Inside Agile Processes: A Practitioner’s Perspective

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Abstract
Organizational agility is achieved through timely awareness and agile Business Processes (BPs). Yet, in Business Process Management (BPM), agility tends to be associated only with operational BPs and is often reduced to technical agility. This paper argues that agility should be investigated in the context of other types of processes, especially knowledge-intensive emergent business processes (EBPs), as they are, by definition, agile. This paper describes an action research project that uses a holistic model of BPM to investigate a real-life example of EBPs, taking a practitioner’s perspective.

1. Introduction

Agility is commonly viewed as the ability to continuously adapt to an ever changing environment, by mobilizing the required resources and processes. From the business perspective, “agility is the ability to detect opportunities for innovation and seize them by assembling requisite assets, knowledge and relationships with speed and surprise” [1]. A company’s agility is directly related to its capability to dynamically create knowledge and take action upon it. This, in turn, creates a solid basis for a sustainable competitive advantage [2]. Agility encompasses both exploration and exploitation of opportunities. “Exploration is organizational experimentation with new alternatives in pursuit of knowledge about currently unknown opportunities. Exploitation is the use and development of things already known through refinement and extension of the existing competencies, technologies and knowledge” [3]. While extension of the existing competencies is related to organizational learning, the ongoing improvement of work practices is the main focus of Business Process Management (BPM).

Organisational agility is achieved through agile business processes (BP), both primary and supporting, at different organizational levels. Yet, in BPM, the concept of agility is often associated only with operational BPs. “Operational agility reflects the ability of firms’ BPs to accomplish speed, accuracy and cost economy in the exploration of opportunities for innovation and competitive action. It ensures that firm can rapidly redesign the existing and create new BPs for exploiting dynamic marketplace conditions” [3].

However, “agility is more likely to emerge from a creative process of exploration, and not from mechanistic, prescriptive and commoditized techniques and technologies... Agility is in our thinking, in our reaction to change” [4]. Hence, agility is closely related to, and achieved through knowledge work and complex, situational decision making. Yet, this type of work is not typically carried out within routine BPs. “We have knowledge workers who for the most part work on nonroutine tasks and complex efforts. Emergent work practices are becoming common rather than prescribed projects. Most of the simple tasks have been automated or soon they will be” [4].

As the current focus of the BPM discipline is gradually shifting to include more complex unstructured processes, one could argue that the same logic should also apply to the concept of agility. Thus, agility should be investigated in the context of knowledge-intensive BPs that are, by definition, agile.

Furthermore, contrary to the operational BPs, agile BPs require very rapid process improvement, ongoing learning and unstructured, situational decision-making, often in a team environment. Thus, more than any other processes, agile BPs require a holistic approach to BPM that encompasses four highly intertwined components: strategy, people, processes and technology. All these reasons call for more research on agility within non-technical components of BPM, especially its people component. Even more, an appreciation of the human factors is pivotal to the successful integration of agility-enabling technologies [5]. However, current work on agility tends to focus predominantly on the technology and process components of BPM, often taking a very mechanistic view of BPs. For example, in very recent times, execution of agile BPs tends to be reduced to a composition of SOA-based services. Thus, the term “agile” is often used as a synonym for “SOA-enabled”. Moreover, while increased flexibility is very important...
at the technical level, the examples used are often those of operational BPs (e.g. travel agency). Yet, more challenging examples of knowledge-intensive BPs remain unexplored by BPM researchers.

Knowledge-intensive BPs involve predominantly *tacit* (experiential) knowledge that is highly contextual. Consequently, it is very hard to research these processes outside of their context i.e., by using research methods based on surveys, observations or by conceptual modeling, as it is often done in BPM.

This paper argues that in order to understand issues related to agility in knowledge-intensive processes, it is necessary to: (i) use the holistic model of BPM and (ii) study these processes in their context. This means that it is necessary to use a research method that will enable a researcher to actively participate in these BPs to ensure transfer and internalization of tacit knowledge.

This paper takes a holistic approach to BPM to investigate a real-life example of agile, team-based BPs, taking a practitioner’s perspective. The paper focuses on a particular category of knowledge-intensive processes called *Emergent* BPs (EBP). They are prime examples of complex, agile processes as their structure *emerge* during process execution through situated decision making, often in a team environment. Examples include design of a new product, service, or even a new BP.

This research was inspired by a real need to solve a complex practical problem related to design and introduction of a new model of Business/Management Information Systems (BIS/MIS) education. Putting the educational aspect aside, we argue that in this context, any education model is implemented as a set of work practices. From the organizational perspective, these practices encompasses various BPs, both inside and outside of the classroom environment, that range from highly repetitive operational BPs on one side, to highly creative and emergent BPs on the other. Even though they exist in the educational environment, these organizational processes are BPs, as they involve a set of coordinated activities that aim to achieve a particular business objective and create a business value. Furthermore, implementation of these processes could be also seen as an example of a major organizational change in this context. All these reasons have inspired and initiated our BPM-related research.

Even though we used the educational domain as our source of insight into a particular type of agile process, many lessons learned from this research are also relevant to the other knowledge-intensive organizational environments that (i) also involve complex design processes, including design of new services or products, and (ii) are interested in the problem of design, dynamic improvement and sharing of “best” work practices that involve agile BPs.

This paper offers the following research and practical contributions to the BPM field:
- It takes a holistic view of BPM to study agile processes, thus extending current research on BP agility beyond the technical and process components.
- It uses action research founded in the state-of-the-art theoretical frameworks in BPM, and other related fields, to offer an inside view of agile BPs, taking a practitioner’s rather than an observer’s perspective,
- It extends the holistic model of BPM even further, by offering a better insight into inter-dependencies among different BPM components, in the context of agile BPs.
- The paper also contributes to a better understanding of the problem of, and a possible methodology for, rapid improvement of agile BP.
- Finally, by focusing on collaborative design processes in education, this paper opens a new domain for BPM-related research and practice.

2. Theoretical foundations

The holistic model of BPM encompasses four intertwined components: strategy, people, BPs and technology [6]. While strategy defines organizational goals and objectives for value creation, the actual business value is created and delivered to customers via BPs. In general, a BP is defined as a set of coordinated organizational activities/tasks, guided by organizational policies and procedures and performed by skilled people in different formal roles. BPs are supported by BPM systems and other technologies that could range from simple BP automation systems, to complex systems designed to provide user-driven support for ad-hoc communication/collaboration and coordination.

Very recent industry-wide adoption of the holistic BPM model has resulted in an increased recognition of the knowledge and experience people develop, use and share, while participating in all phases of the BP lifecycle. In response, BPM has started to evolve beyond operational BPs to include knowledge-intensive processes. In general, a BP is *knowledge-intensive* if its value can be directly attributed to people’s knowledge and experience required for BP-related, non-routine, situational decision making.

This research started from a theoretical proposition that in agile BPs, the agility requirement should be extended to all four components of BPM, including even strategy. While agile BPs do require agile technology and will continue to benefit from SOA-based solutions, these processes require human agility even more. In fact, an appreciation of human factors is pivotal for any organization aiming to become more agile [5]. This is because people are in charge of
complex decisions and, ultimately, need to deal with all aspects of change management required to implement those decisions. “Agility assumes that change is continuous and embracing it is an ongoing activity” [4]. Furthermore, agility demands a faster cycle of knowledge creation and action that defeats the traditional organizational response of predicting and reacting based on pre-programmed heuristics [7], that in the BPM context include pre-defined BP models.

This paper focuses on EBPs as prime examples of agile BPs. “EBPs are organizational activity patterns that exhibit the following three characteristics in combination: (i) an emergent process of deliberation with no best structure or sequence, (ii) requirements for knowledge that are both general and situational, (iii) distributed across people and evolving dynamically and an actor set that is unpredictable in terms of job roles or prior knowledge” [8]. From the knowledge perspective, EBPs are practice-oriented, rather than procedure-driven processes, as they predominantly involve experiential knowledge accumulated through practical problem solving and reflection-in-action [9].

While the current research on EBP is still evolving, there are already notable examples of interesting research projects in this area. Markus et al. investigate a design theory for a new type of information system that could be used to support EBP [8]. Debenham and Simoff focus on management and execution of EBP at the technical level, enabled by intelligent agents [10]. Hawryszkiewych focuses on design methods for collaborative EBP [11]. All these exemplary projects confirm the previously stated argument that research and practice on agile BP tend to focus more on the process and the technical components of BPM.

Furthermore, EBPs call for the human-centric knowledge management (KM) approach because process-related knowledge is inseparable from individuals [12]. It is a combination of experience, context, interpretation and reflection and involves more human participation than information [13]. This means that knowledge, and especially its tacit aspects, “cannot 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 technology-push model of KM” [14]. Instead, EBPs require the so-called strategy-pull model of KM, originally proposed by Malhotra [14]. In fact, when combined with BPM, this KM model reinforces the interdependency among BPM’s strategy, people and process components.

In summary, our research on agile BP is founded in, and guided by, a combination of the very recent BPM-related theoretical frameworks including: a holistic model of BPM [6], the knowledge perspective of BP [9], the strategy pull model of KM [14], as well as the current research on organizational agility and EBP [8].

3. Project background

This project was inspired by a real challenge to design and implement a new model of BIS/MIS education. From the organizational perspective, this educational innovation was, in fact, a major organizational change, impacting on all previous work practices and processes. This impact was not confined only to the teaching and learning aspects but was extended to the associated educational management processes, including even facility management and HR processes. From the BPM perspective, the new model involved design and implementation of a number of BPs, including both operational and EBPs.

The overall project was guided by a set of complementary objectives in two different domains. On one side, our objective was to design and implement an innovative model of BIS/MIS education to address the shortcomings of the traditional, widely used transmission model. From the organizational innovation perspective, our second objective was to create a set of sustainable work practices that could be shared and transferred to other courses (subjects), from one staff member to another and even across organizational boundaries to other universities. As these practices were implemented via domain specific processes, both procedural and practice-oriented [9], it was possible to study them from the BPM perspective.

Our approach to study an educational innovation from the BPM perspective represents a significant departure from a common practice to consider only the educational research perspective. By taking this approach we were able to bring in various relevant BPM frameworks to inform and guide the design and implementation of these practices from the organizational perspective. At the same time, the acquired experience has enabled us to contribute to the holistic model of BPM in the context of EBPs.

Even though these specialized processes do exist in the educational domain, they are still service-oriented BPs, because they are core organizational processes that contribute to value creation in this environment.

Without going into too much detail of the new educational model and its theoretical foundations, the reminder of this section will briefly introduce the context necessary for better understanding of EBPs in this domain. Following a common BPM practice, we start from the old “as-is” model and then proceed to describe the new “as-is” model, terming that way to indicate that it has already been implemented.
- The old “as-is” model

While the world of IT/IS keeps changing at an unprecedented rate, and our students population keeps changing in terms of prior skills and learning needs, the world of BIS/MIS education remains very much unchanged, especially in the large foundation courses. Universities continue to use the same transmission model of education, where the main focus is on delivery of content. However, practice confirms that “It does not work to teach the [MIS] class like geologists naming minerals… Nor does it work to teach the class as a glorified dictionary” [15].

Even when technology is introduced to enhance student learning experience, by providing more flexibility and interactivity, in most cases the underlying educational model, although technology-enhanced, remains fundamentally the same. Furthermore, from the organizational perspective, large foundation courses are typically delivered in a very standard way. Large lecture teaching is combined with more interactive tutorials. To enhance this model of delivery, lectures are often recorded and made available online to provide more flexibility, but in essence they remain structured around content delivery. While tutorials provide much more interactivity, they are often guided by less experienced staff (tutors) who may have mastery of the content, but who often have very limited experience in teaching methods. Thus, design of application-oriented learning activities, appropriate for developing students’ higher level cognitive skills, remains a major challenge [16].

A growing body of evidence confirms that content-based education does not help students to develop advanced learning skills including critical thinking, problem solving and reflective skills [17], all deemed vital for their future business and BIS career.

However, BIS-related educational innovations still focus on different aspects of curricula, without any significant change to the underlying educational model, especially at the foundation level. “Educational reforms are usually additive rather than transformational, having little impact on core values, structures and practices” [18] (ch 2, pg 23).

- The new “as-is” model

From the educational perspective, the new model was based on a combination of three well-known educational models: Problem-based learning [20], Reflective practice [21] and Team-based learning (TBL) [16]. Looking from the BPM perspective, the new model was implemented via a number of organizational processes, ranging from operational processes related to the course, staff and facility management on one side, to very creative, knowledge-intensive processes on the other side. This section focuses on the TBL model, in particular its process aspects, in order to introduce agile, team-based EBPs in our context. In essence, TBL is a comprehensive group-based instructional format developed to facilitate active learning, even in large classes. For more details on the educational aspects of TBL model, including well-researched benefits for students and their teachers, see [16] and [18].

Looking from the BPM perspective, it is possible to observe a number of different processes that are used to facilitate all aspects of TBL including course design, classroom management, and even student group composition and performance evaluation. We also argue that the process view of TBL extends outside of the classroom environment to incorporate BPs related to staff, student, course and facility management.

Leaving operational BPs aside, the main focus of our BPM-related research was on creative and knowledge-intensive processes in the context of this model. For example, course design could be seen as “a creative process in which the instructor establishes strategic framework that serves as a basis for ensuring that individual course components are mutually supportive” [16]. Furthermore, TBL is structured around the instructional activity sequence [19] that is also an example of a creative, knowledge-intensive process. Its most challenging part involves design and implementation of application oriented activities [19] that have been the main focus of our project and BPM-related research. In fact, our team-based implementation of application oriented learning activities, that are in essence highly specialized processes, represents the core feature of our new model of BIS education. Based on the experiential knowledge acquired during design and collaborative implementation of these processes by a team of professionals, we argue that they are examples of agile, highly creative EBPs.

In our case, the actual delivery of these processes in a large class involved coordinated activities and situational decision making of the whole TBL team (the team leader(s) and TBL tutors), that very much resembled a team of players in any group sport or even a team of medical practitioners working together in the “same time/same place” mode. By adopting a broad definition of a BP, to include organizational processes that in a given context contribute to value creation and organisations’s competitive position, we argue that these processes, even though highly specialized, should be seen as BPs, thus inspiring BPM-related research.

In order to fully understand the innovative nature of these processes, especially their agility aspects, it is important to briefly describe the organizational
structure of the learning environment in which these processes were designed and implemented.

Our major research and practical contribution in this context is the extension of the above described model of TBL with the concept of TeamNets. This concept was originally introduced in virtual organizations to describe networks of teams, in particular their patterns of interaction and collaboration [22]. We argue that the same concept is highly appropriate for our context to describe opportunities for collaborative learning across a network of learning teams (LT) in a large class environment. To describe our version of TBL, we coined the term TeamNet Based Learning (TNBL) that emphasises different patterns of knowledge sharing and co-creation across learning teams (LT) in the same large class environment (in our case more than 260 students). Figure 1 illustrates the organizational structure of our TeamNet environment, where circles represent different LTs, and arrows illustrate examples of their interactions. In addition to their unique alphanumerical codes that enabled tracking of group and individual learning progress, all LTs where colour coded to facilitate allocation of designated TBL tutors. Thus, each LT had its own TBL tutor and all LTs allocated to the same tutor had the same colour code.

![Figure 1: The organisational structure of TNBL](image)

Just like in TeamNets in virtual organizations, our version of TeamNet was also implemented as a multi-level form of organization with one or more TBL team leader and TBL tutors (that together formed the TBL team), and a large number of LTs. Similar to TeamNets in virtual organizations [22], in our organizational environment TBL tutors were acting as “boundary spanning” individuals, crossing the horizontal boundaries between different LTs, as well as vertical boundaries between different layers of our “organizational structure”, thus facilitating horizontal and vertical information flows. While in the mainstream TBL model the primary role of TBL tutors is to support LTs, in our TNBL environment TBL tutors were also knowledge agents, providing real-time (in class) feedback to their allocated LTs (and other LTs if required), identifying and reporting to the team leader common problems, good solutions and insightful comments from their allocated teams as well as providing high-level summaries across all allocated LTs. Most importantly, TBL tutors were able to assess the real-time performance of their allocated LTs, even at the level of individual students. This real-time intelligence and instant feedback to students and also from students to the TBL leader all facilitated TBL tutors, was designed to provide real-time insight into learning needs and performance of a very large number of students (in our case more than 260 per stream, 520 in total). This, in turn, enabled real-time situational decision making. From the process perspective, this particular organizational structure enabled implementation of highly creative, agile learning processes designed to facilitate unique patterns of knowledge sharing and co-creation within LTs, across groups of LTs sharing the same colour code and across all LTs in a class. These patterns enabled very engaging and innovative processes such as, for example, implementation of learning chains used to illustrate the concept of “collective wisdom”, competitions among team colours, learning circles, etc.

We argue that each process designed to achieve the intended learning objectives via knowledge-sharing and co-creation across our TeamNet was, in fact, an example of highly creative, agile EBPs. Process execution involved coordinated activities guided by situational decision making by all TBL team members based on the real time intelligence of student performance and learning needs. Loosely guided by the initial design, these processes involved patterns of coordination, collaborations and communication that would emerge during process execution. Further analysis of these EBPs from the BPM perspective is provided in the subsequent sections of this paper.

4. Research methodology

The practical project of design and introduction of a new model was combined with an action research project aimed at investigating various organizational aspects of this educational innovation. They included BPM and KM issues related to design, implementation and reuse of innovative practices, “inside” and “outside” of the classroom environment. A major shift in thinking, that inspired this BPM-related research, occurred when we realized that the above described educational innovation could be seen as a set of organizational processes that needed to be designed, implemented and improved on an ongoing basis. In
fact, we had to manage a whole range of processes including design processes (such as design of new curriculum), collaborative EBPs (implementation of learning activities in TNBL environment), as well as operational processes, related to various aspects of student, course and staff management.

From the BPM perspective, the main objective of this research project was to gain a better understanding of agile processes, in particular EBPs in this context, in order to further develop the holistic BPM model. The project started from the following broad research questions used to inform and guide our practice:
- Is it possible to use the holistic BPM model to inform and guide design, implementation and evaluation of an organizational (educational) innovation?
- Is this model likely to lead to a better understanding of these EBPs, especially the ways they are designed, implemented and improved?
- Is the same holistic model applicable to both operational BPs as well as EBPs?
- How does agility of EBPs affect the relationships between different components of the holistic model?

As already stated, due to the contextual nature of these processes, we used an action research methodology to investigate EBPs from a practitioner’s perspective. In essence, action research uses an intervention into problematic situation as a means to develop scientific knowledge [23]. It links theory and practice in a cycling process [24] where the “main intention is to create a synthesis with specific knowledge that provides actors in the situation with the capability to act and the general knowledge that is suitable in similar situations” [20]. In general, an action research cycle consists of the following generic steps: diagnosing, action planning, action taking and specific learning. In our case, each research cycle was designed to correspond to a single instance of course delivery, completed within one 13-week session (a semester). Furthermore, each cycle was designed as a set of weekly “minicycles” that involved design and implementation of a new set of EBPs, delivered twice per week (in two TBL streams).

In addition, our research project followed a particular form of action research, called collaborative practice research, where the main objectives were to understand, develop support for, and improve specific professional practice within the participating organization [23]. Originally, the word “collaborative” was used to indicate close collaboration between researcher and participants to ensure transfer of tacit knowledge. However, in our project this division did not exist as the author was involved both as a practitioner, in charge of design and implementation of the new educational model and its associated processes staff coaching and mentoring, as well as the main researcher, guiding the project and investigating the accumulated experience through reflection-in-action.

Even though action research was the main research methodology, it was supplemented by additional methodologies. For example, we used case studies and surveys to facilitate data collection while the actual design of the new educational model and EBPs was guided by design research.

As already pointed out, this project started from a combination of several research frameworks, including the holistic BPM model [6], the knowledge model of BP [9], and the strategy-pull model of KM [14]. This combined framework was used to support design and implementation of all BPs associated with the new educational model and to guide the project from the research as well as the practical problem-solving perspectives. Based on the acquired knowledge and practical experience, this initial framework was further improved, giving an additional insight into interdependencies among all BPM components in the context of EBPs, as reported in the following sections.

5. Implementation and lessons learned

The initial action research cycle of this project was completed during Semester 1 of 2008 (March to June), after a very intensive four month period of course design and preparation. Data analysis is still in progress. However, the initial feedback has given us a very strong indication that the introduction of the new model, based on the principles of BPM as well as state-of-the-art educational research and practice, was very successful. In addition to the most important performance indicator related to the improved students learning outcomes, other indicators included industry feedback as well as our own process performance indicators, such as the level of collaboration and knowledge-sharing among LTs, quality of information flows, staff engagement and contribution in each EBP, team coordination etc.

Leaving the educational contributions aside, this section describes a subset of the most important findings related to the holistic BPM model and its applicability, in the context of EBPs in this domain. All findings are structured around four BPM components:

- **Strategy component**

  One of the ongoing BPM problems is to translate the given organizational strategy into operational BPs (i.e., map strategic KPI into operational BPs’ KPI). However, in this mapping process the original strategy remains very much unchanged and unchallenged by the underlying operational processes.

  While going through this action research project, especially while designing and implementing EBPs, we
had to reconsider the “traditional” roles and responsibilities of all process participants. As they started to change we could also observe that, to some extent, the initial strategic goals also started to change. In fact, they started to co-evolve with our EBPs in terms of the underlying principles and models used to set the initial strategy. One of the contributing factors was certainly the problem-based focus of all EBPs and our strategic goal to meet industry’s needs for future BIS and business reflective practitioners.

For example, while the wide-spread service-based model of university education that sees students as “customers” and university as “service providers” will continue to inform and influence strategic goals of many universities and the way university education is provided to students, this project has gradually shifted our views, especially in terms of the “business model” of university education and the real “customers” of our services (i.e. our service-oriented BPs). We now argue that, from the business perspective, industry should be seen as the primary customer of the learning partnership (alliance) of universities and their students.

This gradual change of the underlying principles used to inform the strategy, as a result of design and introduction of our service-oriented “customer-facing” EBPs, confirmed previous findings by Galliers [25] related to the role of strategy in agile organizations. “Defining goals apriori and even settling on operating strategies may limit an organisation’s ability to take advantage of opportunities in an uncertain and constantly changing environment. Future organizations will be the one where emerging strategies are devised on the fly for specific short-term endeavors and then a process of reconfiguration goes on to see how best to mobilize resources for the next task” [25]. While organizational strategy will continue to guide BPs, in agile organizations, this strategy is likely to co-evolve with EBPs, as confirmed by our research project.

This particular outcome has also prompted us to rethink the relationship between the strategy and BP components of the holistic BPM model. While in the case of operational BPs, this relationship is typically one-directional (top down), whilst in the case of EBPs, especially if they are the core BPs, this relationship is one of co-evolvement and inter-dependency.

- **People component**

The ongoing goal of BPM, achieved through this component, is to best leverage human knowledge, experience and creativity in all phases of the BPM lifecycle. In addition to what is already known about this BPM component, in terms of human-centered KM, change management, and leadership, this project offered new insights into the nature of leadership required by these EBPs.

When considered in the context of operational BPs, the main focus of this BPM component is very much on “management and control” in order to ensure compliance with the relevant policies and procedures, reinforced by predefined BP models. Consequently, there is a strong emphasis on BP ownership.

At the same time, practitioners are now starting to recognize the need for leadership rather than management and control, even in the context of operational BPs. In fact, strong leadership is considered to be crucial for management of change naturally associated with any BP improvement. However, this leadership role is often delegated to process owners as they are considered to be responsible for their assigned BPs, even as the main change agents.

On the other hand, EBPs make a strong case for transformational leadership, based on a process-oriented journey rather than destination-driven change. “Transformational leaders build a coalition to guide the transformation process and work to develop a sense of teamwork. With trust as a foundation, companies or groups within companies can share their knowledge to achieve results that excel the sum of parts” [22].

This was certainly evident in our project. Here, transformational leadership needed to incorporate strategies to even redefine the process ownership. This meant taking people from being responsible for process execution by following given directions, to individually owning the process in terms of the whole lifecycle, and then to co-owning the process with the rest of the team. However, this “transformational” journey was only possible because of its strong trust-based foundations. In fact, in our case, trust turned out to be the major driving force behind team-based execution of EBPs, especially their ongoing improvement.

Going back to the holistic BPM model, it is possible to confirm that in our EBPs the process and people components of BPM also co-evolved through process execution. Again, this is different from the operational BPs, where the process component determines (even dictates) what people do via pre-defined models.

- **BP component**

Traditionally, this BPM component focuses on different phases of a BP lifecycle. However, the same framework was not applicable to our EBPs, as they followed a different design-implementation-learning pattern. While the initial design of EBPs continued to be created by the team leader, due to the specialized knowledge and expertise involved, dynamic execution of these processes in the collaborative learning environment was a team effort. For example, a process instance often required ad-hoc coordination, seamless,
real-time communication as well as co-design and execution of new collaborative tasks on the spot. Most importantly, in order to help students to focus on tasks-at-hand, our process coordination had to “fade” into the background. Initially, this was very hard to achieve as all participants needed to be educated about the new model, but once we settled into this new mode of working, coordination patterns started to fade and gradually became almost “invisible”.

The new educational model also resulted in a number of new operational BPs related to the operational aspects of course management that were also initially “owned” and managed by the team leader. However, over time, they were co-designed by all TBL team members, who used their “collective wisdom” to create very efficient and effective “reusable” course management processes. In fact, it is possible to argue that BP co-design was a direct result of transformational leadership, and in particular, process co-ownership (i.e. BPM’s people component).

While in the case of operational processes, BP modeling is one of the core activities of the BP lifecycle, our project confirmed that this was not the case with our EBPs. The initial models were used mainly to plan timing and coordination of all activities in order to help team members to prepare. Instead of using the existing BP modeling language, we used very simple, high level conceptual models of EBPs based on the emerging models of Learning Designs, that have been increasingly used in educational research [26] to express innovative learning processes. Our intention was not to capture every single detail in advance but to set the scene, clarify our roles, expectations and responsibilities, as well as share knowledge.

However, the actual execution of each EBP instance involved team-based coordinated situational decision making guided by real-time feedback obtained from all TBL team member, and, via them, from all LTs. Here, the team leader was the main coordinator of all activities within each EBP, guiding the process towards the intended learning outcomes. It is important to observe that in each instance EBPs execution was guided by students learning rather than constrained by the initial process design. Thus, our collective ability to observe learning progress and needs of all LTs in the real-time mode and then adjust EBPs accordingly, were the main reasons why these processes needed to be very agile.

Even though the actual process instances were “reconstructed” and analysed after each process execution to facilitate reflection and our own learning, these models were never rich enough to capture the essence of EBPs, only their coordination aspect. We discovered that the best way to transfer the “know-how” was not via models but through shared experiences that involved mentoring during the actual process execution, collaborative real-time problem solving and collaborative reflection after each session.

Another important BPM research finding is related to a possible BP improvement methodology suitable for EBPs. Inspired by the “traditional” BPM, our initial methodology was very much structured around a BP lifecycle. However, over time, with the accumulated experience, this methodology gradually evolved into a form of participatory action research that needed to be very rapid in terms of very short action minicycles, to meet the requirements of twice-weekly sessions. It involved the whole team, and, via them, our students in order to capture all perspectives of each EBP and the associated operational processes. Again, this ongoing rapid BP improvement methodology was only made possible by transformational leadership and process co-ownership, again BPM’s people component.

In summary, this project confirmed that in the case of EBP, a possible BP improvement methodology needs to be structured around the associated knowledge processes, rather than process structure, in order to facilitate reflection-in-action.

- Technology

The ultimate goal of any BPM technology is to support process participants through all phases of the BP lifecycle. However, in this project we found that the existing BPM systems would not meet the requirements of our work in terms of flexibility, ad-hoc coordination, collaboration and communication patterns, decentralized control and user-driven co-design.

As one of the team members pointed out: “You don’t need technology to coordinate on-the-court actions of a basketball team”. But, it is possible to use technology to plan and co-design and later analyse the experience and in this way to facilitate knowledge co-design, sharing, transfer and reuse. Therefore, our main BPM support requirements were related to, and guided by, our collaborative knowledge processes involved in design, implementation and ongoing improvement of EBPs, rather than BP lifecycle as in “traditional” BPM.

At the time of writing, we are currently experimenting with possible use of web 2.0 tools to support our knowledge processes in the future, including co-design of EBPs, different phases of collaborative problem solving and team reflection. Based on the initial feedback, these aspects of BPM support appear to be much more important than any possible support for technology-driven process coordination, monitoring and execution of process instances, as currently offered by BPM systems.

Most importantly, any BP support needs to co-evolve with the actual EBP process itself. Therefore,
the traditional approach to SDLC, where user requirements are specified in advance, do not apply here. In essence, what is needed is support for “harvesting the collaborative wisdom” of all team members that will grow through the accumulated experience.

The above analysis of all four BPM components, in the context of EBPs, has enabled us to address the initial exploratory research questions. Thus, this project confirmed that it was possible to use the holistic model of BPM to guide the actual practice of design and introduction of a major educational innovation. Even though we could not use it to design the actual EBPs, the model prompted us to consider four different BPM components and their relationships when managing these processes. The same approach enabled us to gain a much better understanding of EBPs in the educational domain from four different perspectives. We also confirmed that compared to operational BPs, in the case of our EBPs, their agility feature did affect the relationships between different components of BPM and even the holistic model itself.

Finally, this project also confirmed that EBPs were executed though coordinated, collaborative situational decision making that required very strong transformational leadership. Consequently, we discovered that a possible (if not the only) way to improve these processes was through collaborative participatory action research, as previously discussed. This finding has very important consequences for workplace training of BPM practitioners involved in any knowledge intensive BPs, especially EBPs. We argue that it is necessary to design training methods to help all participants in EBPs to improve situational decision making and their reflective practice in the given context, if possible though mentoring and coaching in the real-life setting. These workplace training requirements go well beyond current BPM training practices that often focus on BP modeling as well as improvement methodologies guided by process models rather than the associated knowledge processes.

6. Conclusions

Current research and practice in the area of agile BP is very much inspired by the real need to enable agile organizations. However, the concept of agility is predominantly associated with operational BPs, in particular technology-enabled agility.

This paper argues that this view needs to be extended to knowledge-intensive processes, especially emergent processes, as they are by their very nature agile. Furthermore, it is necessary to study agility beyond technical level to fully understand the other components of BPM and how they contribute to, or are affected by, agility in the context of the given BP.

Thus, in order to study EBPs, one needs to consider the holistic BPM model that incorporates four highly intertwined components: strategy, people, processes and technology. Furthermore, owing to their knowledge-intensive nature, especially tacit knowledge being generated and transferred, EBPs call for action research where a researcher needs to be actively involved in BP design and management.

The main objective of this paper was to describe an action research project on highly-specialised EBPs in the educational environment. In fact, due to the tacit knowledge involved, one could argue that EBPs are always highly-specialised and could only be studied in the same context in which they naturally occur. The project was initiated by the real life problem to improve the current educational model and its associated processes, used in the foundation BIS/MIS classes.

Combined with educational frameworks and methodologies, the BPM approach described in this paper has enabled us to introduce a major work practice innovation in a domain that is not typically considered by BPM researchers and practitioners. At the same time, this project represents a significant departure from the typical practice to study educational innovations exclusively from the educational research perspective. By bringing in the BPM perspective, we were able to apply the existing state-of-the-frameworks to guide our research and professional practice. But most importantly, we were always guided by the ultimate goal to provide an innovative and educationally sound learning experience for our students, measured by the improved learning outcomes, that we achieved even after only one semester of using this model.

Our project confirmed the same point as made by Iversen et al. [23] who stated that “this form of action research typically leads to a portfolio of focused research projects based on the ongoing and emerging problem solving efforts in the participating organization”. In fact, the ongoing problem solving activities in our project have opened up further interesting research questions related to BPM, knowledge management (especially design and sharing of best practices across different courses, faculties and universities) and change management as well as leadership, organizational learning, information management and business intelligence, and of course, educational research. Our current BPM-related work involves further refinement of all BPs as well as methodologies for reuse of these processes across different courses and in different educational environments.
7. References


