

Association for Information Systems

AIS Electronic Library (AISeL)

ICEB 2007 Proceedings

International Conference on Electronic Business
(ICEB)

Winter 12-2-2007

The Role of Process Knowledge in a Business Process Improvement Methodology

Ravi Seethamraju

Olivera Marjanovic

Follow this and additional works at: <https://aisel.aisnet.org/iceb2007>

This material is brought to you by the International Conference on Electronic Business (ICEB) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICEB 2007 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

*Proceedings of The Seventh International
Conference on Electronic Business, Taipei,
Taiwan, December 2-6, 2007, pp. 397-404.*

THE ROLE OF PROCESS KNOWLEDGE IN A BUSINESS PROCESS IMPROVEMENT METHODOLOGY

Ravi Seethamraju, BPM Research group, The University of Sydney, Australia,
r.seethamraju@econ.usyd.edu.au

Olivera Marjanovic, BPM Research group, The University of Sydney, Australia,
o.marjanovic@econ.usyd.edu.au

ABSTRACT

The newly established holistic approach to BPM (Business Process Management) has led to increased recognition of the knowledge and experience people develop, use and share while modelling, executing and improving their business processes. However, this knowledge perspective is often neglected by the current BP improvement methodologies. Our empirical research confirms that business process improvement is, in fact, a complex, knowledge-intensive, collaborative process that consists of a set of coordinated, contextualised knowledge management processes. This paper describes the results of our on-going research project that, among other things, aims to investigate the role of individual and collective process knowledge developed and used in a business process improvement methodology deployed in a real-life, complex organization.

Keywords: Process knowledge, Process Improvement, Methodology

INTRODUCTION

Increasing competition, changes in stakeholder requirements and new technologies are driving business organizations for rapid and significant changes. In order to respond to such changes and survive in the complex business environment, business organizations are constantly striving to improve and manage their business processes. While the wide-spread understanding of BPM as the process automation technology will remain for quite some time, business leaders are now taking a new holistic approach to BPM that incorporates people, processes, systems and strategy [1]. This holistic approach to BPM has led to increased recognition of the knowledge and experience people develop, use and share while modeling, executing and improving their business processes. In fact, knowledge is considered as an integral part of the business process and not something to be managed separately. This process related knowledge is created not only by individuals, but also by groups of people sharing and using their knowledge and experience throughout the business process eco system.

The experiential knowledge owned by individual domain experts as well as the collective “know-how,” however, are often neglected during BP improvement projects as they continue to focus on the explicit knowledge that is normally captured by BP models. The problem of BP improvement has often been reduced to a modeling problem, typically performed by a process analyst whose experience is limited to the explicit knowledge expressed by process models. With their grounding in the software development methodologies, many BP improvement methodologies often include phases that closely resemble those of a software development lifecycle. For example, they typically start with analysis and design and finish with BP implementation and post-implementation (phases) that are executed in a sequential order.

In this paper, we argue that business process improvement is a complex, knowledge-intensive, collaborative process that consists of a set of coordinated, contextualized knowledge management processes. The main objective of this paper is to report the results of our on-going research project that, among other things, aims to investigate the role of individual and collective process knowledge developed and used in a business process improvement methodology deployed in a BP improvement initiative. In this research project we aim to identify and document the issues/strategies/practices related to externalization, creation, application and reuse of process knowledge in a specific e-procurement process improvement initiative currently undertaken by the BPM team in a large multi-unit organization. This paper includes an exploratory case study used in this research to identify and describe important research and practical issues created at the crossroads of BP improvement methodology and process-related Knowledge Management.

LITERATURE REVIEW

The need to improve customer service, to bring new products and services rapidly to market, and to reduce cost inefficiencies have been pushing business processes to the top of business organizations' priority list ([1], [2]). Business processes are an effective way to manage an organization at any level and eventually support its overall goals. Consequently, they are now considered the most valuable corporate asset [1] and their continuous improvement has become an imperative for many business organizations.

Business Process Improvement Concepts and Methodologies

In spite of the increased attention, BP improvement is not a new concept. Rapid advances in information and communication technologies, end-user computing and increasing globalization and competition have all intensified this need for improving business performance. While continuous improvement philosophy and methods have helped in achieving significant improvement in the quality of manufactured products and processes, their effect on business processes has been limited. Even though information technologies were deployed to improve these business processes, results are often disappointing.

The earlier disciplines of ‘Organization & Methods’ and ‘Operational Research’ have resulted in many business process improvement methodologies used to this day. Currently, business process improvement covers a continuum from incremental continuous improvement to radical reengineering of the business and its processes. Process reengineering is now considered obsolete and impractical considering its radical view of redesign, the top-down approach, strong focus on BP automation and past history of failures and problems [1]. Other approaches such as process design, process redesign, process improvement etc. are still alive and widely used by various consultants and practitioners, often under different names.

While improving business processes is well recognized as an imperative need for many organizations, the first and the foremost question asked by the practitioners for initiating such business process improvement is ‘how?’ In other words, they are interested to know what methodologies to follow and which tools to use. In fact, many consultants and software vendors differentiate themselves by the methodology they apply. Improvement methodologies are primarily the field of consulting firms who have developed proprietary business process improvement methods [3]. Even though there are many models, techniques and tools available for improving the business processes, many authors such as Davenport [2] argue that process innovation remains more an “art than science” [4].

In essence, a methodology is a theory that is put in practice with the objective of dealing with real world situations [5]. It is expected to provide a means of describing the knowledge and experience and to offer certain level of generic structure to the approach for practitioners to employ in their specific business situations. In addition to offering certain level of organization and structure to the approach, methodology is also expected to facilitate understanding of the roles and tasks and identification of the skills required to implement the approach [6].

In the revised version of his ‘what-to-do’ book called ‘Business Process Improvement,’ Harrington [7] addressed this ‘how’ question and provided technical procedures for implementing business process improvement in business organizations. This particular approach consists of a six phases – *organization, documentation, analysis, design, implementation and management*, and is expected to lead to the implementation of the best-value future-state solution [7]. Reviewing various methodologies and tools on process improvement, Povey [8] observed that the past methodologies were incomplete and generally did not address the implementation issues adequately. While most of the methodologies address the analysis and redesign with some degree of thoroughness, the actual implementation of changes were addressed either superficially or not addressed at all [8]. The next section will discuss the issues and challenges with the current BP improvement methodologies.

Challenges and Issues with the Current BP Improvement Methodologies

A methodology is expected to provide a means of generalizing and describing the knowledge and experience and, place that in a structured way to make it easy to implement by explaining the roles, tasks and required skills. Given that each business situation and each business process have unique characteristics, it is difficult to develop and adapt a common universal methodology that is applicable to all types of business situations and contexts and delivers the outcomes in all types of business scenarios and contexts. While there is always an opportunity to learn from the existing successful approaches and practical experiences in case study situations, their adaptation and reuse in a different situation cannot guarantee any degree of success. Each methodology has its advantages and disadvantages and no single model is the best one for all business situations and contexts.

Requirement to consistently follow a particular approach to process improvement prescribed by a particular methodology that worked well in a different context, may stifle the creativity of people involved in the improvement and actually restrict the opportunities for achieving optimum results. Conforming to the rigid requirements prescribed in a given methodology may be contrary to the improvement philosophy a firm would like to embed in their organizational culture.

Clouded by the undue focus on project management and organizational change aspects, the challenge to develop an improved process is relegated to the bottom in the quest to develop the ‘best’ process improvement ‘methodology’ [9]. In order to deal with this challenge, many firms tend to adopt best practices. A ‘best practice’ is a successful way of resolving a particular problem that may need to be adopted in a skillful way to the prevailing conditions. Best practices are collected and applied in various fields such as business planning, healthcare, manufacturing, software development, product design and software implementation ([10], [11]). In business process reengineering literature also, about 30 best practices are described by [9].

Increasingly this challenge has forced organizations to discover the ‘best practice business processes’ and adopt them to their local business situations rather than deploying a methodology for achieving process improvements. To make things easier for business organizations, some of the software vendors claim that the so called ‘best practice’ business processes are already embedded in their software solutions. For example, enterprise systems software vendors such as SAP, Oracle etc. claim that the

business processes embedded in their software solutions are typically best practices. These large ERP software vendors reportedly investigated business processes across a wide variety of organizations and industries and then modeled the best of them into their software solutions ([12], [13] and [14]). With many firms preferring to leave a well-tested configuration of the enterprise system unchanged [15], the underlying assumption that the best practice business processes embedded in the software remain 'best practice' forever is contrary to the continuous improvement philosophy. This brings the focus back to the improvement methodology that is sustainable and deliver continuous improvements rather than finding an 'off-the-shelf' and one-off process improvements enabled by software solutions.

None of the business process improvement methodologies documented in the literature were individually capable of providing a complete methodology. An analysis of various business process improvement methodologies that were currently in use revealed that none of them were robust enough to be able to deliver sustained improvement [8]. He has developed a 'best of the breed soft BPI' model by taking best parts of the existing models into a new model by incorporating a socio-technical approach that balances the technical needs of the process with the cultural needs of the people who execute the process.

Sustainability of business process improvement and the currency of the methodologies/models is another challenge. While business process improvement methodologies and tools have helped achieve significant improvement in operational areas, many organizations have found it difficult to sustain over the long term. Lack of sustained commitment by the senior management, lack of continued training and further development, culture clashes, 'tick box' approach by senior management in incorporating enablers of process improvement, and lack of structures to stop backsliding are some of the problems affecting the sustainability [16].

Focus on easily quantifiable and harder elements in the process improvement methodology is another issue. Even though some of these methodologies include 'soft' elements such as human relationships, resistance to change and organizational culture, their focus is on harder and more quantifiable elements of the organization ([6], [17]). Even though many best practices and research papers recognize the importance of human elements and the organizational aspects, they are not included in most of the existing methodologies. Difficulties in modeling these factors into the methodology and inability to generalize the issues across various business situations are some of the reasons for this.

Even though understanding the evaluation and continuous improvement notion and incorporation of human and organizational issues into the business process improvement methodologies are critical success factors, most of the methodologies stop at implementation stage. This seems to be inconsistent with the increasing pressures of an ever-changing world in a highly competitive business environment [18]. Moreover, this is an antithesis to the continuous process improvement philosophy adopted by many business organizations. Application of many of these approaches and methodologies is not feasible due to associated application cost, time required for its implementation and lack of knowledge about their potential benefits [18]. In an business improvement context, it is necessary to evaluate both the process itself as well as the methodology in order to ensure that it is effective when used by practitioners. Thus, several methodologies and tools developed by various experts, academicians and practitioners to help businesses improve their processes, do not seem to adequately support the practitioners through all stages in the business process improvement [6].

Another issue is whether the business process improvement methodology does indeed work or not? Many methodologies and tools have been developed both by consultants/experts and researchers without rigorously assessing their usefulness to the practitioners. It is also not clear whether these methodologies and tools, when applied, really contributed to the improvement objectives, were useful to the end users and, most importantly, whether they were tested elsewhere. Revising the frameworks and methodologies of [2], [3], [7], [19], a new business process improvement methodology that incorporates theory, tools and practices was developed by [6]. Even though this methodology was tested by the authors at the time of development in a particular business context, no further work is done. It is not clear how much better this methodology is than the previous methods. As noted by authors [6], further testing of the MIPI methodology with more case studies and a framework that incorporates users' skills into the methodology is essential.

In summary, some methodologies and tools are developed by consultants and are used exclusively by them in their consulting assignments while some other methodologies developed by the researchers are published in the academic journals. What is good for one business process and organizational context may not be acceptable and adoptable to another as many issues including the management style, organizational culture, skill levels of participants and the process characteristics such as complexity, scope, significance etc. may impact on the adopted business process improvement methodology. More over, all of these methodologies are not rigorously tested for their validity across different business situations and therefore are limited in their applicability. In addition, cost effectiveness of the methodology and the ability to adapt a generic methodology to a particular business/industry sector are also not evaluated thoroughly in spite of their significance.

However, in spite of their significant differences, most of the existing BP improvement methodologies in the literature typically consists of some or all of the following stages - development of objectives, problem definition and scoping, process analysis and modeling, redesign, identify change levers/implementation, benchmarking, evaluation and continuous improvement ([6], [16]).

All these stages of BP improvement generally are linear and sequential with varying emphasis on a particular stage of the process of improvement in each of those methodologies. In practice, it is however, difficult to visualize a strictly linear and sequential process of achieving business process improvement, especially with the methodologies increasingly incorporating 'softer' aspects such as change management and human relationships.

Knowledge Aspects of BP Improvement

As already stated, knowledge is considered an integral part of the business process and not something to be managed separately. It is deeply embedded not only in documents, models or formal repositories but also in organizational routines, processes and practices [20]. Organizational knowledge includes both explicit knowledge that can be externalised, documented, codified, shared within the same context and managed by technology as well as tacit (implicit) knowledge that is deeply embedded in the experience people develop over time. While some aspects of tacit knowledge cannot ever be externalised, some aspects of it can be described and shared usually via collaborative problem solving, sharing of the same experiences etc. This particular aspect of tacit knowledge is commonly termed "experiential knowledge".

Research in the area of knowledge management (KM) also confirms that people develop new practices even when engaged in highly repetitive, routine business processes. Knowledge and especially the process knowledge, is inseparable from individuals and their actions [2]. It is a combination of experience, context, interpretation and reflection, and involves more human participation than information [4]. Reflection upon concepts and the distinctions among them is the essence of the process of 'knowing' [21] and hence makes it inseparable from individuals. This also means that knowledge, and especially its tacit aspect, is not something that can be "bottled", stored and pushed around by technology in order to be delivered to the right people at the right point of time, as promoted by the so called "Technology-Push Model of KM" [22].

We argue that any BP design process is, in fact, a knowledge intensive process as all decisions about activities and tasks to be performed implicitly and explicitly deal with process-related knowledge. The structure of a process represents only one aspect of this knowledge derived from the organizational procedures and rules used to specify sequencing of activities, the way activities exchange information and the way processes join and branch out [23]. The need therefore to understand and appreciate the role of knowledge management within the context of process redesign and/or improvement initiatives and the way knowledge is to be integrated with the business process is imperative [24].

The process orientation implicit in the process knowledge that is possessed by the owners and users will facilitate process improvement [25]. Therefore, involvement of individuals in process improvement initiatives will allow them to exploit their core talents, skills, process knowledge and experience and leverage them into process improvements [26]. This involvement, will in the long run increase the coordination of each individual's efforts with the company's business operations in their day-to-day execution. In fact, the embedded practices and norms at the operational level characterized by the process knowledge will help sustain beneficial outcomes of the process improvement [26].

Furthermore, inadequate importance attributed to the business process knowledge among the individuals especially in administration and services sector that heavily involve knowledge-based activities is one of the major reasons for the failure of business process improvement projects [24]. In addition to this, inability of the organizations in developing predictive dynamic models for evaluating the effects of designed process improvements before implementation have also contributed to these failures. While simulation models are successfully used in manufacturing process contexts to analyse the scenarios and arrive at informed recommendations for improvement [27], not much experience and knowledge is available about the business processes in services and administrative sector.

In summary, experiential knowledge owned by individual domain experts, is often neglected during BP improvement projects as companies often adopt the model-based approach that focuses on control-flow models, coordination mechanisms, rules & policies - in essence, the explicit knowledge. With emphasis decisively shifting towards the evaluation of the improvements (outcomes) as well as the process or methodology of achieving improvements, the inseparable link between the individual/collective knowledge of the stakeholders in the project and the business process under investigation, is expected to have significant influence on both the process as well as the outcomes.

RESEARCH METHODOLOGY AND CASE STUDY ORGANIZATION

The main objective of this research is to investigate the role of individual and collective process knowledge in the development, deployment and evolution of a business process improvement methodology. More precisely, in a specific e-procurement process improvement initiative currently undertaken by the BPM team in a large university, we aim to identify and document the issues/strategies/practices related to influence of process knowledge possessed by individual participants. The main research question this study investigates is:

What is the influence of individual/collective process knowledge in the development and evolution of business process improvement methodology in this business context?

In line with the exploratory nature of this research, a case study method that involved an interpretive approach was adopted to capture

its corresponding contextual richness and complexity [28]. Interpretive research offers an opportunity to understand the phenomena through the meanings that people assign to them [29]. This project used an exploratory, structured-case study research method to investigate the business process improvement methodology developed and evolved as the BPM project progressed from its inception to completion.

In order to capture accurate reflection of the issues under investigation and the evolution of business improvement methodology in this context, semi-structured interviews with the stakeholders and facilitators of the project were conducted. In addition, the research team participated in the process improvement workshop as non-participant observer, and observed the evolving methodology and the interacting and facilitating factors in the final outcome. In addition, information that relate to the origin and history of this project, its plan of action, minutes of the previous meetings and workshops, and other policy related documents were collected and content analysed. Like all interpretive studies, this study sought a subjective understanding of the conditions, practices and consequences of social action as expressed by the stakeholders and facilitators in their particular social context and are expected to reveal complexities and details that are commonly omitted in quantitative studies [30]. The data thus collected from different sources was compared and triangulated in order to identify the development and evolution of the business process improvement methodology in this context.

The case study organization, chosen for this research, is a large university that employs about 6000 staff. The e-procurement business process improvement project, investigated in this study, is being implemented in a large faculty that employs about 200 people. The faculty consists of a number of organizational units including academic departments, research centres and other commercial units. The specific process improvements emerging from this project along with the evolving BP improvement methodology are expected to be rolled over to other faculties in time. The study was conducted during the 2006 to 2007 and is currently in the final stage. This particular organization was selected because of the access given to the researchers, its potential as a rich organizational context in which to study the influence of process knowledge and the evolving nature of the process improvement methodology in a BPM implementation context.

The e-procurement BP (also known as “purchase-to-pay”) is one of the core operational processes in any organization. In essence, it is a very simple repetitive, standard BP designed to coordinate the main activities related to procurement of goods and services from a supplier, their receipt and storage and subsequent payment. Thus, it typically includes the following high-level tasks: “order goods and services”, “Receive goods and services” and “Make payment”. An organization procures many different types of goods and services however, some of them need to be registered and subsequently managed as company assets for insurance and depreciation purposes (e.g. equipment costing more than \$5000). In this particular organization, asset management has been a very complex problem and this mainly due to a very diverse nature of assets procured by different organizational units. For example, while some of the asset types were virtually the same across all units (e.g. computers), in many instances different units had to acquire and manage very diverse types of assets. Some of them would require special storage and safety procedures in place (e.g. radioactive substances). Some would even require the specialist knowledge to check the working order of a received asset (e.g. a very sophisticated piece of equipment).

Even though the e-procurement BP remained the same (in terms of its main tasks and control flows) across different units within the same faculty, over time, the underlying organizational practices and policies have evolved and changed. This was followed by development and acquisition of different applications used to manage different aspects of e-procurement process. In particular, very diverse asset types led to development and implementation of different asset management applications designed to meet the diverse needs of different units. The e-procurement BP improvement initiative started as a part of a much larger initiative to standardize operational processes that, in turn, will enable implementation of a concept of shared business services. From the business value perspective, this will enable different units to share assets, improve bargaining power with suppliers, streamline the processes and most importantly better utilize knowledge, expertise and experience of people involved in this BP as well as other organizational processes.

Over time, the BPM team aims to start similar initiatives in other faculties, again, first with the e-procurement process and then with the other core BPs. Consequently, transfer of knowledge and experience acquired in this particular project and its transfer to the subsequent BPM projects is critical, in order to make the subsequent projects even more effective. Obviously, this is a very challenging task not only because of the underlying infrastructure, but also because of different organizational contexts including different organizational culture, information management and change management practices as well as organizational policies and practices.

As is typical in any case study research, this study had limitations, including lack of generalizability and subjective bias ([28], [30]). The findings of this study were specific to the situation observed and provide anecdotal evidence. Since the business process improvement methodology and process knowledge of individuals in the project is continuously evolving and changing, it was possible that the influence of process knowledge on certain aspects could not be seen immediately, and may become apparent only after a long period of time [31]. The limitations discussed above could thus have influenced the process as well as the outcomes of this study. However, these limitations are unlikely to have affected the validity and reliability of the outcomes significantly because the objective of the study was not to generalize, but to provide anecdotal evidence and illustrate the role of

process knowledge in this particular project.

DISCUSSION AND LESSONS LEARNT

Rather than a sequence of commonly used phases that are primarily focused on BP models and model improvement technique, this research has confirmed our initial view that a business process improvement methodology is a set of coordinated knowledge-management processes. These processes deal with acquisition (externalization), creation, co-creation, transfer and application of both explicit and most importantly experiential knowledge (i.e. externalized tacit knowledge). They need to be carefully designed and coordinated in order to best leverage individual and collective knowledge, experience and creativity.

As already pointed out, a typical BP improvement methodology would normally start with the analysis and modeling phase(s) that result in a design of an “AS-IS” model. In this case, BP modeling typically involves acquisition and transfer of the explicit knowledge from the domain experts (i.e. people actually executing these processes) to the process analyst. The analyst then proceeds to represent this knowledge by a process model. Obviously, some aspects of this explicit knowledge get lost, first during knowledge transfer and then during process modeling. In the case organization, the e-procurement process also started from the analysis phase. However, in this particular case, the analysis phase involved two sub-phases that we named preliminary analysis and collaborative analysis.

Preliminary analysis confirmed that the high-level standard model of this BP was the same across different units. Consequently, the main objective for the BPM team was to understand the level of complexity and differences between different “versions” of the same process at the lower level. However, rather than trying to identify and document all different versions of the “as-is” process and the associated policies, it was important to identify the key participants (the so called “touch points”) – people who have the explicit as well as experiential knowledge about the key aspects of each version of this BP. Furthermore, the BPM team also used the preliminary analysis phase to gain better understanding of the possible sources of, and reasons for, different versions of the process. Our project has confirmed that the key participants were people in charge of various semi-structured decision making tasks in each process and the main differences occurred because of the different policies and procedures that have evolved over time around these decision making tasks. For example, the main differences could be attributed to an important decision: “Is the received good an asset?” and the associated rules used to make this decision in each unit.

Therefore, the main objectives of the preliminary analysis phase in this particular project were to locate the key domain expertise and to understand the reasons for, and sources of different versions of the same process that have evolved over time. From the knowledge management perspective, these objectives are very different from those of “traditional” BP analysis and modeling phase that typically focus on knowledge transfer from domain experts, in order to create very comprehensive “as-is” BP models. In typical BP improvement methodologies, modeling of the current (“as-is”) BPs is normally followed by design of improved (“to-be”) processes. This is often done by process analysts with a varying degree of end-user participation.

In this particular case organization, the preliminary analysis phase (as described above) was followed by a collaborative (full-day) workshop that, in essence combined the collaborative analysis sub-phase and with collaborative design. Workshop participants included the “touch points” from each unit as well as the members of senior management. The workshop was prepared and guided by the workshop facilitator who was also one of the leaders of the BPM team and therefore included in the preliminary analysis. As it is typically the case with collaborative workshops, some preliminary rules were established and discussed at the very beginning to create an environment that encourages, supports and values equal participation.

From the knowledge management perspective, the workshop included all key knowledge management processes: acquisition, co-creation, transfer and application of both explicit and experiential knowledge. Rather than in a particular sequence, these knowledge management processes were highly intertwined. Furthermore, even though the high-level model was used at the very beginning of the workshop, the main emphasis was not on process modeling. After confirming that the high-level model was indeed the same for all functional units, participants focused on process tasks. Therefore, instead of looking at control-flows between tasks and trying to identify possible problems with for example, process structure, the group focused on each individual task. As expected, the special emphasis was placed on decision tasks. The main objective was to gain shared understanding of different rules, policies that people used to make a particular decision and how they would normally proceed to implement this decision.

Again, rather than creating the fine-grained models of different versions of decision making tasks, shared understanding was achieved through collaborative exploration of different common and less common scenarios. As already stated in the previous sections of this paper, the KM field confirms that some aspects of tacit knowledge can be only externalized through collaborative problem solving. This was exactly the case with collaborative exploration of different scenarios that were proposed by the workshop facilitator as well as emerged during workshop.

This collaborative analysis (sub-phase) of the workshop focused on the key question that the workshop facilitator used to engage all workshop members: “*How does this work in your world?*”, where “this” referred to different scenarios. This question would normally lead to discussion of different policies, underlying systems and even different aspects of organizational culture that have shaped the way a particular version of the process is currently implemented. Again, rather than focusing on process aspects

(such as process structure) the main emphasis was placed on the knowledge, experience and skills, participants currently bring to each task no matter how complex or simple it was. For example, the actual task of sending an order for goods and services to a chosen supplier is, in essence a very simple, routine task. However, it was acknowledged that the real value of this task was created by the team of purchasing officers who have established and continue to expand a network of trusted, high-quality suppliers.

Looking from the KM perspective, the main objective of collaborative analysis was not on collaborative modeling but on building of shared understanding of current practices. Knowledge management processes included both knowledge acquisition from the key participants as well as knowledge transfer between different functional units via various knowledge management techniques including discussion, clarification and story telling related to different exceptions and management of complex cases. The key role was played by workshop facilitator who was in charge of coordination of these knowledge management processes.

The next phase, also performed during the workshop included knowledge co-creation that in essence, included collaborative design of new version of the key decision tasks as well as discussion of the associated policies (including both the existing and possible new policies). Compared to the typical BP improvement methodologies where the main emphasis is on design of a new "to-be" process, in this particular project the group focused on individual tasks first with the view that the overall process model will also emerge during the same process. The new knowledge was created through open discussion of new ideas and their possible implementation in different units. The key question used to facilitate this knowledge management process was "How would this work in your world?" Even though participants decided not focus on the technology, they commented on possible support for different scenarios that could or could not be provided by the existing systems.

The collaborative workshop resulted in a preliminary design of new decision tasks and the associated policies that were also combined in a new version of a e-procurement process. It is interesting to point out that, again the high level model of to-be process remained the same. This is not surprising having in mind that this is the core business process that has to include a standard set of high-level tasks, because goods and services still need to be ordered and received and payments need to be made.

After the to-be processes are designed, typical BP improvement methodologies normally proceed with the implementation phase. In this particular project, the implementation phase again included a number of knowledge management processes. After the workshop was completed and the agreed outcomes documented, this, now explicit knowledge, was then communicated back to all organizational units for further analysis and discussion. This phase is still currently in progress. The BPM team anticipates that after the reviews are completed by each unit and feedback collated, they will be ready to design an implementation plan for new process. In the meantime they have started a related information management project with the main objective to map the existing data sources and come up with the integrated view first at the conceptual and then at the implementation (technical) level.

CONCLUSIONS AND FUTURE WORK

The main conclusion of our empirical research is that business process improvement is, in fact, a complex, knowledge intensive, collaborative process. It consists of a set of coordinated, contextualized often emergent knowledge processes that cannot be captured and prescribed by a process model. Therefore, any process improvement methodology should focus on knowledge management strategies and processes rather than place the main emphasis on BP models as it has always been the case in this area. This project will continue with BP improvement of e-procurement processes in other faculties. From the KM perspective, it is expected that this would include a two-way transfer of knowledge, from completed to new projects in order to continue to improve the underlying methodology and knowledge processes as well as from the newly completed projects back to previous projects to ensure continuous improvement and sharing of new ideas.

REFERENCES

- [1] Gartner Research (2006) "Gartner position on Business Process Management", Gartner Research Note, 1 February, <http://www.gartner.com>.
- [2] Davenport, T.H. and Short, J.E. (1990) "The New Industrial Engineering: Information Technology and Business Process Redesign", *Sloan Management Review*, pp.11-27.
- [3] Kettinger, W.J., Tenge, J.T.C. and Guha, S. (1997) "Business process change: a study of methodologies, techniques and tools", *MIS Quarterly*, Vol. 21, No. 1, pp. 55-80.
- [4] Davenport, T., (2005) *Thinking for a Living: How to get Better Performance and Results from Knowledge Workers*, Harvard Business School Press.
- [5] Preece, I. and Peppard, J. (1996) "A study of tools, methods and methodologies for business process redesign", *Proceedings of the 3rd European Academic Conference in BPR*, UK.
- [6] Adesola, S. and Baines, T. (2006) "Developing and evaluating a methodology for business process improvement", *Business Process Management Journal*, Vol. 11, No. 1, pp. 37-46.
- [7] Harrington, H.J., Esseling, E.K. and van Nimwegen, H. (1997), *Business Process Improvement Workbook*, McGraw-Hill Companies, Inc..
- [8] Povey, B. (1998) "The development of a best practice business process improvement methodology", *Benchmarking for*

- Quality Management & Technology*, Vol. 5, No. 1, pp. 27-44.
- [9] Reijers, H.A. and Limam Mansar, S. (2005) "Best practices in business process redesign: an overview and qualitative evaluation of successful redesign heuristics", *Omega*, Vol. 33, No. 4, pp. 283-306.
- [10] Glovin, J. (1997) *Achieving Stretch Goals: Best Practices in Manufacturing for the New Millenium*, Prentice-Hall, New York.
- [11] Butler, P. (1996) "A strategic framework for health promotion in Darebin", *Report to the East Preston and North*.
- [12] Bingi, P., Sharma, M.K. and Godla, J.K. (1999) "Critical issues affecting ERP Implementation", *Information Systems Management*, Vol. 16, No.3, pp. 7-14.
- [13] Konicki, S. (2001) "Nike just didn't do it right, says i2 Technologies", *Information Week*, 5 March, <http://www.informationweek.com/827/nike.htm>.
- [14] Scheer, A.W. and Habermann, F. (2000) "Enterprise resource planning: making ERP a success", *Communications of the ACM*, Vol. 43, No. 4, pp. 57-61.
- [15] Somers, T.M. and Nelson, K. (2003) "The impact of strategy and integration mechanisms on enterprise system value: Empirical evidence from manufacturing firms", *European Journal of Operational Research*, Vol. 146, pp. 315-338.
- [16] Bateman, N. (2005) "Sustainability: the elusive element of process improvement", *International Journal of Operations & Production Management*, Vol. 25, No. 3, pp. 261-276.
- [17] Ruessman, T., Preece, I. and Peppard, J. (1994) "Tools and methods in business process redesign", Working paper, *IS Research Centre*.
- [18] Vokala, M., Rezgui, Y. (2000) "Critique of existing business process re-engineering methodologies – the development and implementation of a new methodology", *Business Process Management Journal*, Vol. 6, No. 3, pp. 238-250.
- [19] Childe, S.J., Maull, R.S. and Bennett, J. (1994) "Frameworks for understanding business process reengineering", *International Journal of Operations & Production Management*, Vol. 14, No. 12, pp. 22-34.
- [20] Amarvadi, C.S. and Lee, L. (2005) "The Dimensions of Process Knowledge", *Knowledge and Process Management*, Vol. 12, No. 1, pp. 65-76.
- [21] Glazer, R. (1998) "Measuring the knower: Towards a theory of knowledge equity", *California Management Review*, Vol. 40, pp. 175-194.
- [22] Malhotra, Y. (2005) "Integrating knowledge management technologies in organisational business processes: getting real time enterprises to deliver real business performance", *Journal of Knowledge Management*, Vol. 9, No. 1, pp. 7-28.
- [23] Bera, P., Nevo, D. and Wand, Y. (2005) "Special theme of research in information systems analysis and design – I: Unraveling knowledge requirements through business process analysis", *Communications of the Association for Information Systems*, Vol. 16, pp. 814-830.
- [24] Smith, H. and McKeen, J. (2004) "Developments in Practice XII: Knowledge-Enabling Business Processes", *Communications of the Association of Information systems*, Vol. 13, No. 4, pp. 25-38.
- [25] Reijers, H.A. (2003) *Design and Control of Workflow Processes: Business Process Management for the Service Industry*, Springer-Verlag, Berlin.
- [26] Beckett, R.C. (2004) "Stimulating and evolving knowledge-oriented business process improvements in a business enterprise", *Journal of Manufacturing Technology Management*, Vol. 15, No. 4, pp. 325-334.
- [27] Giaglis, G.M. (2001) "A taxonomy of business process modelling and information system modelling techniques", *International Journal of Flexible Manufacturing Systems*, Vol. 13, No. 2, pp. 209-228.
- [28] Yin, R. (2003) *Case Study Research: Design and Methods. 3rd ed*, Sage Publications, CA.
- [29] Deetz, S. (1996) "Describing Differences in Approaches to Organization Science: Rethinking Burrell and Morgan and their Legacy", *Organization Science*, Vol. 7, No. 2, pp. 191-207.
- [30] Mason, J. (2002), *Qualitative Researching. 2nd edition*, Sage Publications, London.
- [31] Willcocks, L. and Lester, S. (2002) "In Search of IT Productivity: Assessment Issues", in L. Willcocks, L. and S. Lester (eds.), *Beyond the IT Paradox*, John Wiley & Sons, pp. 60-97.