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USE OF ERP SYSTEMS: A SOCIAL SHAPING PERSPECTIVE

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Abstract

The term of social shaping is very attractive and has been widely used in the Information Systems (IS) literature. Social shaping of an Enterprise Resource Planning (ERP) package can materialise through the means of power, politics, discourse and user resistance. Whenever a package is socially shaped, either it is modified or there are no changes in the package but it is used in a different way than intended. This paper is concerned with the use of ERP system through the lens of social shaping. The paper suggests that empirical observation in the post-implementation stages of ERP system in this respect will give rich insights by informing which stakeholders are involved, which means are deployed that shapes the system and does it lead to an improved situation.

Keywords: ERP, Social Shaping, Post-Implementation

1. Introduction

Enterprise Resource Planning (ERP) systems continue to be used by organizations to get benefits such as transparency of business processes, better supply chain management and improved financial situation etc. These organizations invest billions of dollars to purchase and maintain these systems, in the expectation that they will resolve their business problems and ultimately deliver the expected benefits. ERP systems are quite complex in nature (Fichman et al., 1997) and impose a certain burden and discipline on the adopters to use them effectively (Gill, 1999). This inherent complexity means that even successful implementation of ERP systems does not result in the effective use of these systems. This, in turn, will lead to the realization of benefits only partially (Boudreau, 2002).

ERP package has received generous attention from IS research community. But majority of this research is looking at the issues related with package implementation (Wei et al., 2005; Wei and Wang, 2004; Parr and Shanks, 2000; Koch, 2001b; Markus et al., 2000; Kraemmergaard and Rose, 2002; Ngai et al., 2008; Dezdar and Sulaiman, 2009) and organizational management (Rikhardsson and Kraemmergaard, 2006; Wagner and Newell, 2004; Scapens and Jazayeri, 2003; Huq et al., 2006). The underlying assumption within this research is that once a best fit package has been successfully implemented, organizations will be able to realize the advocated benefits. However, these studies do not take into account that due to different organizational dependent contexts, even a best fit package may not be able to deliver in the post-implementation stages (Mousavidin et al., 2009). Extant literature reports many examples of varying levels of benefits realization after the successful implementation of ERP systems (Barket et al., 2003). In this paper, we propose the lens of Social Shaping of Technology (SST) to investigate the use of ERP system. While using a technology such as an ERP package, different organizational members may have different interpretations of the system. Additionally, different organizational groups might be sharing the same interpretations of the system. Therefore, we believe that SST is a very relevant approach to study the use of ERP systems. It is envisaged that the use of SST, to investigate the ERP systems, might stem the insights that can fuel the better utilization of ERP system in the post-implementation stages. SST is also an alternative to understand the ERP systems as in traditional IS research, stakeholders are categorized based on their functional roles (Mousavidin et al., 2009).

This paper predominantly draws on the ERP and the social shaping literature. In the following section, literature review provides a brief background of ERP systems, use of ERP systems, social shaping and its motives. It then discusses the application of SST to study the use of ERP systems. Against this backdrop, the research gap and research questions are presented. The paper finished with a brief conclusion and the practical implications.

2. Literature Review

Enterprise Resource Planning (ERP) systems are preeminent way of dealing with integration issues these days. These systems were originally developed from the concepts of Material Requirement Planning (MRP) and Manufacturing Requirement Planning (MRP II). Information Systems were built on the basis of these two concepts in the 1960-1970s which were then used to automatically integrate the activities of production, inventory and accounts departments (Markus et al., 2000). The scope of these systems evolved over the time and functions of human resource, marketing & sales, and distribution & supply network were also included in these systems. Consequently, the term Enterprise Resource Planning (ERP) was invented by Gartner Group of Stamford, Connecticut, USA in the 1990s (Chen, 2001). Eventually, ERP systems evolved as enterprise-wide information systems that integrate all information related to an organization's business including products, suppliers, customers, employees and financial information (Helo et al., 2008).

The popularity of ERP systems started to gain momentum in 1994, when a German based company SAP released the new version of its ERP system known as R/3. In the coming years, organizations started investing billions into ERP systems offered by SAP, Baan, Oracle and J.D. Edwards (Chen, 2001). The importance of the ERP systems has become more important in the current age as the business environment is rapidly changing in the face of an increasingly competitive, dynamic and global market-place. Companies face tough challenges to reduce their costs, improve supply chains, reduce stock levels, improve the quality of products and enhance their product range. Against this backdrop, organizations continue to install ERP systems, to help address such challenges (Umble et al., 2002). Globalization and regulatory compliance are the key elements which lead large organizations to invest continuously in ERP systems. By contrast, in the Small and Medium Enterprise sector, companies are purchasing new ERP systems to improve their customer services and to get into the global markets (Jacobson et al., 2007).

2.1. Use of ERP System

A review of prior literature reveals that 'Use' is a term which has been frequently used as one of the measure of system's implementation success. Use has also been understood in terms of 'usage' and user satisfaction' (Boudreau, 2002). Many studies have looked at the use of ERP systems (Schlichter et al., 2010); albeit not tapping into certain issues deeply. These studies have not looked into details about different relevant groups from different functional backgrounds who are involved into the process of using the system. These different groups can lead to certain changes in the system through different means. The studies also don't inform whether changes, demanded by certain groups and individuals after using ERP system, in the post-implementation stages increases user satisfaction. This paper calls for more attention from the researchers on the issues related with post-implementation stages of ERP systems. This is a relatively new research area and only recently few researchers have started looking into it (Howcroft et al., 2010). We believe that, an in depth qualitative case study involving different diverse groups can help in understanding the use and changes of ERP systems in the post-implementation stages. Social Shaping of Technology (SST) can be used as a lens to investigate social and organizational characteristics of ERP system in the post-implementation stages. In the next part of the paper, we discuss about SST that can be used as a guide for any such study.

2.2. Social Shaping of ERP Systems

The social shaping concept (the original name given by the authors to this concept is SCOT, but it is widely described as social shaping of technology approach (Howcroft et al., 2010)) is a subjective approach which was pioneered by Pinch & Biker (1987). They argue that technology does not determine human actions, rather human actions and interactions shape how that technology is used. This view is echoed by Williams & Edge (1996), who argue that the concept of social shaping allows technology to be analyzed as an outcome of human actions which stands in opposition to technological determinism (Orlikowski, 1991). Williams & Edge, further, argue that technology does not develop because of an inner technological logic; rather conscious and unconscious choices made by the people about technology shape the direction of its development and use.

Boersma et al. (2006) have also discussed social shaping perspective with regards to the ERP systems. They explain that social shaping perspective implies a focus on the content of the technology and incorporates a broader and more heterogeneous set of players taking part in a complicated play of negotiations across the development, selection and use of technology. The technological development is seen as the outcome of social process of negotiations where players have different commitments, perspectives or positions in the structure i.e. it can be politicized. They also draw on the theory of organizational sociology which highlights the importance of an organization as a social system; where subgroups in management and employees form social spaces to play an important role in the choice of management strategy and use of the technology.

Another view is presented by Wilson et al. (2006) who argue that the approach of social shaping is attractive because it emphasizes technological development as a social process as well as providing a framework for understanding the context in which the technologies are placed. Social shaping perspective encourages concentration on social and political processes through which terms such as failure, benefits or success come to be ascribed to the technological systems.

Two of the main aspects of social shaping approach are **Relevant Social Groups** and **Interpretive Flexibility**. Organizational members who interpret technology similarly and try to resolve its problems in a similar way are considered to be members of the same Relevant Social Group (Mousavidin et al., 2009). Relevant Social Groups will not only see technology differently but also disagree over success or failure that can be attributed to the technology (Pinch & Biker, 1987). It is very important not to ignore these groups as they can use different motives to customize or shape the technology in their own desired way (Yeow et al., 2008). Therefore, when understanding the development of technology as a social process, artefacts should be seen as they are viewed by different relevant groups, as to do otherwise would mean that technology is autonomous (Howcroft et al., 2010). Due to different interpretations assigned to the technological artefact, the technology is said to have Interpretive Flexibility. It is a useful concept which helps understanding problems and solutions of the same technology as they are viewed differently by different groups of people (Pinch & Biker, 1987). These groups of people contribute to gradual shaping of technology until it takes a workable form (Mousavidin et al., 2009). Again, it is very crucial to observe the different meanings associated by different relevant social groups while understanding how an ERP system can be shaped, as doing otherwise will take out one important aspect of social shaping perspective. Although, the importance of SST is highly acknowledged in the research of Information Systems (Mousavidin et al., 2009) but it has not been used comprehensively to look at the post-implementation stages of ERP systems. Therefore, a study is required taking SST as a theoretical lens to look into technical, social and organizational aspects of ERP system usage. In the next section, we will be discussing the means through which systems are socially shaped.

2.3. Motives of Social Shaping

Whenever a package is socially shaped, there are few drivers behind it. From previous studies, the main motives of social shaping appear to be Politics, Power, Discourse and User Resistance.

Politics is one of the most important motives of social shaping. Vasconcelos et al. (2005) argue that information technologies can be referred to as “socio-technical” networks with the assertion that technology is socially shaped. They argue that in this regard, politics not only plays an important role but more than that acts as an enabler in ICT implementations as an ongoing social process. A similar view is also presented by Boersma et al. (2005), who explain that space for social shaping implies a social context, where socio-technical ensembles can be addressed and politicized.

Another motive is the use of Power to shape the system. Literature provides examples where organizational actors exercised the power endowed by formal structures and/or by virtue of access to critical sources (e.g. funds and social ties). Specifically, these studies showed that a dominant frame emerged when members of that social group applied their power in their social interactions to dominate the interpretive process (Yeow et al., 2008). In this regard, Boudreau et al. (2005) argue that once the users start interacting with the system and gain the detailed experience of the system, they might appropriate the system in a way that was not originally intended by the system designers. In an extreme case users may be resourceful enough to overcome technology’s material constraints thus rendering that technology is malleable.

Use of Discourse is also a mean to socially shape the system. Grant et al. (2006) have explored that discourse plays a central role in the social construction of ERP systems and the practices surrounding their implementation. Discourse brings an object into being so that it becomes a material reality in the forms of practices that various stakeholders want to have in it.

User resistance can also lead to the social shaping of the system. According to Alvarez (2008), the acts of resistance on the part of staff produce unanticipated adoptions of technology. These acts allow users to reach inside the technology and reshape it in such a way that it ceases to be a fixed constraint. He also argues that users develop creative workarounds to counteract the perceived loss of power and identity with the introduction of the new information systems. A similar view is presented by Ignatiadis et al. (2009), who witnessed that on installation of ERP systems, users tried to reinstate the ways in which they worked prior to the introduction of ERP system, including the workarounds.

It is evident from above discussion that how different stakeholders in an organization can socially shape an ERP through politics, power, discourse and user resistance. It is also possible that, through social shaping, the resultant system might become a different version of the original system. Additionally, it might be working in a different way than it is intended to do originally. Consequently, these motives can be very useful in investigating the enactment of changes in the ERP systems via relevant social groups.

2.4. Post-Implementation stages and Use of ERP system through SST Lens

In an organization, different relevant social groups will be using an ERP system and these groups would have different perceptions of ERP system because of its inherent richer functionality. Therefore, SST is a very relevant approach to investigate and understand the use of ERP systems. After looking at the semantics of social shaping and different motives for SST, we will now be briefing about couple of summarized examples which have been gathered from the literature. Although, none of these studies had the purpose of investigating the use of ERP systems via the lens of SST at first hand, however, we will study the results of these studies through the lens of SST.

Example 1

First example is about a state agency in USA, which provides variety of public services for state population (Boudreau et al., 2005). The agency decided to replace its legacy financial systems and installed an ERP system instead. Before implementation, the perspective users concluded that they would reach an acceptable level of efficiency in performing their transactions via an ERP systems, but it was soon realized that, to achieve this, they had to put in a lot of effort. ERP package was perceived

as inflexible and rigid. Added to this was the lack of knowledge of how to use the system. Some users also felt a lack of control and power, which ERP system had taken away from them. So the staff developed small tweaks around the system and used some of the features in contrast with the intended use. One of the reinventions staff made was the use of a statistical field to capture credit card information. Although, initially it was designed to capture some other data but they used it for credit card data. Another example was of using multiple records for the same vendor with different geographical locations. ERP systems give the facility to have one record for the one vendor with disperse locations, but staff created multiple records because they were used to of this way of working from using the previous financial systems.

Example 2

This example is about a state university in USA (Alvarez, 2008), which installed an Enterprise System (ES). A survey was done before the implementation of ES within the university. This survey showed overwhelming support (97.7%) for the implementation of the ES. The survey also showed that the respondents felt that ES system would help them in performing their jobs in more efficient and productive way. But after the go-live date, the scheduling representatives (SR), who were responsible for allocating different courses to the students in the university, felt a loss of power as they no longer had full control on this process anymore. The ES had a built in facility where courses can be assigned online based on a pre-determined criterion. But SRs circumvented the system by taking off this facility. Instead of ES doing the allocation of courses, the SRs would do it manually on the paper. Once done on the paper, they would put these allocations into the ES manually. Performing a workaround not only shaped the system in a different way but it also allowed SRs to maintain control and power over the allocation of resources.

The rationale of presenting these examples is to demonstrate the understanding of how a package can be socially shaped. These examples highlight the different interpretations held by different stakeholders when using the same ERP system. The examples also brief about the actual changes in the system that can be conducted via social shaping through power, politics, discourse and user resistance.

3. Research Gap:

It is evident from the above discussion that social shaping of ERP package is a broad concept which can influence the package beyond implementation stages. Not only small modifications can occur because of direct influence of social shaping but, sometimes, customizations of high level (i.e. modifying the source code) can also happen under the umbrella of social shaping. It is possible that sometimes high level customizations can be done by IT staff as a strategic move e.g. to reduce costs. But this type of customization can also occur as a direct influence from social shaping perspective, e.g. because of heavy political games from one department, an important functionality might be inserted or taken out the package even though it may be considered as the best industry practice. Generally, whenever a package is socially shaped, the actual physical changes to the system become reality in the form of these customizations. Although, there is one exception, when at times the package does not get modified but is being used differently than it was initially intended to use (Kayas et al., 2008). There is no evidence that whether these changes increased user satisfaction, user performance and ultimately the overall benefits of the system. We tried to find the answer for this question in the benefits realization literature. Although, there has been few case studies but most of the studies measuring ERP benefits has been done using surveys (Henedricks et al., 2007; Poston et al., 2001) and they do not take into account SST issues. This is a relatively new research area and only recently few researchers have started looking into it. Because of this gap in the literature, further research should be conducted to investigate the changes in the ERP system in the post-implementation stages with the lens of social shaping and to see the subsequent benefits of any changes. First of all, it will fill the void in the literature by answering whether or not social shaping in the post-implementation stages lead to any improved user satisfaction and improved user performance. Secondly, it will help us to witness empirically how does the package is socially changed once it is in

use, what form it takes after it is shaped and who plays a crucial role in shaping the package. More specifically, future studies should aim to flush out the answers of following questions to gain a better understanding of social shaping phenomenon:

1. How does a package get shaped socially after the implementation?
2. What kind of negotiations takes place before the social shaping of the package?
3. To what extent, relevant social groups and interpretive flexibility influence in the emergence of the new meanings/demands from the system?
4. How do Politics, Power, Discourse and User resistance influence the change in the system i.e. customizations?
5. To what extent, modifications in the system help in increase benefits realization, user satisfaction and user performance?

Due to the nature of the research, any such study can mainly adopt qualitative research approach. According to Cresswell (1998) "A qualitative study is defined as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in natural setting". The study should be conducted in an organization where ERP system has been implemented successfully and has been in use for, at least, 2 years. Semi structured interviews can be carried out for the case study. Key stakeholders shall be identified in the IT department, management and end-users for these interviews. Selecting key stakeholders from different departments will not only help in the getting different perspectives but will also add to the rigor of the research.

4. Conclusion & Practical Implications

The purpose of this paper is to discuss SST and its potential relevance for studying a situation that is not very well researched in IS literature. We believe any such study investigating the post-implementation stages of ERP systems with the lens of SST will be very useful. First of all, it will help academics to build a body of knowledge looking at the use of ERP systems through the lens of SST. Secondly, it will help IT managers to realize the effects of social shaping on the ERP package. The managers can keep a check on the use of ERP system in order to make sure that package is not shaped in a way that will hinder the organization to realize the benefits from the package.

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