategy indicated a difference between individual e-business applications. Similarly, Abraham and Junglas (2011) highlighted the difference in individual applications and strategy. Despite the fact that the case organisation had a software department, internal consultants, online support, and a division solely dedicated to the B2B transformation effort, it was still expected

to be more resource intensive when compared to the Extranet. In this case an interviewee noted,

> the senior management introduced the idea of B2B whereas the Extranet was supported by the frontline employees. For some of the employees the B2B was seen as an unnecessary burden at this stage, which would potentially cost the company much and won't result in any additional profit.

However, senior management support was needed in order to identify and assess the necessary resources for both applications, which would enable the start-up of the transformation process. Lin and Hsieh (2000) observed that context specific differences in applications might result in a different impact based on the individual organisation. The context specificity view becomes important when linking strategy to the transformation agenda. In the case of Extranet the nature of involvement differed, whereby the organisations partners and external members, such as suppliers, lacked necessary resources. The case study iterated that Extranet required external resources that resources of partners might be ch and dependent on size and technological sophistication. Boyer and Olson (2002) findings indicated that a low level of adoption of e-business technologies among SMEs, Similarly Quayle's (2003) funding in the UK indicated that e-business technologies was seen as one of the least important issues in SMEs.

4.2. Planning the change

The findings of the case in B2B and Extranet indicated that individual e-business applications have different implications. In our case the findings iterated that B2B drew a different picture when compared to the Extranet. The reason was Extranets' contextual dependencies such as design, system integration, architecture and background were similar to the Intranet platform already in place. Hence, Extranet had a head start when compared to B2B. The similarity of the two platforms, Extranet and Intranet, also created a synergy for resource planning. Similarly, the interviewee noted that,

> [In terms of resource planning] Extranet proved to be not problematic, compared to B2B. We could use the same standards and procedures for the Intranet; hence we did not have any problems with what we actually planned our resources to be. Even, Extranet was developed and maintained by the same application group (Intranet).

Although, B2B aimed to provide access to all business units and allow more effective engagement throughout the organisation (Lowe and Doolin, 1999), the initial difficulty as pictured by the following interviewee indicated that the impact of e-business transformation of resource planning presented a complex relationship between resources and the B2B resource requirement.

> The Extranet required less upfront resource investment compared to the B2B investments. We could allocate people we lacked, arrange a responsibility matrix with relevant tasks and responsibilities. We were more certain on the Extranet and on our planning as it used similar standards and procedures that of Intranet, hence less impact on the financial resources, and less resistance was faced.

Similarly, Moodley (1999) stated that organisations need to address the main areas of impact based on contextual dependencies, so that the necessary changes can be made. The findings in this case study provided some evidence of how individual e-business applications and resource requirements differ and levels of investment needed by organisations. The comment above by the interviewee may be seen as indicating that he/she felt the B2B system to be disempowering in terms of investment for resources needed in relation to the Extranet, perhaps altering the balance of investments for the resources necessary between distinctive e-business applications. In a similar vein, Sahay and Robey (1996) observed that IT implementation in two very similar governmental agencies could result in two very different organisational outcomes, one experiencing a significant impact on working practices whereas the other experienced a very limited impact.

4.3. Analysing the problems

In the case study, the implications of both e-business applications showed a difference; however, one problem experienced was unexpected staffing problems, despite the resource planning. The resource planning was result of an upper management decision based on feasibility studies and experience with former software transformation processes as well as ongoing discussions with the department heads. Thus, it has limited input from the frontline users as mentioned by an interviewee,

> The employees support was needed in several instances….the jobs that they had were expanded with new responsibilities. Even some of our managers have not been able to claim their overtime since last year. The increase demand for internal and outside clients asked for new specialized resources

> and financial subsidies. Increased time and cost of B2B, has brought the need for skills-set ranging from a few months to a few years and included new resource requirement such as people, developers, and new recruits trained in B2B.

Although the planning was done previously, it did not entail the potential pressure on frontline staff as well as technically experienced staff within the implementation, additional staffing was required, as only a few employees had the necessary capabilities and knowledge about the project, and it proved to be difficult, despite their commitment to working beyond normal hours, to cover for the time-lost. Despite the high commitment as stated by the interviewee in which some employees did not take their holidays, the problem was that there were no substitutes for these key employees. This presented a similar picture to Lowe and Locke's study (2008) on the implementations of ERP systems and the importance of key employees' absences and the impact on the change agenda that may have. Similarly, Abraham and Junglas (2011:178) note "managerial prowess in the transformation effort" as one of the key elements for the organisations transformation success.

Staffing problems and additional workload were only a couple of the key challenges when analysing the problems. There were also unplanned additional requirements for which the steering group was leading the projects another interviewee noted.

> For the new system to be established, allowing the integration and interfaces, the system had an impact on the resources required. The investment of resources occurred in several stages due to the system updates and related technical integration of systems, mostly which was not planned. For example, we even had to exchange our server.

Having analysed the problems in the transformation effort the resources needed particular attention in terms of staffing, generation of workflow and tasks, as well as devising two sets of process regeneration for each individual application. Despite the application area as well as contextual setting were similar, the differences on applications and its resource related implementation problems made it difficult for the participants to create a general solution for an overarching problem.

4.4. Process Regeneration

Having analysed the problems, the process regeneration is aimed towards solving the problems. In this context, processes are defined as "a set of logically related tasks

performed to achieve a defined business outcome" (Vollmann, 1996:60). The definition identifies two important processes in this research: the interdependency of tasks and impact on the outcome. In this research the processes entailed across departmental boundaries. Therefore, cross-functional business scope, cooperation between the individual departments is related to process regeneration.

> [For Extranet] a process scope, responsibility matrix was needed. The workflow administrator asked the participants to create a matrix of responsibilities, stating different tasks listed and matched with a responsible employee for the task. Some voices welcomed the well-organized process scope, whereas some disliked the fact that there were new processes with new tasks "good news, now we have additional workload".

The Extranet has created in some departments' additional workload and processes, causing disagreements. Although the new process regeneration aimed at creating solutions for potential and existing problems, there was an unwillingness to trust that the new processes would work better. One employee noted,

> When the employees were advised to choose a chief editor for controlling and publishing decision, nobody seemed willing to take the controlling task…. no one even commented, hence they decided a future date to name and allocated the task already overly worked out project planner. Everyone wanted to see and wait how the system will work.

Hence, the transformation of workflow and new processes created confusion and resistance as to the understanding of the workflow was not given alongside the internal announcements as well as the training (See Table 3 for training activities and participants). The training of departments took over the implementation place, however, some researchers argue that the inclusion and especially training of the frontline employees must be conducted at an earlier stage (Vollmann, 1996; Bak, 2012). When we look into the training activities, we see that the frontline users have been integrated in the later stages.

Training Activities	**Participants**
System development and change management training provided by the software company)	Steering Group Leader and a member (from the pilot rollout department), software company roll-project management group
Steering Group Training of the system (provided by IT personnel and in-house consultants who were relocated for the purpose of the transformation process)	In-house consultants, steering group, department heads.
Departmental Training (provided by the company to its employees). The training took place for each department, so that the	Internally assigned trainers, individual departments

training could be tailored for the employees.

Table 3: Training activities (in time order) and participants

Both, Extranet and B2B required process regeneration at different stages and parts of MNCs, meaning that it took place in several stages and in different departments, as well as suppliers and distributors with a varied impact. The resistance was felt differently when compared between B2B and Extranet:

> All our external network was considered in the Extranet [whereas with] B2B there was selected business partners which did comply with the specifications of size and priority…in the long term we will have our network more integrated but until than Extranet will provide us a new platform. Extranet, seemed as a logical extension of Intranet wherein we could log into the Extranet and see the information we needed and vice versa, and the information was related to the divisions and to the supplier and distributor. Access to Extranet was restricted at some levels… [This] gave the participants the possibility to use a new platform.

Hence, keeping the newly defined processes and improving them becomes difficult if there is a varying degree of resource needed. At this stage, any existing problems with the newly regenerated process may be feedback during the third stage to be analysed and revised for a new process generation. Despite having started the e-business applications together, in the resource planning stage it was important to recognize where the resource planning varied. One interviewee commented,

> Our division was organised to mirror the structure of the company: for extranet application, we were planning for additional work on top of our existing workload. The Extranet aimed to be developed and maintained by the same application group (Intranet) who was dedicated to supporting that system. The standardized firm methodology was in place that allowed each team to adapt easily into the appropriate procedures. Whereas B2B lacked a uniform set of policies and practices, which made it difficult to apply, and required more investment in resources.

The differences between the application resource requirements became important as well as the dependency upon the contextual setting, namely the organisation and its policies and practices, as stated by the interviewee. Hence the analysis stage provides a good basis for understanding and analysing the resultant problems that the organisations face.

4.5. Continuous improvement

Continuous improvement is constant, incremental improvement over time. In this study the transformation impact on resources identified three key areas for continuous improvement: (1) Identifying whether the process regeneration has solved the problem, (2) if there are possibilities for improvement, where it needs to be improved and what needs to be improved, and when it will be improved- are two questions. In order to promote continuous improvement as a means of development, the key responsibilities became important as well. To achieve continuous improvement for each process and task, a responsibility area was defined. One interviewee noted that,

> It was difficult to understand how things could be improved, but in order to keep a standard even to improve it, key employees have been given additional responsibilities, to control and monitor the e-business workflow applications as well as its content. This involves a lot of work, and they have not given an additional pay or any sort of intensives, and without these I don't think they (senior management) will achieve what they want.

When the data were coded an interesting interview quote described the differences on the impact of the e-business transformation based on the two applications, he/she noted,

> [With B2B] we will be always one step ahead, if we want to grow and learn. This required that we had to invest in the application, necessary capabilities and competencies before and still can not run the system before we have a 100% operating environment. We did make quiet a bit investment on it… changed some parts of our technical and organisational infrastructure, changed the processes ….if the result [of B2B] is being capable to achieve the flexibility and visibility than we can say we succeeded.

Here we see that continuous improvement brought another problem that needs to be analysed and solved. Hence, the continuous improvement in this study cannot be seen as the end of the cycle. Therefore, a feedback loop would allow the organisation to assign where and what the problems are in the problems through to prevent, organize and implement projects on time, and resolve human performance issues consistently by using the BPCM process. The summary and issues faced throughout the BPCM stages have been provided in Table 2, which also includes relevant BPCM stages, which means that the use of the BPCM model was interaction between the stages.

Table 4: Summary of BPCM stages and its relevance to B2B and Extranet

BPCM Stages	Resource Implications	B2B	Extranet
Stage 1: *Link with strategy (*Relevance to BPCM *Stage1)*	• Stakeholder: Senior Management vs. employees	• Driven by senior management based on rather a proactive response in the market changes	• The frontline employers, compared to B2B strategic intent was rather responsive, as Extranet became an industry norm, and the existing system, was not fully operational, drove the Extranet.
	• Assessment of resources: External/Internal Consultation	• The implications for this decision were shared with the supplier and distributors in the supplier-distributor network meetings.	• The division organized to mirror the structure of the company: extranet application needed to group alongside the existing workload
	• Resource Investment	• The internal and external consultants, to understand the associated costs and also to justify the investments for the necessary resources, have done a feasibility study of B2B application.	• Developed and maintained by the same application group (Intranet) dedicated to supporting that system
Stage 2: *Plan the change* (Relevance to BPCM Stage *2)*	• Planning the complementability	For the new system allowing the integration and interfaces, the system both systems had resource implications, B2B required more investments for employers compared to the Extranet.	• The planning was similar to the Intranet with the changes of external members.
	• Resource Investment	• B2B resource investment planning created resistance within the MNC partners and members, as it had an impact on the financial resources required.	• Planning phase included also the inclusion of training, investments for Extranet.
	• System Integration	• Technical planning for B2B architecture was required, involving several stages due to updates and related technical integration of systems.	• Distributors and suppliers readily accepted the changes due to less resource intensive system integration.
	• Scope and Nature of the change (Competencies)	• The business unit members also were resources, and new additional workforces with distinctive competencies were needed in several instances.	• Resources planning for employees were similar to the Intranet.

Table 2 Continued: *Summary of BPCM Phases and its relevance to B2B and Extranet*

BPCM Stages	Resource Implications	B2B	Extranet
Stage 3: *Definition of problem areas in terms of current* resources **(**Relevance to BPCM *Stage1 and Stage 2)*	• Interdepartmental coordination and integration • Resource Investment • Organisational boundaries	• Increased risk as supply chain depends on specialized technical resources, which was lacking overall within the MNC • Increased demand from clients from larger, integrated approaches and training in addition to increased time and cost of B2B, with the requirement for additional resources • Information loss due to system overrides	• The updates for Extranets were assigned to internal employees who needed to gather the data from the external members such as distributors and suppliers. • Some external members were not happy with the design and information shared on the Extranet, with some members requiring opt-out of the system. • Inclusion of all suppliers and distributors however with access restriction
Stage 4: *Process re-generation* (Relevance to BPCM Stage 3)	• Experimentation of new resources • Separation of thought partners and front line resources • Resource Investment • Flexibility	• Increased leverage of technical and managerial skills • Projects at the site, range from a few months to years and includes developers • New recruits trained in B2B • Crosstraining necessary for achieving flexibility in tasks	• The Extranet impacted on the human resources and the allocation of additional people and thus lack of people who are responsible with the control and coordinate the real time data. • Same use of standards and procedures for the Intranet, hence less impact on the financial resources • Standardization of the data and web page requiring additional resource investments • Task definitions incorporate element of flexibility as to when needed
Stage 5: *Continuous improvement (*Relevance to BPCM *Stage 1 and Stage 3)*	• Standisation of process and policies • Assessment of new process& technology • Training • Resource Investment	• Standardized firm methodology in place each team adopts hence the appropriate procedures • Supports the technologies that makes a uniform set of policies and practices difficult • Training throughout the organisation needed • The additional resource investment required for on-site training and monitoring	• Standardized firm methodology in place each team adopts hence the appropriate procedures • Supports the technologies that makes a uniform set of policies and practices difficult • Tasks redefined and assigned, and on-the job training required • The additional resource investment required for on-site training and monitoring

5. Conclusion, implications for theory and practice

5.1. Conclusion

The contribution of this study has been threefold. Firstly, the application of BPCM in this study captured the resource implications and its variances across developmental stages. The findings indicated that except resource investment, resource implications changed throughout the BPCM stages, contradictory to literature, where resource investments is linked only to initial planning phase (stage 2 in BPCM) (Norton, 2012; Harrington & Voehl 2011). Secondly, the research also contributed to the understanding of the variability between e-business applications in B2B and Extranet. The "one size fits all" concept does not hold true in terms of the case study, and each e-business application required a unique resource strategy that may be not relevant to other e-business applications. As McElheran (2015) this may be due to the process involved in the e-business application, in our research, however, the iteration between stages 3, 4 and 5 has not changed despite the difference of application. This is also indicating the common issues within an organisations setting that is relevant to not one but also other applications resource implications. In our case, the iteration happened in terms of resource implications based on the; redefinition of problems, process regeneration and continuous improvement. The interlinkage to the latter stages indicates the importance of stages 1(linkage to strategy) and 2 (planning the change) in every stage of the transformation process, and that this is rather dynamic and changes as the transformation progress, which was viewed as rather static in the literature (Igira and Aanestad, 2009; Star and Ruhleder, 1996).

Finally, the small number of relevant studies focuses on BPCM for overall transformation effort and are rather descriptive and fragmented due to the transformation impact. Employing a case study analysis in understanding the resource impact in the present paper comprises an attempt to provide evidence for the applicability of BPCM in describing and monitoring changes at a wider, inter-organisational level. This also allows to overcome the difficulty in achieving a multidisciplinary analysis and developmental perspective within the context of transformation assessment (Igira and Aanestad, 2009; Avgerou and McGrath, 2007, Abraham and Jungs, 2011).Hence, it contributes to IS research by providing a business process management, change management tool for organisations that wish to implement changes in an evolutionary manner.

5.1 Implications for practice

Managers should first assess the implications upon resources and their requirements in an evolutionary manner when undertaking e-business enabled transformation. This can also eliminate what Ross and Beath (2002) identified as the resistance to negatively perceived transformation wherein managers repeat the same steps which results with resistance in the first place. However, by identifying which elements have been perceived as having a different resource implications for the organization, the resource implications can be managed with less resistance. This study also encourages the understanding that managers need to recognize that the impact of individual e-business applications may differ across the organisation, and one size solutions may not fit. Hence the variance in transformation must be supported by the management; therefore, an organisation needs to understand the interconnection between the individual e-business applications and the transformation of resources.

5.2 Implications for theory

The present paper described the application of a BPCM model to describe an e-business driven transformation and assesses its impact on resources in a European automotive MNC. Towards this aim, it employed a case study analysis in the context of B2B and Extranet. Previous research efforts in implementing BPCM have focused on redesigning the whole process of either an organisation or a project. In our case, BPCM is implicitly used to assess the changes of resources within two e-business applications. The use of the BPCM model provided a structure for: a) developmental stages of transformation and its impact upon resources (Igrar and Anaasted, 2011) and b) requirements for transforming resource-based actors involved (Sahay and Robey, 1996). The BPCM in this research ends with continuous improvement. Since this methodology was primarily designed to address the e-business enabled transformation in the automotive sector, the last phase may identify new problems and areas of concerns which may provide feedback into stage three, to analyze problems in the process. This paper raises the need for adding a feedback loop that may require an organisation not to restart its transformation, but rather to fine-tune the transformation effort. Nevertheless, there are many case studies of failures, which may require a change in strategy and hence require the organisations to start over with the transformation process.

In any one study, it is possible to investigate a contextual setting a rather relatively small portion of the reality (organisation, industry a certain population etc.). However, BPCM has proved to be a useful model when analyzing the transformation process and its impact upon resources. In the present paper research questions were investigated, such as: which are the key success factors for each BPCM stage for resources? Is the BPCM methodology appropriate for other impact areas of transformation? How can the BPCM be used to increase its validity in the IS literature? And hence, there is an opportunity for obtaining more knowledge from the examination of most relevant case studies, or even from their crossover analyses. Particularly, research based on multiple–case analysis would enable raising insight on critical success factors for each stage of BPCM to assess the impact upon transformation. There are also implications for research and practice that needs to be directed. Since the transformation agenda has still kept the actualization in the IS literature, it is important to provide and introduce transformation frameworks for monitoring and guiding the transformation process for other industries as well.

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