

Summer 10-6-2011

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## Recommended Citation

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# **EXPLORING PATTERNS OF BUSINESS-IT ALIGNMENT FOR THE PURPOSE OF PROCESS PERFORMANCE MEASUREMENT**

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## **Abstract**

*Having successfully implemented the first phases of their Business Process Management (BPM) initiatives a number of organisations are just now facing the next big challenge: Maintaining the just gained flexibility through continuously measuring and improving their processes' performance. Although numerous approaches are available there is evidence that companies face severe difficulties in aligning their process-related measurement needs with the appropriate information technology (IT). This study presents and analyses the results of an extracting multiple case study. A framework of four patterns derived in the course of the analysis gives new insights in ways to design business-IT alignment in the context of process performance measurement.*

*Keywords: Business Process Management, Performance Management, Business-IT-Alignment*

# 1 Introduction

In the sight of today's turbulent and fiercely competitive world organisations are forced to be highly adaptive (Smith and Fingar 2003). A popular approach for coping with ever-changing requirements while still improving operational efficiency is called BPM. Over recent decades organisations have increasingly adopted BPM as a holistic management concept and in so doing aligned their organisational and management activities with their core processes (Armistead et al. 1999; Lee and Dale 1998). However, thoroughly understanding and aligning an organisation's processes, does not suffice for the creation of enduring organisational performance. Quite the contrary: Once business processes are defined and in place, organisations "will need to begin measuring processes and their outputs and to continually refine their designs" (Davenport and Beers 1995, p. 60) so as to preserve their performance for the long term.

Practitioners and academia alike have developed a plenitude of approaches for addressing the challenges of measuring process performance. There is evidence, however, that despite the availability of quite sophisticated methods and tools on both the business and the IT side today's organisations are not truly capable of aligning these concepts so as to establish successful and integrated process performance measurement (PPM) approaches (Genrich et al. 2007; van der Aalst et al. 2007).

However, there is not a 'one-size-fits-all' approach for establishing PPM initiatives. We argue that different objectives require different PPM approaches and use the extracting multiple case study method for exploring and reflecting on existing practices. We do so by first providing a brief foundational background for our contribution introducing basic concepts of PPM and business-IT alignment (section 2). Subsequently, we sketch the methodology of our research project (section 3). Findings of the case analyses are presented in section 4. The patterns we deduced from our research project are proposed in section 5 and rounded off with a brief discussion on when they seem most applicable. The concluding section 6 summarizes our work, names implications and limitations, and gives an outlook on future work.

## 2 Foundations and Related work

### 2.1 Process Performance Measurement

Very much like the earlier excitement about the BPM approach (Corea and Walters 2007; Smart et al. 2009) the current hype around the management of business process performance is fuelled by an enormous practitioner interest. It is thus not a surprise that the most elaborate conceptions of the notion have so far been provided by practitioners. The Association of Business Process Management Professionals (ABPMP), one of the premier non-for-profit practitioner organisations in the field of BPM, defines the measurement of process performance as "the formal, planned monitoring of process execution and the tracing of results to determine the effectiveness and efficiency of the process" (ABPMP 2009, p. 22). The information gained in the measurement process is then "used to make decisions for improving or retiring existing processes and/or introducing new processes in order to meet the strategic objectives of the organisation" (ABPMP 2009, p. 22). It becomes obvious from this definition that process performance management consists of two major building blocks: The measurement and the improvement of business process performance. Concepts that have been identified as contributing to either of the two building blocks include defining performance metrics, monitoring, controlling and simulating processes, aligning process and enterprise performance, and a number of other concepts (Kueng 2000). Although the term process performance management has up to now not reached a broad popularity and the concept is still about to develop, there have been a number of prior efforts in both research and practice addressing either the measurement or improvement of business processes performance, or sometimes even both.

Some of these approaches stem from the business realm and have been developed in organisational and industrial research. Several represent broad strategic management concepts, like e.g., Total Quality Management (Isaksson 2006), Six Sigma (Snee and Hoerl 2005), Lean Management (Houy 2005), or Business Process Reengineering (Davenport 1993; Hammer 1990). Others are rather techniques either to be used in the context of a larger concept or on their own, like Process Mapping and Root Cause Analysis (Siha and Saad 2008) or Statistical Process Control. At the same time, information systems (IS) researchers are increasingly engaged with providing solutions for measuring and managing process performance and process execution quality (Genrich et al. 2007) and provide specific techniques for solving clearly delineated sub-problems, like e.g., business activity monitoring, process mining, or simulation (Kueng 2000; Powell et al. 2001). A rather recently introduced concept, termed (business) process intelligence (BPI), builds on applying business intelligence (BI) techniques like data mining and statistical analysis for analyzing process data in order to uncover weaknesses and discover opportunities for improvement (Grigori et al. 2004). While BI has traditionally provided historical, retrospective analyses, in the context of BPI it is used to take the “pulse of the company” (Hall 2004, p. 3) generating findings based on present-day transactional data that are analyzed in near real time.

Despite the evidently rich repertoire of partly very mature solutions from both business and IT today’s organisations find it difficult to align and integrate them into a consistent and successful approach for process performance measurement.

## **2.2 Business-IT Alignment**

The alignment of business and IT has been discussed extensively in the IS research community (Luftman 2000; Luftman and Brier 1999). It refers to a desired state in which an organisation is able to use its IT in an “appropriate and timely way, in harmony with business strategies, goals and needs“ (Luftman and Brier 1999, p. 3) to better achieve its overall business objectives, e.g., increased performance, customer satisfaction or market share. In practice, however, this alignment is often hard to accomplish. Differences in goals, culture, and incentives cause an invisible gap between business and IT that is most often hard to bridge. As a consequence IT systems are considered overly expensive as they are neither fully accepted nor used by the business side and thus do not provide the intended return on investment.

In order to overcome the described gap it is essential to understand both the principal components and the relations that come into play in business-IT alignment. During the two decades since its first emergence in the academic literature alignment has been conceptualised in various ways. The most widely accepted definition is the one provided by Henderson and Venkatraman (1993), who understand alignment as the overall degree of fit or integration between the four elements business strategy and IT strategy and organisational infrastructure and IT infrastructure. The direction of alignment is not predetermined and aims rather at answering “how IT is in harmony with the business, and how the business should, or could be in harmony with IT” (Luftman 2000, p. 2). The ultimate goal is to ensure that the organisation’s partial strategies are defined consistently and lead the organisation as a whole into one uniform direction. Therefore, IT and business functions need to adapt their strategies in parallel. The achievement of alignment is an evolutionary and dynamic process (Chan and Horner Reich 2007), which is contingent upon a number of factors such as support from senior management, good team work, leadership, trust, effectual communication, and adequate knowledge of business and technical environments (Chan and Horner Reich 2007; Luftman 2000). Achieving and especially sustaining alignment requires strengthening its enablers and lessening its inhibitors (Luftman et al. 1999).

Figure 1 visualizes the interplay of the elements of business-IT alignment. In the herein reported research study we employ the business-IT alignment model as a conceptual lens for analyzing and understanding patterns of alignment in PPM initiatives.

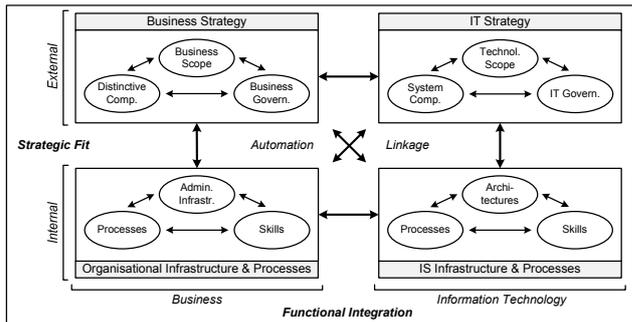


Figure 1. *Strategic Alignment Model (Henderson and Venkatraman 1993, p. 8)*

### 3 Research Method

Case studies are a frequently used research method in the study of IS phenomena (Palvia et al. 2004) and have explicitly been advocated for the study of performance measurement systems (PMS) and their application in practice (Kaplan 1984). Case studies allow the researcher to study a research phenomenon directly as it is perceived by the subjects involved, learn about the state of practice, and understand real-world processes and decision making. The extracting multiple case study method is an approach suggested by van Aken who describes it as “a kind of best-practice research [that] is aimed at uncovering technological rules as already used in practice” (van Aken 2004, p. 232). This exploration of and reflection on knowledge and skills developed in practice is a forceful research activity and one that has led to a number of powerful technological rules and influential design theories (Gregor 2008). We intentionally chose this variant of the case study method as we strongly believe that there is a substantial body of both experience and tacit knowledge on how to align business requirements and IT capabilities in the context of PPM.

In order to better understand the experience and knowledge as well as the how and why of PPM initiatives we accomplished case studies with six different organisations that together provide an in-depth understanding of both current practices and challenges in contemporary real-life settings. Our unit of analysis is the procedure of aligning business requirements with IT capabilities in projects that aim at the development of a PPM approach. The chosen multiple-case design allows for cross-case analysis and a better generalisation and positioning of the findings (Benbasat et al. 1987). As case partners we only selected companies who explicitly stated that they had a PPM initiative under way. Companies were deliberately chosen from different industry sectors and with a wide variety of competitive and organisational characteristics in order to introduce diversity into the sample. Two of our case companies are from the service industry; the other four are from the manufacturing industry. Semi-structured face-to-face interviews with process and performance analysts, quality managers, and BI professionals constituted the main basis of inquiry. The interview guideline was designed using open-ended questions and was pretested prior to the actual interviews in order to elicit correct interpretation of questions and free flowing information. Questions were formulated to address four key aspects:

- 1) the business strategy and background that form the basis for PPM,
- 2) the IT systems and capabilities used to support PPM,
- 3) the way business needs and IT capabilities are matched, and
- 4) enablers and inhibitors of the respective approach.

Interviews typically lasted around one and a half hours. As each interview was completed and transcribed, it was analysed in detail. Thereafter, the main findings were summarized. Due to company request all cases are presented anonymously. The subsequent section presents aggregate results from the interview analysis per case organisation. When applicable, direct quotes from interviewees are included in the summary of the findings.

## 4 Research Findings

**Company A** is one of the largest telecommunication companies in Switzerland. Its strong competitive position makes market pressure a minor concern. The top management's dominant strategic focus lies on new product development and maximising their market position. The overall business strategy of the organisation is very strongly focused on product innovation, growth and market share.

The implementation of a PMS represented a pilot project realised within the boundaries of one organisational department. Although PPM and improvement were of some importance to the top management there was only limited support available. The existing IT capabilities, however, were advanced and fully designed for a comprehensive process analysis: The availability of an integrated IT infrastructure and a highly sophisticated process intelligence tool made nearly any kind of measurement feasible. Dashboards were in place allowing for not only a retrospective, but a real-time process performance assessment. The whole project was pushed by one enthusiastic employee with a strong analytical background. Despite his strong commitment to the project, however, it was nearly impossible to win any additional support for it. This was not least the case because the workforce showed a strong resistance towards the measurement initiatives for fear of complete transparency of individual people performance. The BI specialist in charge of the project mentioned: *"In order for a process-oriented performance measurement approach to become truly successful you have to reduce barriers of incomprehension and refusal among the employees. Otherwise the resistance will just make the whole effort useless."* Another inhibitor to the success of the PMS implementation was the humble management valuation of the benefits attainable through a process-oriented performance measurement. Due to the above-mentioned strategic focus on product innovation rather than efficiency enhancement managers did not feel the pressure to launch any internal improvement initiatives. The management was simply reluctant to put any effort into learning new measures and altering a running system.

**Company B** is a globally operating insurance company. Their business strategy is based on a set of core values including the provision of added value for their customers in the form of innovative products, quality of service and productivity. In order to enhance overall customer satisfaction and achieve operational excellence the parent company decided that all subsidiaries have Six Sigma-based improvement practices and adequate systems for process performance measurement in place until 2012.

In the course of the second case study we accompanied one subsidiary of the whole insurance group that was just about implementing their PPM approach. Teams that had been trained in the Six Sigma methodology were in charge of selecting, prioritising and realising PPM and improvement projects. While the employees in charge of the projects had a strong ambition to implement sustainable practices for measurement and change, there were a number of obstacles to resolve on the way. The interviews revealed that on the one hand a perceived low market pressure and an entrenched functional work habit among the workforce hampered the establishment of a consistent process orientation and process culture. A member of the Six Sigma team mentioned: *"We have been working in this function-oriented way for a very long time – and it worked really well for us – but now it's difficult for the people to understand the purpose behind a process-oriented measurement. That makes it very difficult to identify and define effective process performance indicators."* Once the measures and metrics for a project are defined, an IT-project is launched in order to aggregate and allocate the required data. Where possible, dashboards are designed that show the most important metrics graphically so they can be monitored at a glance. This makes it easier for the respective process owner to continually check whether the process operates in the defined manner. Where dashboards were installed the acceptance of PPM was significantly higher. However, past acquisition activity of the subsidiary had resulted in a highly fragmented IT landscape. As a result, it was not always possible to extract the required data along a complete process. Moreover, many of the systems in use were legacy systems that did not provide accurate data needed for measuring process performance at all (e.g., time stamps). If the IT was not able to provide the required metrics the business reacted with a lack of understanding and disappointment.

**Company C** is a leading company in the pharmaceutical sector. The actuator for launching a corporate-wide Lean Six Sigma programme as a strategic business initiative had been a significant rise in costs and the simultaneous quality drop of pharmaceutical products below an acceptable level.

In the course of our case study the head of organisational redesign and excellence provided a deep insight into what had been achieved and how the programme had been carried out: Since the adoption of the combined approach the organisation possesses an excellent knowledge of all its processes and has achieved an enormous cost reduction. Production processes across world-wide subsidiaries have been standardised and the intended next step lies in expanding the Lean Six Sigma approach to processes in other functions like Human Resource Management, Marketing and Research and Development (R&D). In order to measure process performance the organisation primarily relies on statistical analyses. A major advantage of applying the Six Sigma methodology manifested in its strict and sequential measurement approach. Through a strong emphasis on product data that is captured and aggregated along the production process the case company was easily able to locate any process inefficiencies. The IT infrastructure used along the production processes for data acquisition and analysis, had been reduced to a minimum. As the company's quality manager said: *"We have constantly reduced the amount of IT we rely on in our production facilities. It is also part of our lean philosophy: We have as much IT in place as needed for the statistical analyses we conduct, but no more. Too much IT is rather disabling than enabling."* Despite the definite strength of Six Sigma for measuring process quality and efficiency the interviewees complained that the insufficiently analyzed and elaborated relationship between cost of poor quality and the sigma quality level of processes impairs the full success of the approach.

**Company D** is a global player in the construction industry. Its business strategy is built on values such as excellent innovation, high quality and productivity and direct customer relations. As a manufacturing company employing a Lean Six Sigma approach for their production processes they have a sound process understanding and culture. Their IT landscape is extraordinarily well integrated.

Company D's way towards a process-oriented performance measurement started with not only a very strong Six Sigma approach but also an elaborate and well-functioning finance-oriented corporate performance management (CPM) approach in place. Due to some inefficiencies and complaints in the service division it was decided to expand the current measurement approach to an end-to-end scope in order to facilitate root cause analyses. The responsibility for implementing the approach was given to the IT department as it a) had direct access to all operational and analytical IS and b) was felt to have a reasonable understanding of the companies' business processes. This decision, however, resulted in major difficulties in identifying the appropriate metrics and indicators to purposefully measure process performance. Although the technical BI capabilities of the team were exceptionally strong, a team member of the process improvement initiative said: *"We are technically capable of extracting any measure from our systems. When consulting the process owners, however, it often proves that our knowledge of the processes is not deep enough and we are not measuring what is actually important. Currently, our approach more or less prerepresents a trial and error approach."* In order to be able to measure the financial impact of process inefficiencies it was also planned to build a link between the so called black-box financial performance management and a white-box approach for measuring performance on a process level. The process improvement team quickly realized that the definition of respective value driver trees was not possible without the availability of people with appropriate knowledge and skills to interpret, analyze, and define such links.

**Company E** is a globally operating engineering company. With its business strategy it aims at achieving technology leadership position showing global presence with high local expertise. In order to enhance customer satisfaction the top management decided to restructure and reorganise the service division on the basis of the IT Infrastructure Library (ITIL) framework.

While previously described cases are all characterised by an evolutionary and continuous approach to establishing PPM, company E, started its PPM and improvement initiative in conjunction with a reorganisation project: In order to optimize the customer contact management and realize higher process

transparency as well as a better traceability of cost drivers top management decided to redesign and standardize the service division according to the reference processes of the ITIL framework. In line with the restructuration project the line management wanted a better basis for decision making for future process improvements on the basis of a few relevant and meaningful measures to be mainly automatically derived through the use of a dedicated IT infrastructure. One of the performance analysts formulated it in the following way: *“We want as few process performance metrics as possible and as many as necessary. Both, performance monitoring and re-reporting need to be efficient to reduce resources required to manage measurement and allocate more resources to interpret the results and think about process improvement.”* The adequate set of measures was derived in an iterative procedure with the respective process owners, starting from a rather big set that was step by step reduced when a measure was considered irrelevant. In this case the project team that was responsible for the development of the measurement approach experienced virtually no resistance from other employees—partly because the whole team consisted of people who were actively working in the processes themselves and partly because all other employees were informed and involved from the beginning. It was only the insufficient integration of existing IT systems, which were not optimized for process performance analyses that marred this otherwise very successful approach: Due to missing links in the existing IT infrastructure media disruptions were unavoidable, which were sometimes hazardous for the measurement quality. In order to tackle this challenge it was decided to adapt the IT strategy with regard to technology scope and system competencies during the second rollout phase of the initiative and subsequently create a fit with the required skills and processes.

**Company F** is an international leading supplier of technology and services in the areas of building and industrial technology, automotive, and consumer goods. Its business strategy is lead by the three super ordinate goals of innovation, diversification and internationalisation. Their PPM initiative rather emerged evolutionary and decentralised than as a strategic initiative.

Due to the widespread dispersion of its subsidiaries the logistic function plays a major role in the company and is responsible for the worldwide specification, coordination and controlling of the global production and distribution processes and for the definition of process standards and performance levels. Case company F has a really strong corporate performance measurement approach in place that allows for a detailed analysis of financial results. Over time, however, it became more and more obvious in the logistics department that the current approach is neither capable of adequately allocating budgets to departments nor suitable for conducting root cause analyses in case of cost increases or faulty results. The business unit manager thus sought for a technology that was able to visualize processes on the one hand and automatically measure process metrics like cycle time, dropout quotes, or resource utilisation on the other. The BPI technology that was purchased quickly facilitated a comprehensive analysis of inefficiencies in the overall process landscape and thus immediately provided business value. The business unit manager noted: *“In this case IT really is not only a supporter but an enabler. With these analyses we are capable of proving that some changes in the business strategy will become inevitable.”* It was pointed out, however, that despite the obvious benefits of the technology, it will become difficult to convince the business side of the value and necessity of a process-oriented approach to performance measurement.

## 5 Four Patterns of Business-IT Alignment

### 5.1 Case Study Synthesis and Framework Development

The aim of this research study lies in uncovering technological rules, design theories or patterns as they are already used in practice, i.e. in exploring and reflecting on knowledge and skills that have either been built deliberately or emerged evolutionary (van Aken 2004). These patterns can be interpreted as design patterns as they are known and frequently used in the world of object-oriented programming (Gamma et al. 1994). Therein a pattern describes a pair of a regularly recurring problem

and a respective general solution. The general solution is not meant to solve one specific problem, but to serve as a template that can be reused for advancing the problem solving process for a certain problem class. It is the goal of this research to illuminate four different design patterns for business-IT alignment in the context of PPM. The conceptual lens for exploring and extracting the patterns is the business-IT alignment framework proposed by Henderson and Venkatraman (1993). The unit of analysis is the procedure of aligning business requirements with IT capabilities in projects that aim at the development of an integrated PPM approach. In their seminal paper Henderson and Venkatraman (1993) differentiate between two categories of alignment patterns, namely: “Business strategy as the driver” and “IT strategy as the enabler”. In the context of this research it proved valuable to slightly adapt these categories into a) the primary driver behind PPM and b) if PPM Technology represents a strategic enabler. These two dimensions allow us to classify the different patterns we identified in the course of our study. The first dimension indicates that PPM initiatives may either be implemented as part of executing the overall business strategy or as a consequence of the technological potential and IT capabilities the organisation owns. We name the first case “business pull” and the second “IT push”. The second dimension indicates whether the available PPM technology is perceived as an enabler for realising the pursued business strategy or not.

Companies B, D and E all started their PPM initiatives as a consequence of a strategic decision and their chosen PPM approaches were selected so as to support their overall business strategy, namely Six Sigma in the first two and ITIL in the last case. PPM technology is in these cases used as an enabler for implementing the business strategy. While company C likewise started its PPM initiative using Six Sigma, IT was not perceived as a strategic enabler and was thus reduced. Company A had the necessary IT infrastructure in place, but its overall business strategy focuses on innovation rather than on efficiency and thus PPM is not perceived as an enabler for implementing the business strategy. Company F started its PPM initiative in a dedicated business function tentatively trying to support process improvement through the use of IT. Providing the evidence that PPM technology is able to better implement the overall business strategy it is the aim to adapt the IT strategy accordingly. Figure 2 visualizes the classification of approaches.

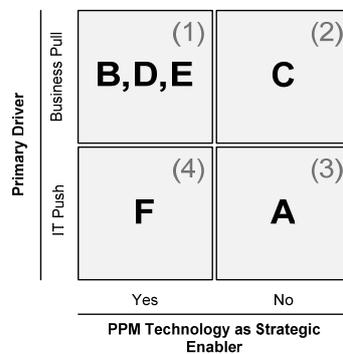


Figure 2. A Framework of Four Patterns for Business-IT Alignment in the Context of PPM

Following the perspectives introduced in the 1993 Henderson and Venkatraman paper we subsequently describe the individual patterns we derived in detail. The descriptions provide an overview over the patterns and hints on when they appear most applicable as well as enablers and inhibitors that have been identified in the course of case analysis.

## 5.2 Four Patterns for Aligning Business and IT in PPM

The first quadrant can be divided into two sub-patterns 1a (derived from cases B and D) and 1b (derived from case E) with the latter representing a more mature version of the first. Both patterns are anchored on the notion that the business strategy aims at increasing the organisation’s overall efficiency and process performance. Since the business strategy represents the actuator for the PPM initia-

tive both patterns are characterised as business pull. In the first case the business strategy acts as the direct driver for organisational (re)design choices. The IS infrastructure is only adapted in a second step. IT is in this pattern regarded as an enabler for a comprehensive PPM approach leading to intensified efforts for improving applications, skills and IT operations. In order to implement this pattern it is important that the business side provides a strategy translator who is capable of articulating the logic and choices underlying the chosen business strategy and respective PPM initiative. Moreover, it is important that the IT infrastructure is properly integrated so as to picture processes from beginning to end and that the IT staff has appropriate analysis skills. As could be seen in case B a lack of sufficient data, an entrenched functional work habit and a much disintegrated IT infrastructure are hazardous to the implementation of this pattern. Case company D had given the full responsibility for realising their Six Sigma approach to the IT team which led to a trial and error variant of process performance measurement and thus complicated a successful implementation. An overview over the pattern and some of its critical enablers and inhibitors as observed in the case studies is given in Figure 3.

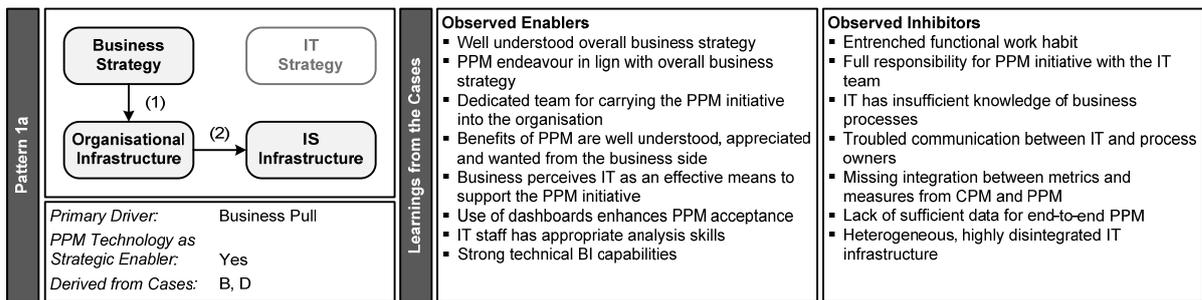


Figure 3. Alignment Pattern 1a

As mentioned above pattern 1b can be seen as a more mature variant of pattern 1a. While it also prescribes following the path from business strategy to adapting organisational processes and skills and subsequently adjusting IS infrastructure and IT capabilities accordingly, it thereafter suggests adopting the IT strategy so as to identify the best possible IT competencies for implementing the business strategy. Changes to the IS infrastructure that are made in the second step are reconsidered and if necessary redesigned in order to provide a sustainable IT support for implementing the business strategy in step (4). Pattern 1b has been derived from the case of company E. In this case embedding the implementation of a PPM initiative into a reorganisation initiative proved very valuable. Moreover, a very early involvement of business and IT stakeholders into the project prevented misunderstandings and potentially defensive attitudes. A disintegrated IT infrastructure again proved to be hazardous to measurement quality and the capability of depicting whole processes. Figure 4 summarises the main characteristics of pattern 1b as well as the enablers and inhibitors that were observed in the case.

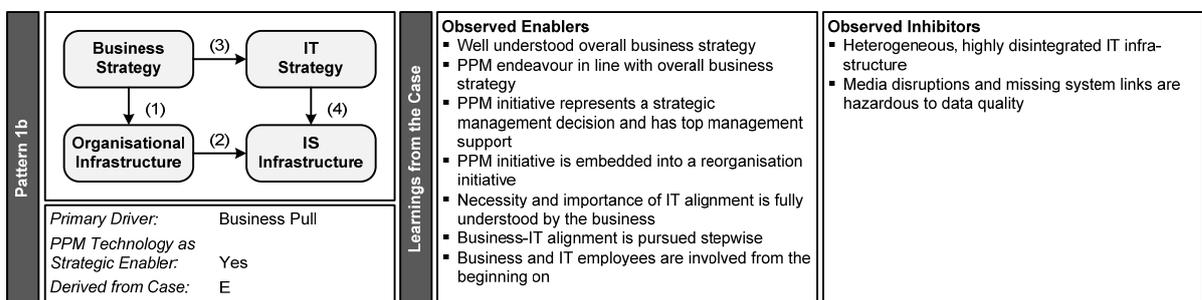


Figure 4. Alignment Pattern 1b

Pattern 2, like the previous two, belongs to the category business pull. The PPM programme starts as a business initiative, e.g. as a result of the strategic decision to implement a Lean Six Sigma programme as has been the case with company C. In contrast to previous patterns, however, IT is in this case seen as an inhibitor (illustrated by the - symbol in Figure 5). As the analysis of the case material revealed IT

was felt to be a confounder in the process of identifying and removing process inefficiencies. In line with the people empowerment principle that is strongly grounded in the concept of Lean Management process improvement ideas are rather generated decentralised by people than centralised through the use of IT systems. Pattern 2 thus seems especially applicable if the chosen business strategy and culture implies a strong focus on enabling and empowering the workforce and a comparatively little reliance on IT. Moreover, the success of this pattern appeared to strongly depend on the mindset of the people involved: While employees in the manufacturing department appreciated being part of improvement initiatives, employees in the non-production area felt restricted and overly controlled. An overview over this pattern and the most crucial enablers and inhibitors that were observed in the case is given in Figure 5.

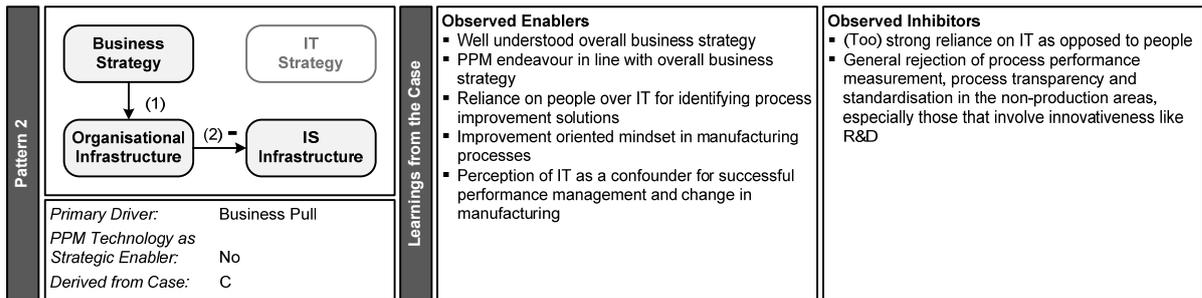


Figure 5. Alignment Pattern 2

The remaining two patterns that we identified in the course of analysing our case data are both categorised as IT push. They are akin in so far as they both depict an alignment procedure that starts with the acquisition of a new PPM IT system. In pattern 3, the availability of an advanced technology for business process performance measurement does—on a limited scale—induce organisational change, but does not unfold the power necessary to also provoke change on the strategic level. In the case of company A, which sparked pattern 3, the reason lied in the chosen business strategy that strongly focused on product innovation and market share expansion, but not at all on improving the organisation’s efficiency. As a consequence, IT was not regarded as a strategic enabler and the enthusiastic employee who started the PPM endeavour was not capable of convincing the top management of rolling out the initiative to a broader level. Figure 6 summarises the main characteristics of pattern 3 including enablers and inhibitors that have been observed in the analysis of case A.

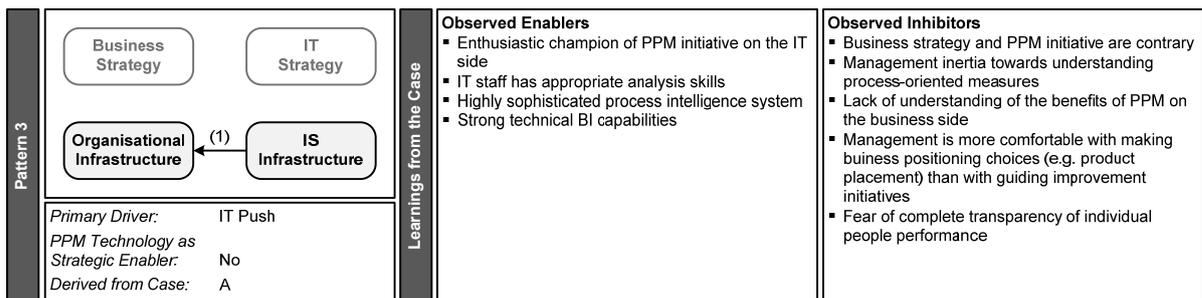


Figure 6. Alignment Pattern 3

The last pattern, too, starts with the acquisition of sophisticated PPM technology. In contrast to the previous pattern, however, this pattern suggests following the path from adjusting and improving the organisational processes and structure towards integrating PPM into the business strategy. This approach is especially viable if the chosen strategy already focuses on efficiency improvement and cost reduction. As could be witnessed in the case of company F, pursuing this pattern demands for a corporate culture and leadership style that allow or even support bottom-up improvement initiatives and employee engagement. A strong function-oriented incentive system and a missing alignment between metrics and measures from CPM and PPM in contrast were identified as contra-conductive for a suc-

successful PPM initiative. Pattern 4 as well as the enablers and inhibitors identified in case F are summarised in Figure 7.

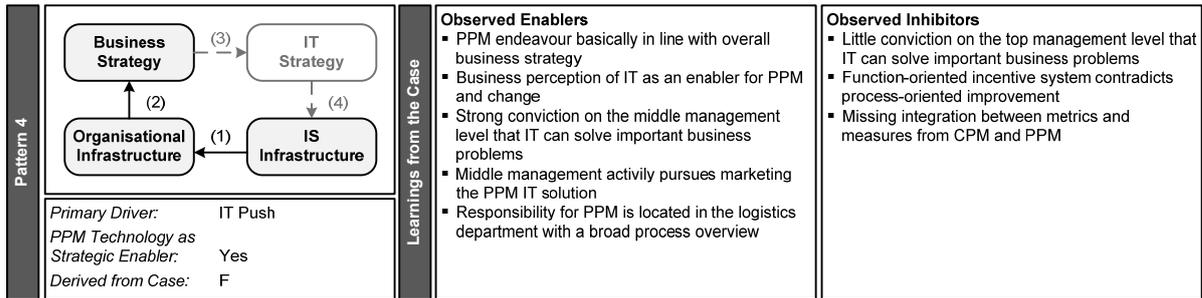


Figure 7. Alignment Pattern 4

## 6 Implications, Limitations and Future Work

In this contribution we used the extracting multiple case study method for analysing and reflecting on contemporary approaches for aligning business and IT in the context of PPM initiatives. We identified four different patterns that describe the current practices in six case study companies. The pattern descriptions are enriched with enablers and inhibitors as they were identified in the course of the case analyses.

The study's findings are expected to be of benefit to both the PPM research and practicing communities in terms of guidance for positioning their current research and practices. Practitioners may find our results interesting in that they offer the opportunity to compare their own approach to PPM with current common practice and provide an overview over possible pitfalls. Moreover, we hope to have stimulated and encouraged other researchers to investigate in analysing and improving business-IT alignment in the context of PPM. Limitations of our work show up in the limited set of six case companies that were analysed. A validation of the patterns with other companies needs to be carried out. Also, this research represents a snapshot of current approaches. Extensions of the presented work may thus include longitudinal studies of PPM initiatives. Future research will additionally need to explore further contingency factors that influence the way business-IT alignment is achieved in PPM endeavours.

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