Organizing Projects for Innovation: A Collective Mindfulness Perspective

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Recommended Citation
http://aisel.aisnet.org/amcis2009/276

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ABSTRACT

IS projects continue to present a problematic endeavor for organizations. A high percentage of IS projects fail to meet efficiency metrics of on time, on budget, and on initial specifications. Even when projects meet these efficiency metrics, recent research and experience show that they fail to deliver business benefits. This paper presents an appreciative enquiry of a successful IS project that delivered an innovative business solution that was highly appreciated and valued by the business. Analysis of post-project data reveals the resemblance of the project practices with the creation of a collective mindfulness. It suggests that the project practices supported by an Agile software development method allowed the organization the opportunity to create a ‘bubble’ of collective mindfulness. This bubble of collective mindfulness had the capacity to sustain a high level of vigilance and sensitivity to business operations and needs which fostered business innovation and the delivery of a successful solution. The paper empirically contributes to the understanding of how IS project management could enable business innovation. Practitioners are invited to create a mindful organization for IS projects that embraces change and fosters business innovation.

INTRODUCTION

IS projects are notoriously surrounded by a high rate of failure; whether it is failure to complete the project, deliver specifications or meet time and budget allocation. Even when projects successfully meet their performance metrics (on time, on budget, and on specification), a recent study shows that they usually fail to deliver effective business benefits (Ashurst et al. 2008). A recently reported business experience also shows that even when IT project managers celebrate the completion of their projects on budget and on time, the business side does not necessarily value the solution and may find the whole experience painful and not worthwhile (Murray 2007). This paradox presents a challenge for IS project management. It shows that striving to meet efficiency metrics for completing projects on time and budget does not necessarily equal with delivering a business-valued solution.

However the field of IS project management has been concerned with organizing projects to meet efficiency targets, little is known regarding the management of IS projects to produce innovative business solutions. The thin strand of research on IS benefits realization focuses on how IS projects could produce the initially anticipated benefits (see for example: Karlsen 2008; Reymeni et al. 1997; Ward et al. 1999; Ward et al. 1996). Research on IS benefits
realization implicitly or explicitly assumes that IS projects are frozen in time and the benefits that have been agreed upon in the initial stages of the project will continue to be required despite the passage of time, the change of business environment, and the evolution of business needs.

This paper presents an appreciative enquiry of a successful IS project. Success here is defined according to the outcome of the project as the production of a novel IS solution that is valued by the business. It aims to understand how and why business innovation could take place in the context of IS development? The studied IS project took place in 2007 in the UK Life Branch of the international reinsurance company Munich Re. Data collection consisted of tape-recorded unstructured interviews and document reviews. Collective mindfulness has been adopted as an analytical lens to make sense of the collected data.

Following the introduction, the paper proceeds as follows. The second section briefly reviews Agile software development since the studied project was supported by Agile methods. The third section presents the theory of Collective Mindfulness. The fourth section describes the data collection method and the case study. The fifth section presents the research findings following the previously presented framework of Collective Mindfulness. The last section discusses the findings and draws theoretical and practical conclusions.

AGILE SOFTWARE DEVELOPMENT FOR IS DELIVERY OR FOR BUSINESS INNOVATION

Agile software development presents a practice-led movement that favours individuals and interaction, working software, customer collaboration, and responding to change over the traditional practices of focusing on processes and tools, comprehensive documentation, contract negotiation, and following of a plan (Fowler et al. 2001). Agile software development includes many methods such as eXtreme Programming (XP) (Beck 2000), Scrum (Schwaber et al. 2002), the Dynamic Systems Development Method (DSDM) (Stapleton 1997), Crystal (Cockburn 2001), Agile Project Management (APM) (Highsmith 2004), Feature Driven Design (Coad et al. 2002), and Lean Software Development (LSD) (Poppendieck 2001). All have been developed by software practitioners. However these methods differ in their details, daily practices and emphasis, they share a general orientation towards short iterative cycles, frequent communication with customers, and constant adaptation and accommodation of change.

There are ample practitioners’ publications that focus on promoting Agile methods through the presentation of successful case studies or suggest ways to extend Agile to cover areas that are thought to be not well covered by the existing methods. Practitioners’ publications maintain a focus on Agile processes and the daily practices. They link success to the adoption of the methods in a linear cause and effect way ignoring the organizational context and adaptation. Academic research continued to lag behind practice in the area of Agile methods as it has been with other systems development methodologies (Fitzgerald 2000). There are a few studies, however, that attempt to offer analyses and theorization of Agile. Conboy and Fitzgerald (2004) offer a broad conceptualization of agility based on manufacturing and systems thinking (Conboy et al. 2004). The claim of the Agile founders and advocates; Highsmith and Cockburn that Agile methods are rooted on the view that organizations are complex adaptive systems has been adopted in academia. For example, Meso and Jain (2006) and Vidgen and Wang (2006, 2007) adopted Complex Adaptive Systems (CAS) theory to develop a theoretical grounding for Agile software development practices (Meso et al. 2006; Vidgen et al. 2006; Wang et al. 2007). However useful, these studies maintain a narrow focus based on analyzing the IS organization practices of Agile methods and overlooking its business impact and the quality of the delivered system. Studies on Agile development continue to treat the subject as solely an IT issue forgetting the end product of the development efforts and the business organization that a developed system would serve.

This paper goes beyond the narrow focus on Agile methods themselves: their details and daily practices within the IT organization to explore the wider picture of an IS development project based on Agile methods. It investigates the impact of having an Agile-based software project on the business organization. It questions how and why business innovation could take place in the context of Agile-based IS development.
COLLECTIVE MINDFULNESS

The concept of collective mindfulness is rooted in Langer’s model of individual mindfulness (Langer 1989b, p. 4). In her model the rich awareness involved in the individual mindful state is depicted through active differentiation and refinement of existing categories and distinctions, creation of new categories out of the continuous streams of events that flow through activities, and a more nuanced appreciation of context and of alternative ways to deal with it (Langer 1989b). Langer later explained: “A mindful approach to any activity has three characteristics: the continuous creation of new categories; openness to new information; and an implicit awareness of more than one perspective” (Langer 1997, p.4). Mindlessness, in contrast, is characterized by entrapment in old categories; by automatic behavior that precludes attending to new signals; and by action that operates from single perspective (ibid). Mindless practice would strictly follow the rules disregarding the context, novelty, and the differences in individuals’ abilities. Langer argues that mindful learning - or what she calls “sideways learning”- of a subject or a skill makes us receptive to changes in an ongoing situations. Mindful or sideways learning involves: openness to novelty, alertness to distinction, sensitivity to different contexts, implicit or explicit awareness of multiple perspectives, and orientation in the present (Langer 1989a; Langer 1997). Weick and Colleagues (1999) extended this model from the individual level to the group level. They argue that in group level the rich awareness is expressed the same way as Langer’s model as a by-product of five cognitive processes. They explain that collective mindfulness is as much about what people do with what they notice as it is about the activity of noticing itself: “Mindfulness is as much about the quality of attention as it is about the conservation of attention” (Weick et al. 1999). They focused on studying High Reliability Organizations (HROs) and how they could sustain attention to details and small failures in prevention of the escalation of any problem which might lead to a disaster.

According to Weick and colleagues (1999) mindfulness in HROs involves: preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and under-specification of structure. Mannarelli and others (1996) argue that “an increasing number of organizations may be required to operate to nearly the same standards and, therefore, under nearly the same demands as the HROs ...” (Mannarelli et al. 1996). In their research they focus on less extreme organizations that have opportunities for High-consequence accidents not because of operating hazardous or complex technologies as in HROs but because of increasing public sensitivity due to a combination of media, legal, and environmental concerns.

Vogus and Welbourne (2003) theoretically and empirically connect the literature on high-reliability organization to even a broader set of organizations that they called reliability-seeking organizations. Unlike HROs that operate high-hazard technologies, or less extreme organization that operate in a sensitive institutional and environmental condition, reliability seeking organizations are tightly coupled to their unpredictable and complex environment. Vogus and Welbourne (2003) focus their study on software houses. They show that software houses could well serve as an example of reliability-seeking organizations. Weick and Sutcliffe (2007) extended the collective mindfulness theorization to include other business organizations that seek a reliable performance (Weick et al. 2007b).

Swanson and Ramiller (2004) applied and extended the concept of mindfulness to IT innovation adoption (Swanson et al. 2004). They argue that a mindful firm attends to an IT innovation with reasoning grounded in its own organizational facts and specifics. They contrasted it with a mindless approach to IT innovation based on bandwagon effect and the “me too” approach. They conclude by pointing at the need for field studies to further the understanding of mindfulness in IS innovation. They also highlight the need to “know how mindfulness embraces opportunities for continuous learning, as distinct from the taking of more prepackaged and pre-determined approaches.”(ibid, p. 575).
The constructs of collective mindfulness as developed by Weick et al. (1999) and adapted to IT innovation adoption by Swanson and Ramiller (2004) are further explained as follows:

**Preoccupation with failure**

The mindful organization is not concerned with success as much as it is concerned with failure. It treats a quiet period with suspicion that it could be an indication of possible miss of trouble’s signals (Schulman 1993). These organizations would encourage the reporting of errors and make the most of any failure that is reported (Weick et al. 1999). It encourages sustained attention even during periods of success. In the context of IT, it refers to the organizational alertness and detection of early signs of failure. Swanson and Ramiller (2004) note that a preoccupation with failure in IT context can aid in identifying opportunities for realizing value from an IT innovation (Swanson et al. 2004).

**Reluctance to Simplify interpretations**

Simplifications are potentially dangerous because they limit both the precautions people take and the number of undesired consequences they could envision (Weick et al. 1999). The mindful organization is reluctant to simplify events and produce a repetitive interpretation based on the past. Since simplifications increase the likelihood of eventual surprise, a mindful organization actively entertains novel, diverse, and conflicting perspectives (Swanson et al. 2004). This principle invites vigilance and divergence in analytical perspectives among members of an organization (Schulman 1993).

**Sensitivity to operations**

A mindful organization pays attention to day-to-day operations and the course of events as they unfold. Sensitivity to operations entails the frequent review of performance, operations, and environmental conditions. It allows the detection of problems and opportunities sooner, develops intuition and flexible options, deepens personal knowledge of the enterprise, and facilitates improvisation to cope with the unclear and changing environment (Brown et al. 1997; Vogus et al. 2003).

**Commitment to resilience**

The mindful organization develops capacity to bounce back from errors and also to cope with surprises in the moment. Weick et al. (1999) note that “it is important to retain both connotations of resilience to avoid the idea that resilience is simply the capability to absorb change and still persist. To be resilient means to utilize the change that is absorbed” (Weick et al. 1999). Mindful organizations accept the inevitability of error and hence pay attention to its prevention and containment (ibid). They favor effectiveness over efficiency (Weick et al. 1999). In the context of IT innovation, commitment to resilience is of particular importance as time passes and unfolding reality departs from the firm’s initial expectations. “This implies a practical and realistic view, one that acknowledges that trade-offs between schedule, budget, and delivered functionality may need creative adjustment” (Swanson et al. 2004, p.561).

**Reliance on expertise over formal authority**

A mindful organization recognizes the diversity of expertise required for its operation. In the IS innovation context, it implies that expertise could be found in managers, users, and other business-side participants (Ross et al. 2002). Hence IT innovation should not be structured around the IT expertise ignoring the richness of the organization. The expertise needed for IS innovation is to a substantial degree constructed collectively through the very process of innovation and hence organizational mindfulness depends in part on the on-going learning that organizational members can help to foster in one another (Swanson et al. 2004).
RESEARCH METHODS
The study adopts an interpretive approach to enquiry (Markus et al. 1999). It aims to understand how innovation could take place in Agile-based IS development projects (Walsham 1995).

The primary method for data collection was in-depth interviews with project stakeholders. The fieldwork involved a total of 12 formal interviews. Interviewees include an external consultant, project manager, members of the project team, and departmental managers. The interviews were largely unstructured and general questions were asked to serve as prompts. Interviews lasted between 45 minutes and two hours and were conducted on-site at the interviewee’s premises. All interviews were tape-recorded upon the interviewee’s explicit agreement and the audio recorder was clearly displayed during the interview. Data collection also included reviewing some of the project documents.

The first author started the field work with an open approach to enquiry that aims to understand the phenomena as it happened in the organization. However familiar with many social theories, the first author had no theoretical starting point for data collection. The theory of collective mindfulness emerged as a possible theory that could explain the success of the project towards the very end of field work. The theory of collective mindfulness was then applied – in retrospect - to make sense of the collected data. Data was coded and analyzed following the convention of qualitative data analysis (Miles et al. 1994). The second author works in the studied organization and was the organizational sponsor of the studied project. He was involved in the final stages of the writing up of the paper.

Case Study
Munich Re group is an international organization that provides financial services of reinsurance, primary insurance, and asset management. It is the world’s largest reinsurer and the second largest primary insurer in Germany. Group post tax profits for 2006 were EUR 3.54 billion. On the reinsurance side, the company employs over 6,500 staff worldwide in over 60 units of which UK Life Branch (UKLB) is one. The study investigates a project which took place in 2007 to develop a new claims administration system for UKLB. It was the first attempt to adopt Agile software development methods in the organization and an external consultancy was hired both to support the adoption of Agile methods, and to provide the IT delivery team. Following Agile methods, the software was developed in short time-boxed iteration cycle of 3 weeks and hence the first software code was received 6 weeks after the project started. The project was envisaged at the start to last for 12 iterations yet it extended to have two extra iterations to cover for an emerging extension of scope. The project was initially scoped to manage the payment of claims & premium accounts for a particular line of business, but was opportunistically extended to cover additional lines, and additional claims assessment business processes. The project produced a highly successful system: “at the end, it became a core business solution to manage a claim”. The system has been perceived by the business users as a first class claims system that improved the workflow, improved controls, and allowed staff to work in a relaxing manner trusting the in-built controls in the system. The system was later praised by the corporate audit team and given a best practice rating during the audit.

ANALYSIS: THE CREATION OF A MINDFUL IS PROJECT

From occupation with success to occupation with failure
UKLB used to follow a traditional approach to software development where the IT project manager is responsible for the delivery of the project according to efficiency metrics of on time, on budget, and to specifications and where the business expect an IT manager to deliver initial requirements as in business case. This approach was putting a burden on IT project managers who were often reluctant to report problems in the hope either that it would be resolved or that they would figure out ways to resolve them later. IT managers, being responsible for IS projects, felt that reporting problems would be a personal failure and breaking of business trust of their ability to meet expectations. This view has been expressed as follows:
“When the project moves from the certainty of nice concrete plan and the reality is coming into view and reality is in plain view, you know, they [project managers] struggle to come to express that to you. And that’s where you start to see the effect of their understanding of the expectations as you see the pressure piling up on them ...they are extremely reluctant to say that things are not OK....That’s because the message is rarely received in a pleasant way..... ‘Don’t shoot the messenger’ doesn’t seem to work on IT for some reason...which leads to certain reluctance to tell it as it is. This desire to succeed all the time... you have to get to a point where you can say ‘no’ and say ‘it’s not working’ and it has to be ok. You’ve got to be in an environment when it is perceived as an opportunity to improve and change something and not as a failure; a personal failure of letting people down.”

The Director of Operations (in his previous role as Head of IT Development) felt that a new model of work needed to be introduced to allow IT managers to detach themselves from the happenings of the project and encourage them to detect and report problems. This has been expressed as follows:

“[Reporting problems] almost gets [seen] as a personal assessment of your worth as a human being. You [a project manager] get so entrenched with the project that you can’t step back and say ‘No, it’s not about me, it’s about business processes’.” [director]

UKLB opted to pilot a move towards a different model for IS development to change the IT development mindset and ease pressure on IT managers. A new model that would not only allow problems to be detected and reported early on and as soon as they are noticed but also to incorporate that detection and actions arising into the natural project cycle, so it would no longer be seen as a defect. They sought to try an Agile-based model with the support of an external consulting company. As it was a new model, team members were learning how to make it work. They were cautious of failure and were open in expressing their views, concerns, and fears. The IT manager of the project was no longer hiding any discomfort or concerns on the hope that issues might get better and resolved. Instead IT managers and other team members were vigilant in noticing, forward in expressing any concern and taking steps to rectify situations. This has been expressed by the project manager:

“when off shore came with a different way of doing a user case, and someone altered the user case- he shouldn’t have done without discussing it with the business- then we had to put some controls in to make sure that use cases were versioned and there is a certain sign off for it”. [IT manager]

Team members were also more open to raise issues and concerns and discuss them with the rest of project team and stakeholders. This has been expressed:

“the problem could be noted by one or two people in the project team and because they're working on that area that they might consider it [a] medium or relatively minor problem but if you’re exposing that problem to the rest of the team, people who can realize the implications of that would add their concerns at that point...and as a result it may get escalated more urgently.” [business team member3]

**Reluctance to simplify interpretations**

1.1.1 Labeling

The Claims project allowed for IT and business sides to engage in the development in new ways that overcome the traditional labelling and divide between IT and business. Having a project room, Wiki, daily stand up meetings, and team Velocity Burndown Chart allowed for the creation of an IT-Business enmeshed team that had one goal, which was to serve the business well. A business raised issue was not simply labelled “resistance”, “lack of
understanding”, or “lack of IT knowledge” and hence ignored but rather had to be well understood, further explored, discussed, and acted upon during iteration meetings:

“it was a business project, we only supported them”

The business side also for the first time appreciated the IT side and the technical issues and hurdles they need to overcome to produce certain requirements. Consequently, IT were not labelled anymore as having no idea of the business and wanting to constantly push the IT agenda regardless of the business needs.

“Meetings [stand up meetings] made me perhaps for the first time understand what IT people are doing, [and] their specializations; you know coders, testers, analysts etc. It made me realise how much work goes into these things.” [Business team member4]

1.1.2 Discarding

The Claims project was organized to have an extended meeting every iteration cycle. This meeting was attended by the IT consultant, IT project manager, business subject matter experts, business testers, IT developers and testers, and MD/Directors and other stakeholders. The meetings were led by the business SME’s, and they also presented the functionality that was to be demonstrated. These meetings allowed for in-depth discussion of system’s options and exploration of requirements and their implications rather than simple stating and discarding of requirements from the outset:

“[the meetings included/contained]...the end users, the stakeholders, the designers so everyone gets together and if anyone has concerns then the whole group is there in one place to discuss the implication of that change or whether it should work and ultimately the business decides on which way to go as a result of the three-weekly iteration discussions”. [business team member 1]

“[in this project the business] were able to look at what was coming and we prioritized so [the external consultant] would say to me: ‘well if you want these tables to do what you want them to do, then you have to sacrifice some other functionality’ and I as a user could look at what is more important to me....I can make the judgment after discussing with a number of people and we can then say: ‘well, look! … it should be in phase one functionality and the other [item] we can do in a later phase’”. [business team member 3]

Sensitivity to operations

1.1.3 Business users aware of IT operations

The Claims project created deep awareness and appreciation of the business side of the IT operations and the details of their processes. Interviewees from the business side were aware of IT operation and the cycle of work as expressed:

“...you get code delivery every three weeks which is a massive bonus for the business because we started to see, and get a much earlier look and feel about the system and that code is meant to be a working code. So... you see the system develops almost in front of your eyes.”
The business side appreciated the costing and timing issues involved in changing requirements which avoided the typical frustration of delays and exceeding budget and the attribution of it to IT department malfunction. As a business user expressed it:

“...including my area would certainly increase the cost; it required at least two more iterations to build my side of things and there is a ripple effect. You add another chunk, that obviously ripples out to your testers, not user acceptance tests, but the initial tests.”

1.1.4 Business areas made aware of each other’s operations

Quite a few departments were involved in the project, however some that were involved were, functionality-wise, out of scope. The idea was that they would be indirectly affected by the developed system and hence their involvement would be beneficial:

“I was involved from the beginning of the project - even [though] my area, technically speaking, from functionality point of view, was out of scope. But clearly decisions made by [system’s initial beneficiary department] would impact upon my area.”

Allowing other departments to join the project, even though they are out of scope, gave them opportunity to rethink their own operations. These departments later requested to join the system and prepared their own business cases.

“because of the wider Agile [business processes] being built, I found it easy to persuade [the sponsor] of why we should bulk this on [request to join the system] so we get much more end-to-end flow, otherwise we would’ve had a lovely smooth accounting system and a separate claims system that did not really have any obvious interface with it. But that really got signed off after less than a third away from the end of the project.”

Users were requested to prepare their own business case for joining the system

“we had to prepare the business case, part of it was about what would it cost to add full claims assessment to the existing scope. We had to ask [external consultant] to cost that because there was the off-shore cost of building it. Once we had a good figure, we were able to put that to the MD ….“.

The open practices of the project allowed for mistakes to be detected early on:

“we have a variety of stakeholders, some of them are sort of minor stakeholders. Therefore, you may forget their requirements or [these] may not be so obvious. Because of the demo, it was easier for the business to see if there is something missed. Before, we were only involved to pick up these things later in the user acceptance testing”

1.1.5 Awareness of project’s team members work

The project practice of daily stand up meetings gave team members from both the business and IT side the opportunity to exchange experience and learn what each member is responsible for. Each team member became aware of the daily practice of other members’ work and the issues they face. A business team member expressed this idea as follows:
“The business users had much more involvement throughout the project. So everyday there was a scrum, the SMEs would go. We would say what we’ve done on the project the day before, what we’re going to do today and tomorrow, and whether there are any problems or issues... it was a stand up meeting. It’s punchy but you also heard the story from IT perspective, from an architect point of view against someone else’s point of view and that went all the way down the room including -obviously- [the external consultants] as well. And that openness I found refreshing.” [Business team member 2]

**Commitment to resilience**

The business side of the project team was allocated points to act as their virtual budget for the project. When developing system’s features, the business members of the team would specify their requirements and leave them to IT to work out its effort value in terms of points. IT would allocate points based on development and testing time then convey that to the business. The business then had to take a decision regarding the execution of these features. When there was a clash between the number of points required to develop features and the allocated points for that iteration, rather than simply re-prioritizing, the business also thought of alternatives:

“we find another way to serve our requirements to a point, then we can look at developing that further in the future....this is how we dealt with our problems really, we did not drop it [particular function] off scope completely, we’ve just reviewed it and put it in a slightly different way so it can fit with the budget of the project’. This helped the business to “work on this compromise arrangement rather than either push the budget too far or drop [scope] all together”.

When the project team detected the possible extension of the system to include another department which was out of the initial scope, they asked IT to value the amount of work to include it. The business side of the project went on to request the extra funding to implement this extension. This “transparency” allowed for the business side to appreciate the exceeding of the initial budget and find it as a seized opportunity to improve operation rather than the traditional view of IT failure to deliver on budget. It also allowed for IT to see the business value of accommodating and embracing change rather than finding it a burden on the IT function. A senior business manager said:

“Our end product was not what we originally budgeted for. But we were able to re-budget and get more because we could see the considerable business advantages of doing so”. [business team member6]

The iterative cycle of the project gradually built the project team confidence of their ability to deliver and cope with requirements’ change which allowed the team to extend the scope of the project to add more departments and functions:

“With the iterative method, the team was proving it can deliver, proving it can deliver, proving it can deliver and therefore when they wanted to add change controls to add two or three iterations, it was with a high degree of confidence because they knew the team would deliver, because the team had delivered before for, you know, several months”

“As we moved towards the end of the project, those [feature’s tests] that passed started to increase exponentially and those that fail dropped off...so that was quite satisfying to see every three weeks, it gave us the boost that we’re moving in the right direction”.


The IT side of the project was also committed to accommodate business change and encourage the business to go through their requirements, change and prioritize them as they go along:

“Prioritizing requirements was a business role this time. So it is not the IT [team] going back to [a] typical waterfall response: we cannot deliver, you cannot have what you want [even] though you do the role [of prioritizing or rejecting requirements] and [so it’s] back to the argument [between IT and business]. This time, the users were involved. We said no restriction for you to change something. Don’t worry if we give it to you now [at the end of iteration] and it is not what you want because I mis-understood you or you didn’t quite understand what you wanted until you saw it working. As the solution evolved, you realize how to change it so we made no restrictions [on the business to change or amend requirements]. We made it clear, you are not penalized for that at all but you must manage that requirements list up and down. We will estimate it in terms of size, will give you a velocity of the team’s general delivery and cost. But you’ll [the business] have to make that line [deciding on requirements]”.

Reliance on expertise

The business side was heavily involved in the project in the form of Subject Matter Experts, testers, and stakeholders’ attendance of meetings every iteration cycle. This active involvement of the business allowed for continuous cross-learning between the business and IT. This has been expressed by interviewees as follows:

“from non-IT point of view, it was educational for me to be able to see the work that was really happening behind the scenes as part of the development of the system, i.e. we [the business side] had no idea of how much work goes into the development and coding of a piece of software. I would normally at the start of a project [an IS development project], sit down with someone telling him make it [the developed system] do that please then he goes away. Six months later, he comes back with something that may or may not work. With this I can see every three weeks exactly what was going on.”

Involved users were not chosen for their seniority but rather for the extent of involvement of the operations:

“I am not the most senior there, but because this is my job, it was perhaps felt I could contribute to specs and workflows.”

The involved users were empowered by their managers to take decisions which allowed IT people to interact directly with the decision makers of the business:

“People we were engaging with on daily basis were the people who do the work: the actual people who run claims. And they were there because their managers empowered them to take decisions directly”

DISCUSSION AND CONCLUSION

The Claims system was developed following new practices for both project management and software development. The project created a bubble of collective mindfulness where team members became concerned of failure, reluctant to simplify or discard issues, sensitive to both IT and business operations, willing to embrace and cope with change, and more reliant on direct expertise rather than line of authority. This state of mindfulness had the capacity to sustain a high level of vigilance and sensitivity to business operations and needs which fostered business innovation.
and the delivery of a successful solution. The combination of these elements allowed the team to redefine their failure criteria from time and budget to delivering a system that serves the business well.

The case study shows that project team members were occupied with failure. They were vigilant in noticing issues and forward in reporting concerns. The daily stand-up meetings provided a platform for members to express concerns and report early signs of failures. This fear of failure could have been partially infused by the novelty of the adopted Agile methods and the organizational attention it created. Team members were also attentive to possible opportunities to realize business value from the system under development.

The project members were also reluctant to simplify requirements and take decisions on them without extended discussion. They were keen to hear all points of views; a practice that has been facilitated by the end of iteration extended meetings and system demonstrations. Issues raised were not discarded without discussion and further investigation. This ability to entertain diverse and conflicting perspectives or ‘conceptual slack’ as Schulman (1993) terms it allows vigilance (Schulman 1993) and “is likely to produce new ideas and modes of operating that can become innovative” (Vogus et al. 2003, p.882).

Project room, daily stand-up meetings, project wiki, and published team burn down chart and velocity chart improved the team members’ sensitivity to operations. Team members became aware of the day-to-day operations of the project and each other’s roles. It also deepened the knowledge of project members from the business side of the company and the internal operations of different departments. These practices also allowed the business and IT to learn about each other’s internal operation which facilitated the discarding of the traditional IT/business labelling and overcame the widely reported business-technical gap (Hirschheim et al. 1989; Land et al. 1983). This awareness of the diversity of operations and point of views improved the business ability to innovate and to extend the system to cover more business processes and departments. This finding supports the view that “Innovation requires preserving (not reducing) the uncertainty and diversity in the environment within the organization” (Van de Ven 1986, p.605).

The studied project cultivated an environment that embraced change and developed a capacity to deal with it. This has been fostered partially by the short iteration cycles that gradually built the team confidence of their ability to cope with change and continue to successfully deliver. Building the confidence to cope with change is not in Weick and Sutcliffe’s (2007) original model of mindfulness and could be considered part of its appropriation in the IS context (Weick et al. 2007a).

The team members’ increased awareness of both IT and business operations has also contributed to the sustainability of accepting change and finding practical and innovative solutions to deal with it. The collaboration between IT and business based on costing points and the granting the business side the liberty to choose their options enhanced the business ability not only to prioritize requirements but more importantly to find alternative options for the system.

The subject matter experts were chosen based on their direct involvement of the business processes either covered or affected by the Claims system and not according to their seniority. These users were also empowered by their line management to take design decision on the project. The inclusion and empowerment of actual users in the project allowed for ideas to flow and get connected as argued in (Beirne 2006). This also rectified one of the major criticism of participative approaches which was the reliance on involving high level business participants that their views not necessarily reflects the actual work being done (Beirne et al. 1992). Also having an external consultant in the project to act as a coach and mentor in Agile increased the team members’ attention to their own business processes and practices in attempts to question the consultants practice and the advocated Agile methods. Langer (1989) notes that “the imaginative use of outsiders [e.g. independent consultants] can encourage ... mindfulness ...[and] can keep important questions flowing” (Langer 1989a, p.139).
However Agile methods prescribe short iteration cycles, it was the practice of using these cycles as occasions to have extended meetings where project stakeholders, team members, and consultants get together to attend the system demonstration and discuss requirements and their implications that helped to sustain organizational attention during the project. This adaptation and addition to the methods or mindful adoption of Agile methods empirically asserts Swanson and Ramiller (2004) point that a mindful adoption of an IT innovation would consider organizational specifics. The mindful adoption of Agile methods in the case study encouraged creative thinking and team members’ ability to find alternative and complementary ways that enhanced the management and deliverables of the project. This finding supports Wastell (1996) argument that the strict adherence to the methodology could hinder organizational creativity (Wastell 1996). It also invites practitioners to reappraise the concepts and usefulness of IS development methods and consider their own organizational context in their adoption. Adaptation and variations on IS development methods should be accepted and incorporated in their adoption and not considered as a failure of adoption (Fitzgerald et al. 1999) (Avison et al. 2003).

The study demonstrates that business innovation could take place in the context of IS development if the project could sustain a focus on business needs and requirements and if business users and stakeholders could sustain attention and interest in the development project. This sustainability of attention or mindfulness from both the IT and business side would allow the business to better express their needs and allow their requirements to evolve to better serve the business. This finding takes users’ participation a step further than has been previously advocated (Land et al. 1983; Mumford 1997). This paper advocates the vigilance and sustainable attention from both the business and IT sides throughout IS development project.

In conclusion, this study provides an empirical support to Swanson and Ramiller (2004) endeavor to adapt the collective mindfulness concepts to IS innovation and extend it to cover IS project management. It reveals that an IS project can be considered a reliability-seeking organization due to its complexity, the criticality of its output to the rest of the organization, and the serious repercussions of its failure. Accordingly, a mindful approach to managing IS project that embraces rich interpretations, contextual sensitivity, and commitment to flexibility would not only improves IS delivery but also encourage the business to innovate while developing a system.

LIMITATIONS AND FUTURE RESEARCH

The research reported here presents a single case study and the framework needs to be refined and tested with further cases. There is also a concern regarding the price of mindfulness. However most of the literature on mindfulness treats it as a positive phenomena (Langer 1997; Weick et al. 2007b), this study supports Vogus et al. 2003 argument that there is a cost associated with the creation and maintenance of mindfulness (Vogus et al. 2003, p. 881). In the studied case, the project, whilst creating a mindful organization that allowed for business innovation, ended up over the initially envisaged budget and time.

Although this particular project within UKLB has been successful, it should be noted that “it is this very success and the temptations that arise from it that define a new form of failure” (Weick et al. 1999, p.94). Therefore, the research continues to study the IS development practices after the organizational success of the Claims project

ACKNOWLEDGMENT

This research has been funded by a British Academy grant number SG-48355 granted to the first author.

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