

## The Mindfulness and Mindlessness in Mobile Business Intelligence Adoption

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### Abstract

Mobile business intelligence (m-BI) is a hot topic attracting the attention of many companies. Little is known about the main motivations that drive a company to adopt an innovation in general and specifically that kind of study is lacking within the mobile BI field, whose research is still in its early stages. This paper has two main contributions: first, the motivations which drive an organization to adopt mobile BI are explored based on the organizing vision concept and second the adoption rationales which the companies develop are discussed in terms of mindfulness and mindlessness. This study revealed that both mobile BI organizing vision (external factor) and the enthusiasm of the executives and users (internal factor) are affecting the decision of the companies to adopt mobile BI.

**Keywords:** Mobile Business Intelligence, Decision to Adopt, Organizing Vision.

### 1. Introduction

Business Intelligence (BI) systems provide information to users to support their decision-making process based on data analysis [14]. From the software perspective, BI has always been in continuous improvements in order to meet users' expectations and market changes. Today's business is requesting updated, real time information to be available anywhere, any time. BI vendors are working hard to align their products with the demanding business requirements and the advancements of the BI market.

Recently, a new technology, mobile BI, is being promoted as an extension of BI. The term mobile BI adopted in this paper refers to "a data-driven decision support applications on mobile devices like smartphones and tablet computers" [6, p.6]. The emergence of mobile BI is due to two main factors: (1) the need to make decisions 'on the move' and (2) the generation of new mobile devices.

Mobile BI has attracted a lot of attention and enthusiasm regarding its potential benefits, which makes it a hot topic [13]. Although people started to talk about mobile BI as early as 2000s, its recognized growth is only after 2010—the same year iPad was released [12]. According to Tona and Carlsson [12], there has been a continuous discussion among different stakeholders such as vendors, consultants, early adopters, analysts and journalists. The discourse results in the creation of a mobile BI organizing vision, which is a "focal community idea for the application of information technology in organizations" [10, p.460]. The organizing vision provides information and knowledge through its interpretation, legitimation and mobility as well as influences the potential adopters. According to this organizing vision, mobile BI is expected to have benefits in terms of efficiency and effectiveness such as enhanced communication among decision-makers, decision making on spot, reduction of decision time especially in critical situation like in emergencies, better customer services and new flexible ways of working. [12].

When a new technology is introduced, the organizations often face a dilemma if it is going to be widely adopted in such a way that it transforms the business practices or if it is going to be just another passing fashion [13]. Organizations engage with the organizing vision to help them evaluate whether they should adopt mobile BI or not. However, from a prescriptive point of view organizations are expected to be mindful, where they should pay careful attention to their organization specifics and evaluate the business value of mobile BI by matching their specific needs to it [11]. On the contrary, they may behave mindlessly as well, where they do not pay enough attention to organization specifics. There is a lack of studies which have tried to answer ‘why’ a certain innovation, like mobile BI, is adopted [7]. This kind of study lacks even within the mobile BI field, where there is a call for papers [4] as its academic research is still in its early stages [3]. Consequently, the following research question will be addressed: ‘Why do organizations adopt mobile BI?’ This study has two main contributions: (1) the motivations which drive an organization to adopt mobile BI will be explored based on the organizing vision concept, and (2) the adoption rationales which the companies develop will be discussed in terms of mindfulness and mindlessness.

The remainder of the paper is organized as follows. In Section 2 we describe shortly the mindfulness and mindlessness in innovation adoption. Section 3 presents the research approach. This is followed by a presentation and discussion of the results. Conclusions and future research are presented in the final section.

## 2. Mindfulness and Mindlessness in Innovation Adoption

According to Swanson and Ramiller [11] the adoption process of a new innovation in an organization starts with comprehension where organizations make efforts to make sense of the new innovation. Based on the knowledge gained during this process, they position themselves as adopters or non-adopters. The comprehension process is tightly related to the organizing vision which influences the potential adopters’ decision making process. The community which consists of vendors, consultants, journalists, academic researchers, early adopters, certain practitioners and executive groups interact in a public discourse which in turn shapes the organizing vision. Each organizing vision is identified by a name by which the community members refer to it and it includes metaphors, scenarios, stories, problems and issues [10]. In order to exploit a new technology, the organizing vision provides interpretation, legitimation and mobilization. Interpretation clarifies the existence and purpose of the technology in order to reduce its uncertainty. Legitimation links the innovation to its benefits and business processes. In mobilization different market forces are coordinated to provide the needed resources to support innovation adoption and fusion.

Although, the organizing vision provides knowledge on the new IT/IS, still the decision on why to adopt the innovation should be related to the specifics of the organization. Therefore, business values and challenges of the innovation shall be evaluated by organizations before taking the decision to adopt. To show the engagement of an organization with a new IT/IS, Swanson and Ramiller [11] have introduced two concepts: mindful and mindless. An organization is considered to be mindful when “it attends to an innovation with reasoning grounded in its own organizational facts and specifics” [11, p.559]. A mindful organization shall pay close attention to its specifics to decide on whether to adopt the new IT. Its engagement shall generate knowledge and learning under the context of its own organizational situation such as the organization’s objectives, structure and processes. Five main attributes of mindfulness, from an IT innovation context, have been identified by Swanson and Ramiller [11]:

- Preoccupation with failure – Companies shall look at the innovation with close attention to the possibilities of failure.
- Reluctance to simplify interpretation – Companies shall resist the simplified interpretation that is represented in the organizing vision. They should try to look beyond it with a critical eye and exert complex and conflicting interpretation.

- Sensitivity to operations – Companies shall be alert towards its operations as it may affect the organization reliability. Usually, enhancing the inefficient operations is the main reason that drives a company to adopt a new IT. They shall involve internal experts to relate the organizing vision to the problems of the firms.
- Commitment to resilience – The companies shall accept that unexpected consequences and new situations may arise with the passing of time. Therefore, they shall embrace a practical and realistic view.
- Deference to expertise – The expertise shall be heterogeneous and involve many organizational members through the whole process of innovation. An on-going learning shall take place among them.

However, in many cases, organizations are mindless which results in “actions [which] betray a lack of attention to organizational specifics” [11, p.563]. The companies can get involved in the enthusiasm surrounding an organizing vision and the success stories told by the early adopters. They believe in the community that takes part in the discourse, therefore they attach themselves to this learning without making a thorough interpretation. However in many situations, mindlessness can be embraced when the benefits outweigh the risks. When a company first faces an innovation, it is hard to be mindful and interpret the validity of other firms’ interpretations. Mindfulness and mindlessness interact through the organization vision and create “an evolving landscape of supposition, hopeful belief, and qualified knowledge” [11, p.570]. Mindfulness will be observed in the case when the organizing vision is less fashionable, and mindlessness will be more present where the organizing vision is more fashionable.

### 3. Method

Getting access to organizations that have already adopted and implemented mobile BI was rather challenging. Taking advantage of a professional network, LinkedIn, we managed to send research requests to 16 people. Out of 16 requests we got 6 responses from 6 separate companies. The response rate was 37.5% and it is fair enough. In addition, 3 more interviews—recommended by one of the contact persons—were conducted within the same company. This adds up to 9 interviews in total.

The contacted companies are operating in different industries and located in different parts of the world (see Table 1). The persons interviewed are key persons who have been part of the decision-making process in mobile BI adoption in their own organizations. Due to their different locations, the interviews were conducted via Skype. Semi-structured interviews were chosen because they made it possible to adjust questions and alter an interview sequence as the interviews unfolds. The interviews lasted for approximately one hour each and all of them were recorded with the consent of the interviewees. The interviews were transcribed and e-mailed back to the participants for comments or feedback. Once confirmation was obtained, the transcripts were ready to be analysed. In order to maintain the anonymity of the participants—because of the risk to unfold their internal strategies and policies—the cases are named alphabetically.

**Table 1.** List of cases

Nr.	Cases	Industry	Location
1	Company A	Healthcare	UK
2	Company B	Consulting	Nashville, TN, USA
3	Company C	Aviation	Sydney, Australia
4	Company D	Retail	Netherlands
5	Company E	Non-Profit Organization	Florida, US
6	Company F	Retail	Sweden

Company A is operating in the healthcare industry. They have implemented mobile BI to support their community clinicians, who visit their patients out in the community. Using the same device they could enter the information they were as well able to retrieve different BI reports. Company B is a consulting company and its mobile BI users are most of the time away in different client sites. Company C is operating in the aviation industry and its operational team use mobile BI to get on-time understanding of the airport capacity planning and also on-time departure and performance. Company D and F are operating in the retail industry and have supplied mainly their regional managers with mobile BI who are always on-the-go and paying visits to the different stores in different regions. Company E is a non-profit organization that uses mobile BI to support its community employees to consume information out in the field and be able to answer many questions, which usually emerge during meetings with other stakeholders.

#### 4. Analysis and Discussion

In this section, we analyze the data collected from our cases. Our interviewees have decided to ‘jump the bandwagon’ in adopting mobile BI.

##### 4.1 Making Sense of Mobile BI Innovation

When an organization decides to adopt mobile BI, it makes sure that the facilities and technology needed to support its usage are already in place. Putting the pieces together to understand the circumstances under which organizations decide to adopt mobile BI, we saw that nearly all our cases had already adopted tablets long before they decided to implement mobile BI on them. The adoption of the tablets was not necessarily related to the aim of adopting mobile BI. None of the companies has bought mobile devices with the sole purpose to implement mobile BI. *We became first mobile and then we got mobile BI. It wasn't the other way around... We are already mobile, and we need BI for those people. (Interviewee, Company E).* For most of them it has been a perfect match between BI, which they saw as a ‘big thing’, and the availability of the mobile devices their mobile force possessed. Having the mobile devices already there, knowledge on the power of BI and a mobile force on the road in need of information, created a favorable background for the organization to consider the adoption of mobile BI.

However, the organization’s situation is not sufficient enough to influence the decision of adoption. Other external forces are having an impact on that type of decision. One of the interviewees stated: *But first of all, Gartner also said...they said just do it, just buy such a thing, and play around and see what it can bring and that was actually the approach we have taken... (Interviewee, Company D).* Many analysts conduct different research in the market and publish their results in the forms of reports. We are observing a number of industrial research companies (for example Gartner, Dresner Advisory Services) which are promising to deliver the most objective, reliable and accurate studies to organizations. Generally, these reports are based on a market research studying different perspectives of technology, for instance the identification of the hottest IT issues. The reports are followed by guidelines on how companies shall behave and which specific innovation shall they embrace in order to increase their performance and competitiveness in the market. Our data analysis shows a strong influence and ‘pressure’ from this kind of industrial research. Most of the time, the executives buy a copy of the reports to gain an understanding of the main IT/ IS trends emerging in the market. Executives are attentive to these reports because (1) they want to increase their internal and external legitimacy through innovation [13]; (2) they want to avoid the risk of being left behind; and (3) they do not want to risk their competitive survival [9]. Hence, as one interviewee of company A said: *‘being in the BI industry, you would always be looking at new technologies; new ways to deliver BI’* indicates that the companies are keen in adopting new promising innovation. This is in line with the point made in [13] that those who have adopted a specific innovation and make it to the headlines of the newspapers have a

better reputation. This results in a higher remuneration scheme for executives. Unfortunately, this is not a characteristic of a mindful behavior.

In addition to the industrial analyst reports, the success stories of mobile BI early adopters are attracting the intention of the decision-makers. One of the interviewees in company A describes:

*And we saw case studies where, you know, [a certain company]'s sales people, walking into its store, and straight away on their tablet device they would see sales figures related to that [company name] brand etc.... Again you start looking at the benefit of you doing that. What benefits it would be to go down similar road really...*

This instance illustrates what and how a company would consider as a success story. Although these companies do not operate in the same industry, a success story like this can have an impact on the decision-makers. Generally, the success stories are related to a higher performance and are characterized by a list of benefits generated from the usage of an innovation. They have the potential to influence other companies' decision to adopt similar innovation and to make the bandwagon start rolling [1]. The more success stories get published, the more companies will join the bandwagon, especially when the already joined companies have a higher reputation. Following the footsteps of another company, which appears to be successful, increases the confidence of the following companies. Besides the published stories, the interviews revealed that there is an informal communication between companies. The discussion in this communication aims to share their experiences and perceptions in mobile BI adoption. However, in both cases, the managers seem to assimilate the knowledge transmitted by success stories exactly as they are told and presented to them. They do not scrutinize further as a mindful manager should do. A mindful manager should be attentive to his own organizational specifics. He also should be able to see mindlessness and/or mindfulness in other cases too [9].

On the vendors' webpages and articles you may see a lot of success stories published. The main aim of this published material is to communicate the success of a company in terms of performance because of the mobile BI adoption. However, when we try to scrutinize one of these companies, we understood that that is not always the case. One of our cases has been published as a success story on one of the vendor's web page. However, during the discussion with a representative of that company, he/she confessed that they had many problems with mobile BI in terms of user adoption as people are refusing to use it. Case in point, if there is no use, how could mobile BI be so beneficial that it could be published as a success story? This study casts a doubt on industrial published success stories. They tend to depict that organizations could have an outstanding performance because of an implementation of a specific innovation. These results are consistent with other studies ([13], [8]).

Concluding, decision-makers are making sense of mobile BI through their external environment. In terms of external environment we identify different stakeholders who are directly influencing the decision to adopt such as the research analysts and other organizations' success stories. This relates to what Swanson and Ramiller [10] referred to as organizing vision. However, we have to stress at this point that the informal communication that takes place between the companies to share their experiences, is not formally part of this organizing vision. The organizing vision does have a considerable impact on the early phase of the decision-making process to adopt mobile BI. Due to the engagement with the mobile BI organizing vision, the organizations gain an insight of its interpretation, legitimation and mobilization [10]. We argue in our discussion that organizations engage with the mobile BI organizing vision mindlessly.

However, the mobile BI organizing vision is an unfinished 'solution', which the potential adopters shall customize and fit in their own organization settings and needs [10].

#### **4.2 Innovating Mindfully or Mindlessly?**

In this section we are going to describe the rest of rationales adopted by the organizations in terms of mindfulness and mindlessness.



The adopters who decide to ‘jump the bandwagon’ are in a constant influence of the organizing vision. Therefore it is difficult to adopt reluctance behaviour to simplify mobile BI interpretation. When asked about their understanding and perception of mobile BI the main keywords obtained were: mobility, whenever and wherever, getting the right information and making decisions. Comparing these keywords with the ones provided by the mobile BI organizing vision [12] there is not much difference. So, we can argue that the companies embrace and accept the interpretation provided by the organizing vision without being critical or making it more complicated. This is one instance where they are believed to behave mindlessly [11].

In terms of evaluating their own organizational specifics, nearly all the organizations have found a need, problem or opportunity that mobile BI could meet (see Table 2). The main driver at this point has been mobility.

The organizations had already highlighted their main user groups who most of the times work out in the community; visit store branches, patients and clients; attend different meetings within and outside their respective headquarters. They have customized mobile BI based on the mobile employees who need information when on the go during their everyday work. Through mobile BI, users can access many reports provided to them and have the possibility to drill down in more detailed information. Additionally, based on Table 2 we observe that the organizations have pinpointed their needs to make a case for mobile BI adoption. In order to innovate mindfully, these organizations have tried to identify the needs within their own environment and looked at their specific circumstances before making the final decision to adopt mobile BI. At this point, we observe a mindful behaviour, as they are trying to customize and fit mobile BI within their own processes and users.

**Table 2.** Summary of the main user groups and organization needs revealed by the data analyses

User Groups	Need/Problem/Opportunity
<ul style="list-style-type: none"> <li>• Executives</li> <li>• Regional managers</li> <li>• Consultants</li> <li>• Social workers</li> <li>• Clinicians</li> </ul>	<ul style="list-style-type: none"> <li>• enhance the efficiency of the community-based staff/clinicians</li> <li>• reduce the paper consumption</li> <li>• eliminate the big time lag between the changes on KPIs and the actions of the regional managers</li> <li>• avoid the Excel usage on iPads, which results in losing the context of the information</li> <li>• support people in the community to consume information out in the field but also be able to share it</li> <li>• improve the operational part of the business in terms of monthly reporting and capacity changing</li> <li>• enhance the collaboration within and outside the company</li> </ul>

However, when it comes to sensitivity of operations [11], the interviewees have found difficulties in evaluating the potential benefits of mobile BI:

*Actually, everybody believed there was a business case but it is very hard to measure the effects...in the end you can never measure this... (Interview, company D)*

*It is difficult to quantify the success, like what it is produced, for example what's the value of sharing the information particularly with the community for instance (Interviewee, company E)*

The difficulty of evaluating the impacts of mobile BI is related to the class of the systems it belongs to. Mobile BI is emerging within the decision support system (DSS) application

area [6], and over the years, many studies have been conducted in order to evaluate the impacts of these systems. Most of the academic discussion is based upon improving the efficiency and the effectiveness of DSS. To be effective, a DSS shall allow people to be more efficient such as performing the same task in less time and effort [2,5], but it is really difficult to measure it quantitatively.

Different companies have approached this issue differently. Company A, for instance, has conducted some evaluations related to mobility such as travel time and travel cost that mobile BI could have saved. These evaluation studies represent their efforts to understand the potential impacts of mobile BI within their own organizations. However in other cases we observe that although they found it very hard to measure they have decided to ‘jump the bandwagon’ saying that *‘this is the way to go, as it will take us a far too much time measure it’* (interviewee, company D); whereas company C states that *‘it was actually me who came up with the idea ..I thought this was actually a good thing for the business to install and run with...’*

At this point, we can argue that mindful behaviour depends upon how the organizations look at the innovation. There are companies which (1) try and manage to conduct different evaluation studies before the final decision to adopt; (2) have the will to evaluate but find it difficult and time-consuming; and (3) follow the gut feeling that it will be a success. Being in the same line of discussion, some of the reasons that might determine whether a company would evaluate its innovation attempt, like the mobile BI, are: the kind of industry they are operating; the availability of the resources, especially money and time; and the policies and strategies they follow in regards to innovation.

Being an innovation that is *hot* and in *fashion* [13], not surprisingly it creates enthusiasm among the C-level managers-- *..one of the first users to use it was our CEO in the iPhone. He was so happy.. he was so enthusiastic and he went to the investor to show it, so..It was a very cheap and easy way to start with mobile BI(Interviewee, company D)--and as well the users, which influence at this point the final decision to adopt--Once you get a visualization that is interesting and you know it produces a lot of enthusiasms... So, for us, part of our problems has been that we have created so much enthusiasm that has been difficult to keep up and actually written and thrown away 3 versions that were BI application. (Interviewee, company E).* Hence, not only external factors such as the organizing vision influence the decision to adopt, but as well internal factors such as the board of directors and its potential users.

In terms of deference to expertise [11], during the innovation process the main members involved were the BI team and the final users. It’s worth describing that this collaboration took place mainly during the design of the reports, dashboards, and different visualizations (end-products) rather than throughout the whole innovation process. After the design process, there is an ongoing collaboration between these two parties: mobile BI users requesting information related to mobile BI and the BI team catering it to them. However, we can’t really see other organizational members involved in this process.

Going through the rest of the adoption rationales in this subsection we conclude that there is not ‘black and white’ in categorizing a company either mindful or mindless in adopting mobile BI. As we noticed, there is a combination of mindful and mindless behaviour. Through the whole process of decision-making we see companies shift from being mindless such as in mobile BI interpretation, deference to expertise to mindful in case of defining their organizational needs and user groups. However, because of the nature of BI, we encounter different behaviours in trying to evaluate its potential benefits.

## 5. Conclusions

This paper sheds lights on the motivations that drive organizations to adopt mobile BI through the lens of organizing vision, mindfulness and mindlessness.

We find that organizations engage with mobile BI organizing vision during the early phases of their adoption decision-making process. At the beginning they take part in this engagement passively where they absorb knowledge on mobile BI interpretation, legitimation and mobilization. Afterwards, they move to a more active position in giving their contribution

in terms of experiences and perceptions that on the other hand shapes further mobile BI organizing vision. Informal communication between companies takes place, but unfortunately they do not become public to be officially part of the organizing vision. Besides the influence of the organizing vision, the board of directors and some users (internal influence) who are driven by the innovation enthusiasm may have an impact on the decision to adopt mobile BI.

Being positively influenced by the organizing vision, organizations progress further in their decision-making process. At this point they try to fit mobile BI in their business processes. Although, it is advised that organizations shall innovate mindfully [9], we see a combination of mindfulness and mindlessness behaviour in the decision-making process to adopt. At the beginning they interact with the organizing vision mindlessly as they do not question or have a critical stance towards mobile BI interpretations and different success stories being published. This can sometimes mislead their decision, as the success stories not always are related to high performing companies because of the innovation. In identifying user groups and organizational needs to be met by mobile BI, organizations behave mindfully, however only some of them manage to evaluate the potential benefits of the innovation. This is due to the nature of the mobile BI system; kind of industry they are operating; the availability of the resources, especially money and time; and the policies and strategies they follow in regards to innovation. Therefore during the decision-making process to adopt mobile BI we observe a shift of companies from behaving mindfully in one case to behaving mindlessly in another, creating a swing, which moves back and forth.

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