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Abstract

Understanding successful information systems implementation is important to both information systems (IS) researchers and practitioners. Much of the current IS literature focuses on either the factors affecting IS adoption or processes through which IS are introduced in organizations, and fails to offer satisfactory explanations as to why different organizations initiate IS implementation processes differently. In this paper, we introduce the notion of organizational motivation for IS adoption and highlight its role in explaining IS implementation process by drawing on two recently undertaken research studies. We argue that organizational motives for IS adoption is an important notion that needs to be conceptualized differently for different types of information systems.

Keywords: information systems, implementation, motivation, adoption

1   INTRODUCTION

Understanding the implementation of information systems (IS) in organizational settings has long been of concern to IS researchers and practitioners. As IS require substantial financial investment (Rainer et al, 2007) and potentially affect organizational processes, structure, policies and performance, the successful implementation of these systems is important to management. Recognizing this, a plethora of research has been conducted by many scholars with the aim of understanding how IS are adopted and then implemented in organizations. Much research to date has focused on either the factors affecting IS adoption decisions, or the processes through which IS are implemented in organizations. Although this is important, the existing literature does not clearly explain the differences in IS implementation processes initiated by organizations. Understanding such differences is useful to management in two ways: a) it can help them better appreciate and even predict the likely outcomes IS can generate, and b) it facilitates IS project management by reducing uncertainty associated with project planning in relation to selecting IS implementation activities. In this paper, we introduce the notion of motivation and argue that organizational motivation for IS adoption can serve as a suitable theoretical lens to understand why different organizations implement IS differently. More specifically, drawing on social psychology, management science, and the IS adoption and implementation literatures, we propose a generic IS adoption motivational model which relates the organizational motivation of an IS application to its implementation process. We further describe how the model was initially tested within the Inter-Organizational Systems (IOS) context, and then discuss how the motivational concept was later applied to Business Intelligence (BI) systems. Drawing on our cumulative experiences, we argue that organizational motives for IS adoption is a useful concept that has been largely overlooked in the existing IS literature. We further suggest that organizational motives for IS adoption need to be conceptualized differently for different types of information systems.

2   BACKGROUND

A critical analysis of the existing literature reveals that the term adoption has been defined in several ways. We define adoption as the activities that lead to an IS adoption decision and implementation as the subsequent activities when implementing the IS. In general, IS adoption and implementations have been examined from two distinct perspectives: *the factor-based approach and the process-based approach*. Factor-based research identifies a number of precursors that affect the adoption of IS innovations in organizations. IS adoption decision-making is considered to be a discrete event which can be influenced from the presence or absence or perhaps the level of these conditions. Factors are usually temporal in nature and their importance may change over time. Typical examples of factor-based studies include: ERP (Buonanno et al, 2005), knowledge management systems (Wong and Aspinwall, 2005), data warehousing (Hwang et al, 2004), IOS (Soliman and Janz, 2004), and e-commerce (Kaynak et al, 2005). The findings of factor-based adoption studies are important because a deep understanding of the factors that influence firms to adopt IS is useful to management. In contrast, the process-based approach considers IS implementations as a sequence of stages and seeks to explain how outcomes from the introduction of IS develop over time (Markus and Robey, 1983). According to the process-based view, IS implementation is not seen as a discrete event and the outcomes of IS implementation cannot be predicted from a set of factors. The variation in IS outcomes is partially explained by the differences in the processes chosen by organizations when introducing the IS. Two examples of process–based studies are EDI systems (Damsgaard and Lyytinen, 1998), and Efficient Consumer Response (ECR)-enabled IOS (Kurnia and Johnston, 2000).

Studies representing these two perspectives of IS adoption and implementation however do not offer a clear explanation of the variations observed in implementing IS in different organizations. Thus, there is currently no conceptual link between the IS adoption decision and the subsequent implementation process in organizations. To address this gap, we provide an alternative model which is rooted in the notion of organizational motivations for IS adoption. We also relate motivation to the IS implementation process.

3   MOTIVATION

3.1 Motivation in the psychology literature

The notion of 'motivation' has been widely discussed in the psychology discipline. Hence, drawing on the psychology literature, we discuss the meaning of 'motivation', and then extend the meaning to explain IS implementation processes in organizations. Motivation is described as "*providing a motive that prompts a person to act in a certain way*" (Maehr and Braskamp, 1986), and a motive refers to "*a specific need, desire, or want, that guides the actions undertaken by an individual*" (Maehr and Braskamp, 1986; Toates). Motivation is also explained in terms of two specific dimensions: locus of motive and type of motive. The term 'locus of motive' refers to the source (internal or external) from which a need or drive develops within an individual to act in a certain manner. Theorists of motivation also recognize the existence of various types of motives - not all of which are relevant to the study of IS adoption. Six major types of motives have been identified. These are: economic motive (Nuttin, 1984), imitation motive (Allport 1985), fear motive (Clifton, 2003), power motive (Winter, 1973), status motive (Winter, 1973) and institutional norms motive (Ladd, 2000). In summary, motivation literature helps us to understand why people do certain things in some situations but not in others.

3.2 Motivation in organizational contexts

The notion of motivation can be extended to encompass IS adoption within the context of individual organizations. Using the psychology literature, the term 'motive' may be defined as: '*... the desire that initiates the activities of an organization to adopt an innovative system such as an IT-enabled information system.*' Drawing on the psychology literature (Toates, 1986), which suggests that the activities undertaken by people are guided by their motives, we argue that the activities initiated by organizations to implement an IS are also contingent upon the organizational motives for adopting the system. This view of IS adoption (shown in Figure 1) has not been previously discussed in the existing process–oriented IS implementation literature and hence represents a new way of looking at IS adoption and implementation.
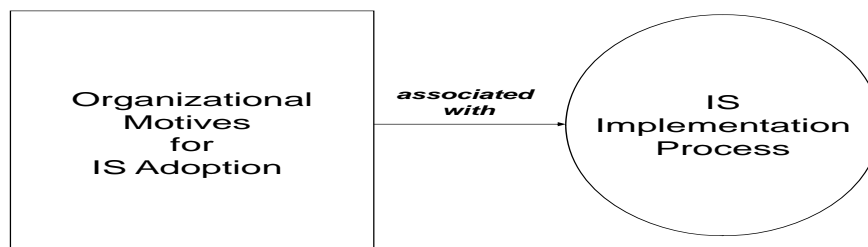

Figure 1.   *Generic information systems motivation model*

4   IOS RESEARCH STUDY

The generic IS Motivation Model (Figure 1) has been applied to understand how and why organizations implement IOS (which connect two or more organizations along a supply chain) and why IOS implementation processes vary in different organizations. Organizational motivation for IOS adoption has been operationalized in terms of the locus of the IOS adoption motive and the type of IOS adoption motive. The initiative to introduce an IOS solution along a supply chain may originate within an organization (e.g. from business units or the IT function) or arise from external (e.g. powerful business partner) entities. Furthermore six types of motives for IOS adoption are identified: economic motive, imitation motive fear motive, power motive, status motive and institutional norms motive. These motives are grouped into two broad categories: socio-political and techno-economic. Classifying motives into these two major categories is useful as it highlights the fact that, unlike

techno-economic motives, socio-political motives are not intended to gain immediate direct economic benefits. Drawing on the locus of motive and two major categories of motives, four distinct IOS adoption motivation scenarios emerge (shown in the left hand side of Figure 2). The generic IS Motivation Model (Figure 1) when used in the IOS context is known as the IOS Motivation Model (IMM) and is shown in Figure 2. This model predicts that different implementation processes will be initiated by organizations with different motivation scenarios. The model also identifies a total of eight key activities that constitute possible IOS implementation processes. Detailed discussion of these activities is reported in Rahim et al. (2007). According to the IMM, the sub-set of these activities that will be initiated by an organization when implementing an IOS application is associated with its motivation scenario (for a given IOS project).
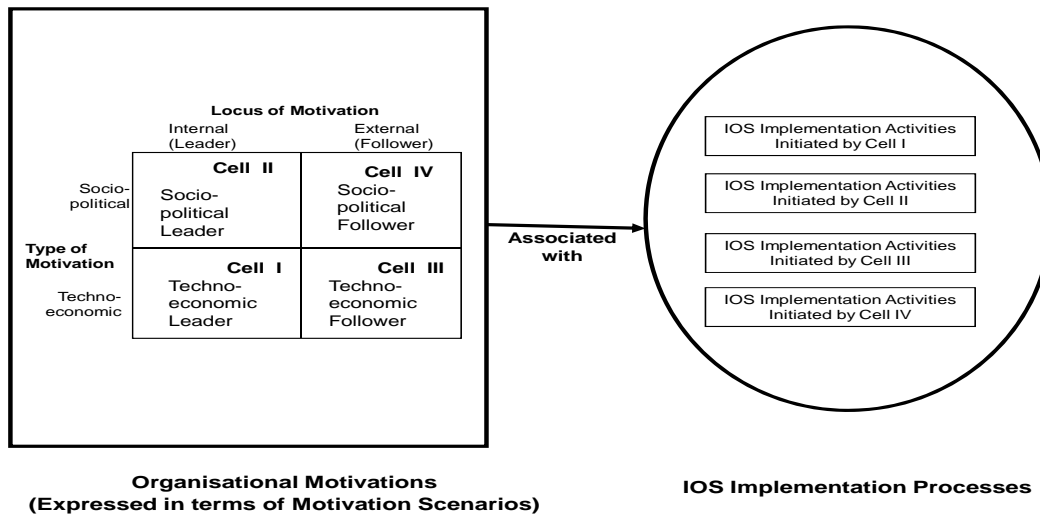

Figure 2.   IOS motivation model

According to the IMM, cell I defines the 'Techno-economic Leader' scenario that occurs when organizations develop a direct economic motive internally, and invest in an IOS project voluntarily, believing that the investment will improve organizational performance with regard to internal efficiency and competitiveness in the marketplace. Cell II defines the 'Socio-political Leader' scenario that occurs when these organizations initiate an IOS project for reasons other than immediate efficiency gains. Cell III refers to the 'Techno-economic Follower' scenario that occurs when an organization is approached either by its business partners or by any other influential organization about IOS adoption and, having evaluated the potential economic benefits of the IOS, invests in it voluntarily. Although the motivation to adopt IOS is generated from external sources, the adoption decision is made based on an economic motive. Cell IV represents the 'Socio-political Follower' scenario that occurs when an organization is approached by its trading partner to adopt an IOS, and a decision is made based on a socio-political motive. Socio-political followers do not develop an IOS, but embrace an existing IOS solution developed by partners or others parties. They are generally the passive users of IOS and introduce IOS for reasons such as legitimacy, compliance, influence or social status. The IMM also includes a set of propositions relating to the IOS implementation processes initiated by organizations belonging to each motivational scenario. Detailed deductions of these propositions are reported in (Rahim et al, 2007). We have also undertaken a number of case studies (Rahim, 2004; Rahim et al. 2004; Rahim et al., 2005; Rahim et al. 2005) to test the IMM in the Australian pharmaceutical and automotive industry sectors. These case studies confirm that the usefulness of the IMM in explaining and predicting IOS implementation processes.

5 BUSINESS INTELLIGENCE STUDY

We have recently applied the generic IS Motivation Model (Figure 1) to a different technology, Business Intelligence (BI) systems. BI systems are becoming increasingly important, as organizations need reliable and effective information environments to support information analysis and fact-based decision-making (IBM, 2006). Furthermore, BI systems are widely recognized as strategic initiatives that are instrumental in creating business value and are considered a priority technology by many organizations (Gartner, 2009). BI systems are mostly used within an intra-organizational context, providing a useful contrast to the study of IOS.

Organizational motivation for BI systems adoption has been operationalized differently from that of IOS adoption. As the locus of motivation for BI context is primarily internal, we have deemphasized the locus of motivation and focused on the type motivation. We initially used the types of motives in the IMM, grouped into the two broad categories: socio-political and techno-economic. These were sufficiently generic to apply within the BI systems context. We then conducted an extensive analysis of the BI literature and published case studies together with in-depth interviews with nine BI experts (Jagielska et al. 2010). The analysis revealed several additional types of motives and led to the development of a four level taxonomy of types of motive relevant to BI systems (see Figure 3).
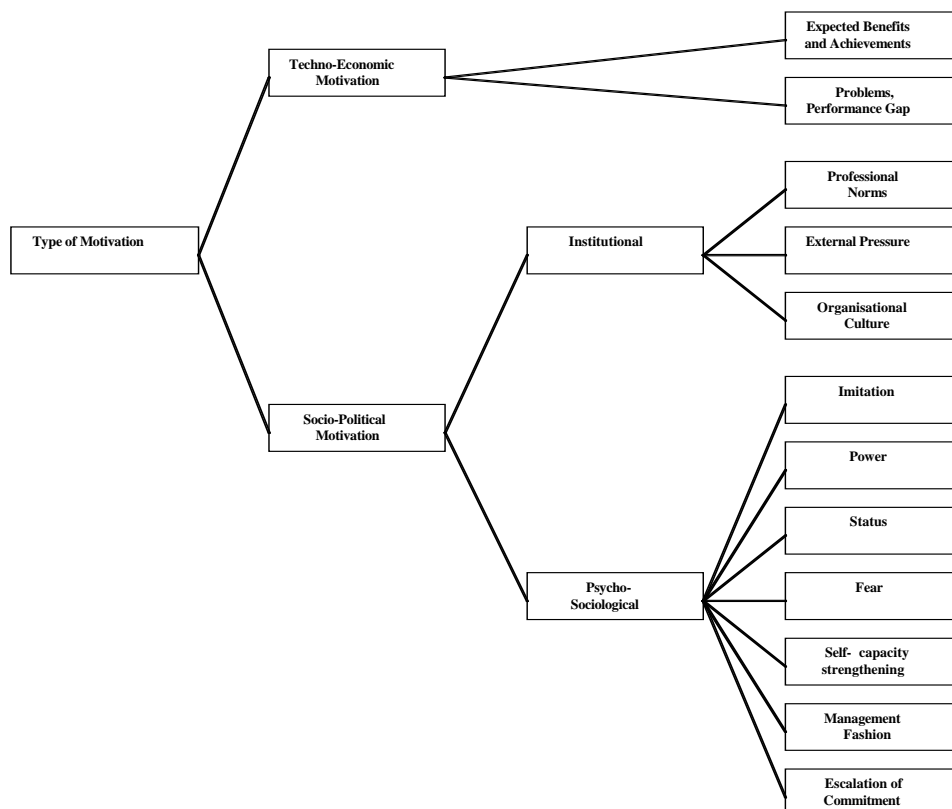

Figure 3.   A taxonomy of motives for BI systems adoption (Jagielska et al., 2010)

The techno-economic motives were then further categorised into the expected benefits and achievements motive (teleological motives), and the problems and performance gap motive. Benefits specific to BI systems include competitive advantage, better quality information for decision making, improved ability to anticipate possible threats and opportunities, a single view of the business, more informed and better decision making, better customer service, discovery of new business opportunities, and improved data integration and access, more sophisticated analysis and reporting (Abraham *et al* 2009, White 2009). The most frequently-identified problem motives include outdated, time-consuming financial reporting, no facility for strategic analysis, fragmented data, data quality

problems, ad hoc and manual data analysis or no analysis, lack of business insight, lack of historical data making trend analysis impossible, and separate data bases resulting in high cost of maintenance and replacement (Abraham *et al.* 2009, White 2009).

The socio-political motives were further categorized into institutional motives and socio-psychological motives to distinguish between motives stemming from the professional environment and the psychological motives of individuals or groups of individuals. Within the socio-psychological motives category we included four of the psychological motives identified for IOS systems (imitation, power, status, and fear). We also identified three further motives: self-capacity strengthening where adoption is motivated by the desire for personal improvement; management fashion where demand for BI technologies is generated by business 'gurus', consultants, vendors and others who actively promote it as cutting-edge solutions for businesses; and escalation of commitment where managers can be motivated by previous commitments to BI technology. Within the institutional motives category we split the institutional norms motive (from those identified for IOS) into the professional norms motive where adoption of BI is motivated by influences arising from the norms and values collectively upheld by the IS profession; the organizational culture motive where adoption of BI is due to influence arising from the norms and values held sacred among some powerful groups of people in the organization; and the external pressure motive where technology adoption can be imposed by industry regulations or by powerful external agents such as customers, business partners, boards of directors and shareholders, who may request the implementation of a specific technology (Gosain, 2004, Xue *et al.* 2008).

During the expert interviews, there was a strong consensus that organizational motivation can have a profound effect on BI systems implementation processes. In particular, BI implementations that are motivated primarily by non-rational, socio-political reasons are likely to produce poor outcomes as many of the implementation activities are either bypassed or not given priorities. The experts agreed that the taxonomy of motives would provide researchers and practitioners with a structured and systematic approach to understanding the motivations for adoption and implementation of BI systems. We argue that understanding organizational motives for BI systems and their possible effects is important, because if awareness of these motives is available within an organization, decision-makers can then take appropriate actions or employ corrective procedures to avoid unsuccessful implementation of the technology. Further empirical research including in-depth case studies is planned to assess the utility of the taxonomy.

6   DISCUSSION

We argue that the notion of 'motivation' provides a useful means of better understanding information systems implementation. Furthermore, we propose a generic IS adoption motivational model which relates the organizational motivation of an IS application to its implementation process. We have shown how the generic model may be used for two types of information system (IOS and BI systems). A number of themes emerge.

6.1 The nature of the motivation model as a theory

When used in the context of IOS we developed the IMM, a model that can be used to predict implementation processes for IOS implementation. This is a type III theory in Gregor's (2006) taxonomy of IS theories. The IMM has testable propositions but does not yet have well developed causal explanations. However, when used in the context of BI we developed a taxonomy of types of motive which provides a useful lens to understand BI systems implementation processes. This is a type I theory in Gregor's (2006) taxonomy and is useful for analyzing 'what is' rather than explaining causality predicting implementation processes.

6.2 There is strong empirical support for the IMM as a predictor of IOS implementation processes

Our case study research has shown that IOS adoption projects can be categorized into one of the four motivational scenarios (see Figure 2) and that all the propositions derived from the IMM are supported by the empirical data. The support has been from within two industry sectors, the pharmaceutical and automotive industries, and for different types of IOS technology. In other words,

industry and IOS technology specific characteristics were not found to have significant influence in explaining variations in IOS implementation processes.

6.3 Motives change within organizations and over time

Differences in motives and IOS implementation process were observed to be different for two IOS projects within the same organization at different points in time. For BI systems implementation too, the experts commented that it is reasonable to expect to see a number of motives prominent at different points. Initially, a socio-political motive (e.g. imitation) may be prominent but later in the project a techno-economic motive (e.g. expected benefits and achievements) may be more prominent. Furthermore, different stakeholders may have different motives within the same BI implementation project (e.g. some may have expected benefits and achievements motive while others may have a self-capacity strengthening motive).

6.4 Business case Motives and real motives

IS implementation projects may be motivated by socio-political motives, yet business cases are almost always expressed in terms of techno-economic motive. In this way, the stakeholders appear to be rational in their decision-making. For example, a project may be justified by specifying expected benefits and achievements whereas the real underlying motive might be escalation of commitment.

7 CONCLUSION

Existing IS literature offers no satisfactory explanation for the variations of IS implementation processes undertaken by organizations. We have developed a theoretical model which is rooted in the notion of 'motivation' drawn from the social psychology literature, and extended that model to organizational motivation for IS adoption. We have then applied the model to IOS and BI systems and the outcomes of our initial applications of the model are quite encouraging. Our initial studies support organizational motivations for IS adoption as a useful concept which can be used to better understand why organizations implement their IS solutions in different ways. An understanding of the variations in IS implementation is important because different outcomes can be expected by managers depending on how the systems are implemented. The IS motivation model provides researchers and practitioners with a structured and systematic approach to understanding IS adoption and implementation.

Our observations have some limitations which require further research attention. First, our proposed IS adoption motivational model was although applied to the BI context (which provided further insights into developing a BI adoption motivation taxonomy), we have not yet fully evaluated the applicability of all theoretically derived propositions for the BI context. Further research is currently in progress in this regard. Additional empirical studies are required to further test and improve the model. In particular, further studies involving different technologies and in different industry sectors would strengthen the generalizability of the model.

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