BI-Enabled, Human-Centric Business Process Improvement in a Large Retail Company

Olivera Marjanovic
University of Sydney, Australia
email: olivera.marjanovic@sydney.edu.au

Richard Roose
Metcash Pty.Ltd. Australia
Email: r.roose@metcash.com

Abstract

This research aims to critically analyse an innovative approach to Business Intelligence (BI) and Business Process Management (BPM) integration, achieved through BI-enabled BP improvement, founded in human-centered Knowledge Management (KM). The analysis is based on recent theoretical frameworks found in the related disciplines of BPM, BI and KM. The main objectives of this paper are to identify and analyse the unique characteristics of this innovative approach to BP improvement that to the best of authors’ knowledge has not been considered by the current BI and BPM literature. The illustrative example used in this paper is currently being implemented by a large retail company in Australia.

1. Introduction

After being on top of the CIO’s business priority lists for the last four years in a row (2006-2009), the latest Gartner report has placed the field of Business Intelligence (BI) at number five [1]. While many business practitioners may (mis)interpret this lower placement as a sign of BI being over its hype phase, and sliding into a less relevant zone, the industry leaders have been very quick to point out that this trend should be interpreted as a sign of maturity of BI technology. Especially, because the other (non-technical) aspects of BI are now much higher on the list. Examples include the third business priority: “Increased use of information and analytics in decision making”, that is clearly related to non-technical aspects of BI [1].

No longer considered just a technical field, BI is now seen as an “umbrella term, commonly used to describe the technologies, applications and processes for gathering, storing, accessing and analyzing data to help users to make better decisions” [2]. While in the past the term BI was used to describe a very broad range of applications, including even those providing codified intelligence, the latest thinking in this field emphasizes BI-supported human-intelligence, in the context of business decision-making.

With BI technology becoming widely available, the collective attention of industry leaders is now turning towards the related business issues and the new opportunities for BI-enabled value creation. “The fact is, BI technology is now at a maturity stage… Business intelligence, the management capability, needs to replace BI the technology” [3]. However, this is going to be very challenging, “because the skill level required to take a more holistic approach to business performance that goes beyond BI technology, is still quite low” [4].

In order to help more mature BI organizations to better understand the concept of BI management capability, Bertram [3] offers the so-called 4P framework that encompasses the following four components:

- **Performance**: Setting up an enterprise-wide performance metrics framework,
- **People**: Development of core business competencies within your business,
- **Process**: Embedding the use of information into and around business processes, and
- **Platform**: Creating core BI capabilities.

The research presented in this paper proposes to extend the above framework with the fifth capability component – **BI strategy**. It also argues that in order to achieve a high level of BI management capability, all five components: strategy, performance, people, process and platform, need to be fully intertwined, as they continue to co-evolve and shape each other.

The above model of BI management capability also illustrates the importance of process thinking and consideration of BPs in the BI context that goes beyond technical integration of BI and BPM systems. In fact, a holistic approach to BI and Business Process Management (BPM) integration has already been recognised by a number of researchers and practitioners. For example, very recent BI industry reports recommend various BPM-related non-technical initiatives, such as redesign of BI-supported processes, as examples of good practices designed to bring positive results without any additional investments in technology [5].
However, the practice of BP and BI integration continues to be reduced to the technical integration between BPM and BI systems. BI technologies continue to be used to make the old broken processes run more efficiently [6]. The same limitation applies to the available research that seldom considers the integration issues beyond technology, as described in the next section of this paper.

Through an exploratory case study, this research aims to investigate BI and BPM integration beyond technology, using a multidisciplinary approach founded in BI, BPM and human-centered KM. It identifies and describes an innovative integration approach that goes beyond “embedding the use of BI-information into and around business processes”, as indicated by Bertram [3]. This approach comes in a form of BI-enabled BP improvement of a very complex decision-intensive business process, currently being implemented by a large retail organization in Australia, with one of the co-authors being directly in charge of this implementation, and the other being an independent researcher.

It is also interesting to note that the same report by Gartner [1] that places BI technology lower on the priority list now identifies Business Process Improvement as number 1 business priority. In this respect, the BP improvement approach described by this paper is very important, because to the best of authors’ knowledge, it has not been considered by the current BI and BPM literature.

2. Related work

2.1. Current approaches to BI and BPM integration

Business processes represent a natural nexus for BI applications, as BI-provided information could be used in all stages of a typical BP lifecycle. For example, it could be used to support the analysis and (re)design of the existing, and design of the new BPs. During BP execution, BI-provided information could be used by process participants to make decisions at various decision points, simulate different outcomes of their intended actions, as well as monitor process execution and deal with exceptions. The outcomes of BI-supported decision-making could be also enacted via BPs, including fully automated workflows.

All these approaches do not offer anything new. They are already well understood and have been widely used by the BPM practitioners, for many years. In fact the so-called BPI (Business Process Intelligence), as currently practiced in the BPM field, focuses on BI-enabled monitoring as well as process-related intelligence derived from the previous process instances. The statement made by Grigory [7] in 2004 still stands: “For many companies, achieving operational BI simply means viewing operational data from their primary ERP system, namely SAP” [7].

On the other hand, BI practitioners and researchers continue to put forward a valid argument that enterprise-wide business data, as considered by BI, include more than the process data, as captured and generated by the BPM systems. In other words, compared to the BPM systems, BI systems offer access to, and possibility to integrate enterprise-wide, heterogeneous sources of different types of data, not all related to transactional BPs. It is important to note that BPM tools and systems such as ERPs “are no longer sufficient for this purpose” [4].

In spite of their diverse approaches to, and considerations of the concepts of BI and BPM integration, both disciplines agree that BPs need to be considered in BI. “The greatest value of BI comes from being increasingly embedded within the business processes themselves [8]. Similarly, Williams and Williams [9] confirm the link between BI-related value creation and different types of BPs. Furthermore, in his BI maturity model Eckerson [10] reinforces the importance of BPs for the organizations aiming to implement enterprise-wide BI initiative and in this way, reach a higher level of BI maturity.

At the same time, BI and BPs integration efforts are still limited, and simply reduced to technical integration of BI and BPM systems. Although challenging, technical integration is already a common practice, especially among industry leaders, and therefore, at the present time, does not offer any breakthrough insights, both to practitioners and researchers alike. As such, it could be only considered as the first step towards a more holistic integration of these two fields and their respective process-centric and data-centric views of organizations and business performance.

However, times are changing. According to very recent industry press, organizations are starting to consider BI and BPM integration beyond technology. For example, Imhoff and White [11] suggest that one of ten mistakes to avoid when implementing BI applications is to assume that BI is just a technical solution. In fact, those that do look beyond technology, when integrating BI and BPM, are already experiencing positive outcomes. For example, the Inaugural Gartner BI Excellence award for Asia-Pacific, went to the packaging company that identified the BP improvement as the key driver of their award-wining BI implementation [6].

But at the same time, even when interested to integrate their BPM and BI efforts in a more holistic way, companies will find very little guidance in the existing literature, both professional and academic. Apart from recognizing the importance of such integration, the current trade press, both in BI and BPM
fields do not offer any framework, a road map, or any systematic method to inform and guide organizational efforts in this area. The same observation applies to the academic literature.

The BI and BPM research communities interested in the integration issues, even if from their own disciplinary perspective, now have an important challenge ahead – that is to provide theoretically founded methods, rather than ad-hoc solutions. The very first step in this direction, like in any emerging applied (industry-based) field of research, is to identify innovative examples found in practice, and analyse them in the context of the currently available body of knowledge, as it is done in this research.

2.2. Current approaches to BP improvement

This section offers an overview of the current developments in the BPM field. It focuses on the main limitations of current BP improvement methods, necessary for a better understanding of the innovative example of BI/BPM integration, analysed in the paper.

For many years the main focus of Business Process Management (BPM) has been on process efficiency and workflow-enabled process automation. However, the whole discipline has evolved, gradually shifting its main emphasis towards business value creation (not necessarily cost-cutting), via ongoing improvement and innovation of a whole range of processes, across functional, and even organizational boundaries. Most importantly, the BPM field has been extended to include various BP-related strategies organizations apply to better leverage human expertise, knowledge and potential to innovate, while using the available technology in the best possible way. Figure 1 depicts a well-known model of holistic BPM, proposed by Harmon [12] that illustrates different components of this evolving field.

**Figure 1. A holistic model of BPM by Harmon [12]**

The relationship between these key components is not simple bi-directional, or always top-down i.e. going from strategy to technology via processes, as with other hierarchical models. If BPM is taken holistically, these components become highly intertwined, as they co-evolve and shape each other.

It is important to note that the same observation was previously made in the context of BI management capability by Bertram [3] and its key components. The obvious similarities between Harmon’s and Bertram’s models, further reinforce the need to look at possible integration of BPM and BI fields, holistically and beyond technology.

As already stated, this paper aims to critically analyse an innovative approach to BI-enabled BP improvement. Regardless of the technology component used to support BPs, popular BP improvement methodologies have a number of known limitations, as reported by the current BPM literature. A more detailed summary of is offered by [13].

Briefly, the most popular BP improvement methodologies tend to be model-based i.e. focused on process models, tasks and control flows. The analysis of “as-is” models is typically performed by process analysts, often without sufficient domain and contextual knowledge. BP improvement efforts are guided by the BP lifecycle model and, as such, closely resemble software design approach. They are frequently implemented as discrete projects, rather than ongoing innovation processes.

On the other hand, practice shows that the ongoing business process improvement involves highly contextual knowledge processes. They include ongoing acquisition, creation and co-creation, sharing, application and transfer of both explicit and experiential
knowledge and are best performed by domain experts with deep experiential knowledge in the given context [13]. Furthermore, to ensure their effectiveness, these processes need to be fully embedded into the processes themselves, rather than “bolted on”. If the KM processes are separated from the actual work itself, they are perceived as “an additional work on top of the real work” and are more likely to fail [14]. Finally, the BPM researchers argue that, “the KM approach to BP redesign, enables new ways of enriching, enhancing and transforming BPs in ways never before practically possible” [15]. The same point is also illustrated later in this paper.

3. Research questions and objectives

This paper focuses on an innovative case of process improvement, made possible by a mature, enterprise-wide application of BI. The case represents a very interesting “pattern” of BPM and BI integration, that extends well beyond technology, into all components of the holistic BPM and BI management capability, as previously defined.

Through an exploratory case study this research aims to address the following research questions:
- How does an enterprise BI solution support an ongoing, human-centered improvement of a core BP in the case organisation?
- What are they key success factors of this approach? How do they relate to the key elements of the BI management capability and the holistic BPM model?
- To what extent the identified BP improvement method addresses the common problems of BP improvement methods?
- Would it be possible to replicate this approach in other mature BI environments, with similar decision-intensive processes or BI technology in place?

4. Foundation theories

In addition to the BI, BPM and KM fields, that provide a multidisciplinary perspective necessary for this research, this section introduces a foundation IS theory used to ground the research phenomenon in the context of progressive development of the IS field, and further illustrate its significance.

In 2003, El Sawy [19] introduced the model of Connection, Immersion and Fusion views of IS, to illustrate the evolving nature of IS in organisations and their impact on, and integration with human work, as depicted by Figure 2.

![Figure 2. The Connection, Immersion and Fusion view of IS [19]](image)

The main differences between these views could be briefly described as follows [19]:

- **Connection View of IS**
  In this model, IT is used as a tool that is separable from people and their work. In other words, IT can be used to support people, but it is a separable artefact that can be pushed aside, if required, and the work will still continue. Examples include a simple report, a spreadsheet like application, a database query etc.

- **Immersion View of IS**
  In this model, people work in the IT-intensive environment where work and IT-processes are intertwined and IT cannot be pushed aside for work to continue. People are connected to the business environment via IT and to operate effectively people need to change the way they work as individuals, groups, enterprise or even across enterprises. Consequently, business processes need to be changed in order to take the full advantage of IT. Examples include a supply chain management application, online order management, CRM, enterprise-wide ERP i.e. the applications made possible by network interconnections and the Internet.

- **Fusion View of IS**
  In this view IT is not only immersed, but it is fully fused with the business environment, “in a way that changes the boundaries between work and personal life, and that fuses personal and public information” [19]. IT-enabled work is treated as one. Any attempt to break it down will only result into IT-enabled work of a final granularity. According to the authors this view was yet to appear (after 2004). However, some applications, such as those based on the embedded software in work and household devices, self-correcting BPs, personalised knowledge portals, applications based on data mining, do indicate that the Fusion view is already
5. The case organisation

Metcash Trading Limited (Metcash) is a multibillion dollar whole-?sale retail distribution company, operating across Australia and New Zealand. It is a complex business environment, comprising three separate business entities: IGA that is the largest supplier of independent grocery retailers in Australia, Campbells Cash and Carry that ?sters convenience stores and Australian Liquor Marketers, that on top of its wholesaling activities, also supports a number of independent brands.

To manage its distribution and marketing operations, Metcash relies on a very large volume of data that need to be collected and analysed across all regional operations. In terms of its BI maturity, this is a very mature organisation, with a complex BI architecture already in place. Their ?rst installation of a BI system took place in 1998 and included the Sales analysis and Promotional effectiveness applications. They were very successful, and since then, their BI environment has continued to evolve to include more and more applications. Very recent examples include: Retail analytics that is used to help retailers to drive increased sales of “hot” products, and Promotional analysis used to drive next year’s program.

These days, this very complex BI environment provides a consolidated view of the whole business and supports a community of more than 500 internal users and over 2000 retails. The key benefits of BI, as reported by Metcash, include:

- Ability to measure the effectiveness of promotional campaigns by tracking against sales activity;
- Ability to flag potential problems, such as delays, before they create a bottleneck in the supply chain;
- Ability to monitor buyer behaviour and respond with the best product mix;
- Ability to predict future demand, based on historical trends, and use it for accurate manufacturing forecasts;

BI is now fully integrated along the whole value chain, supporting Metcash’s key operations. For example, BI enables the company to regularly review its production plans for the following six to twelve months. This is critical for the manufacturing of store generic brands with long lead times, because running out of stock for long periods of time would have a significant impact on their retailers. At the retail level, BI is helping stores to range the right products based on consumer demand, allowing Metcash to intervene early in case of any unanticipated problems.

The company also has an Operational BI strategy in place to maximise warehouse efficiencies and benchmark its Distribution Centres to achieve its best practice. This particular benchmarking aspect provides a context for this research, as described later in the paper.

Looking from the BPM perspective, Metcash’s core BPs, including its very complex cross-organisational supply chain, are all supported by an equally complex BPM environment. At the present time, Metcash is running several ERP systems, one in each state, except in New Zealand. In order to provide a “single version of truth”, very large volumes of data generated by all these systems (ERPs and mainframes), need to be consolidated to enable quite detailed enterprise-wide business analysis. The only centralised place where this could be done for the whole company is their enterprise BI system that currently contains around 3 Terabytes of data. This complex environment enables Metcash to run more than 5000 reports per week along with quite complex analytical applications, such as previously mentioned Retail analyticals and Promotional analysis.

Therefore, based on the described example of data integration from ERP systems into their BI system, it is possible to con?rm that Metcash has already achieved BPM/BI integration at the technical level. This integrated environment has enabled this organisation to run their core intra- and inter-organisational BPs in an ef?cient way and derive the required business intelligence to remain competitive.

However, it is important to point out that this type of integration already exists in other organisations with a similar level of technical maturity of their BI and BPM systems. Even within the same retail sector. The next section will proceed to describe the research method used to study their approach to BI/BPM integration beyond technology.
6. Research method

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 [16]. Interpretive research offers an opportunity to understand the phenomena through the meanings that people assign to them [17].

After the most suitable case organisation had been identified and access granted, the researcher adopted the following research method. To establish a shared context necessary for knowledge sharing in this context, the first step involved a short presentation, given to a multidisciplinary audience, comprising of company employees representing different perspectives (IT and Business). The main objective of this presentation was to give a brief overview of the research context in order to establish a shared understanding of the key concepts and avoid possible misunderstanding. For example, it is a very well known fact that the key terms such as KM, BPM or even BI are widely misinterpreted, even within the members of these respective communities. The presentation was followed by an in-dept discussion with the audience members, exploring their BI/BPM world from different perspectives. Data collected in this initial session was then used to refine the exploratory questions and prepare for the next stage of research, giving enough time for reflection between different stages of data collection. Following the principles of case study research [16], the next stage involved semi-structured interviews and in-dept exploration of issues related to strategy, people, processes and technology, all in the context of their BPM/BI integration. The special emphasis was placed on the non-technical aspects of integration, enabling the researcher to discover an interesting pattern of BI-enabled BPM improvement, as reported in the subsequent sections of this paper.

Like all interpretive studies, this study sought a subjective understanding of the conditions, practices and consequences of social action as expressed by the stakeholders in their particular social context and are expected to reveal complexities and details that are commonly omitted in quantitative studies [18]. However, to ensure that the interpretation made was correct for the given context, the researcher sought a feedback and, when required, additional information to triangulate sources and the actual data collected.

The BI manager in charge of this innovation (the co-author of this paper), joined the researcher in the role of a reflective practitioner, providing valuable insights and interpretations that included tacit, contextual knowledge and therefore would not be possible to capture, just by observation.

7. An innovative approach to BI-enabled BP Improvement

This research focuses on one of the core BPs at Metcash called Planning, Forecasting & Replenishment process. As its name suggests, this process consists of three main activities (tasks): planning, forecasting and replenishment, that could be all classified as knowledge-intensive, involving complex decision-making. Yet, the high level model of this BP is decisively simple in terms of its structure: three high-level tasks connected by control flows.

This process is performed at each distribution centre with the key decision maker being its stock controller. The actual decision making process is supported by a BI environment that could be best classified as a “structured human-decision” environment, following a very recent taxonomy by Davenport [24]. In this type of decision-making environment, all critical decisions are made by human experts. The environment itself is designed to “provide the specific information and other process resources to make better decision faster” [24].

In the case of each stock controller, their structured human-decision environment includes a role-based portal designed to provide relevant, timely and context specific information, necessary to support their decision making process. For example, stock controllers use BI-generated reports, providing an accurate and up-to-date insight into all key parameters (e.g. what is currently in stock, what is in demand, what is the lead time in order to get new stock from vendors etc., aged stock that is not currently selling).

The BI system also offers a rule-based engine designed to support the replenishment activity in each state. The rules are used to store the explicit knowledge related to the replenishment activity, related to stock levels, orders, lead-time etc. Again, the actual decisions are made by humans, rather than a rule-based engine, as they also involve the experiential knowledge. Some of this experience could be externalised and captured by the rules for the well-structured, repetitive cases. But at the same time, the tacit knowledge held by the decision makers will never be captured in its entirety.

Therefore, the key value-add aspect of the overall Planning, Forecasting & Replenishment BP lies in these experiential decisions i.e. in the ability of decision makers to make good decisions based on timely and relevant information, supplied by the BI system. Once these decisions are made, their execution is then supported by automated workflows.

This brings us to the main focus of this research that is an innovative approach to the ongoing improvement of this core BP. As already pointed out, this particular process has a very simple high-level model. Therefore, popular approaches to BP improvement, based on
process models (e.g. control flows, order and timing of individual tasks) are simply not applicable here. Similarly, the common practice of analysing the “as-is” model, followed by design of a “to-be” model is not suitable either. The KM field already provides strong evidence that trying to capture and model all aspects of expert’s tacit knowledge used for complex decision-making will never be possible [14].

To support the ongoing improvement of this BP, the case organization decided to focus on its key value-add – the experiential decisions made by the stock controllers. The resulting high-level pattern of BP improvement is a quite simple, yet very powerful example of BI-enabled, human-centered KM in practice. More precisely, the BI system is used to benchmark the distribution centres, identifying the top performers i.e. the best performing decision maker(s), across the complete network. Then, rather than trying to externalise and reuse their experiential knowledge in a codified forms, the main idea is to identify top performers and enable/encourage them to share their knowledge/insights/practices with the other stock controllers, across company’s distribution network, via Communities of Practice (CoP).

At the time of writing, Metcash is implementing a wiki-based solution to support discussion and knowledge sharing among geographically dispersed members of this evolving CoP. Supported by HR-based initiatives, it is envisaged that, over time, these human-centered knowledge sharing activities will lift the level of performance of these key decision makers across the whole enterprise, resulting in an ongoing BP improvement. Even though the local decision making contexts could be different, e.g. customer preferences are not likely to be the same in each state.

In spite of BI system being the key enabler of this innovative approach to BP Improvement, this organisation recognises that its key success factor is not related to technology. Rather, it is in HR (Human Resource) strategies designed to encourage and reward knowledge sharing. Obviously, the same approach to knowledge sharing and collaboration will never work in an environment that encourages competition among decision makers.

Most importantly, these company-specific HR strategies when combined with the experiential knowledge, held by human decision makers, make the resulting high-level pattern impossible to replicate and acquire by the competitors. This is anticipated to lead to a much more sustainable competitive advantage than BI technology itself.

Finally, this approach also addresses the key problems of BP improvement methodologies, as described in Section 3 of this paper. More precisely, this particular method is not model-based and experts themselves are in charge of process improvement that is an ongoing process rather than a set project. At the time of writing, this company is considering different ways to make knowledge sharing activities an integral component of people’s work, thus making the ongoing improvement intertwined with the BP itself.

8. Discussion and lessons learned

This section analyses the above-described approach to BP improvement from a theoretical perspective and summarises the key lessons learned, relevant for the BPM and BI researchers and practitioners alike.

- The key to the success of BI-enabled BP improvement, as described in this paper, is not in technology and technical integration between BI and BPM systems.

As already stated, the key success factor identified in this case is related to the people component i.e. HR policies that need to be redesigned to enable the ongoing co-evolution of BI technology and human practices. The related research from KM [14] and knowledge-intensive processes [20] confirm that unless these practices become a ubiquitous part of everyday’s work, they are very likely to fail. This also has some important consequence for the design and implementation of knowledge-sharing technology (in this case a wiki-based solution), not only in terms of content, but approaches to technology diffusion and adoption in this organization.

- BI system is changing the nature of human work turning individual decision makers into collaborating knowledge workers.

This case confirms the same point made earlier by Gartner [21] that BI technology is transformational in nature, forever changing the nature of human work. In this case, the role of stock controllers is expected to change, from individual decision makers to knowledge workers, members and potentially leaders of CoPs – all well beyond their immediate work context. In addition to process improvement, it is envisaged that this important change will create a more interesting and rewarding work environment for stock controllers, potentially attracting more high quality employees in the future.

- BI-enabled BP improvement requires new approaches to performance management of processes and people involved.

The current BI system offers the necessary quantitative data to measure the efficiency of the core Planning, Forecasting & Replenishment process, as
well as individual performances of stock controllers, but in their “old” roles of individual decision makers. In fact, this particular aspect of BI-enabled performance management, has led to the innovative approach to BI-enabled BP improvement, in the first instance. However, the ongoing performance assessment of knowledge workers is a much more complex problem [20], especially in a collaborative environment.

This is also an interesting challenge from the BI perspective, as it creates the need to derive and analyse “employee-related” intelligence from different sources of quantitative as well as qualitative data. Discovery, validation and use of relevant qualitative sources of data, in other to perform the required analysis is even more challenging in the BI field that is very much based on quantitative data analysis. This particular observation illustrates the need for an integrative analysis of qualitative (contextual) and quantitative data, that has been recently confirmed as a very important future direction in BI, see [22].

- The relationship between technology and its use in the Connection, Immersion and Fusion View of IS does not follow a liner progression from less to more integration

Finally, this case illustrates that the process of immersion of IT into human work, as described by the Connection, Immersion and Fusion Views of IS [19], does not need to be progressive, with IT getting more and more integrated. In fact, the same technology, in this case, a BI system, could be used in all three ways, within the same organisation, at the same time, but for different purposes.

For example, depending on the level of its organisational adoption, the same BI tool, could be used in the Connection but also in the Immersion views (e.g. providing relevant information, deemed critical for decision making purposes). The same BI system could be also placed within the context of Immersion view, as demonstrated by the example of ERPs and BI integration in the case organisation.

The described pattern of BI-enabled BP improvement could be interpreted as an example of the emerging Fusion view. Even though it is technology-enabled, the key to its use could be only found beyond technology. Based on this case, we argue that the key lies in the fusion of all other components (people, strategy, processes) that make this application possible.

This particular lesson learned fully supports the key issue for IS theory development in the Fusion view, as identified by El Sawy. More precisely, using the principles of the so-called holonomic theory, firstly proposed by Bohm [23], El Sawy states that “The laws of the whole are embedded in the implicate domain, rather than in the explicate domain. It is almost like saying that the secret to understanding the behaviour and form of Swiss cheese in the holes, rather than the cheese. And the holes exist in a different domain than the cheese – and this domain has different rules and representations” [19].

The same metaphor is highly applicable to this research project. Thus, the key to understanding of the BI enabled innovation, (i.e. the explicate domain of our research or “metaphorical cheese”), lies in the issues surrounding the technical solutions (i.e. its implicate domain or “metaphorical cheese halls”). We argue that these “surrounding” issues have already been identified in both BI and BPM disciplines, as described by the holistic model of BPM by Harmon [12] and BI management capability by Bertram [3]. However, further research is required to fully understand how they shape each other and co-evolve in complex, BI-enabled distributed business environments, such as the one described here.

Finally, the level of fusion between BI and human work, as described here, has a potential to evolve even more in the future. The foundations have been set for the ongoing, “self-correcting” and self-evolving processes. However, as already pointed out the key to this evolution is certainly within the people rather than technical or process components of the holistic BPM. Therefore, new practices need to be designed, introduced and carefully evaluated to encourage knowledge sharing as well as leadership and innovation that can only come from the grass roots, through action learning and reflective practice.

9. Conclusion

Taking a holistic view of BPM and looking at BI as management capability, this research aims to explore an innovative case of BI-enabled BP improvement, not currently considered by the BI and BPM literature. From the theoretical perspective, this work is founded in recent theories from BI, BPM and human-centered KM fields. The paper offers a critical analysis of the case, placing it in the context of the Fusion View of IS, previously introduced by El Sawy [15].

Future research involves further investigation of issues and opportunities, created by an ongoing evolution of this “living” system, taking a multidisciplinary perspective founded in BI, BPM and KM, as required by this case.

10. References


