

Exploring the Impacts of Knowledge (Re)Use and Organizational Memory on the Effectiveness of Strategic Decisions: A Longitudinal Case Study

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ABSTRACT

Two forces that dramatically affect the sustainability of firms' competitive advantage in the new competitive landscape have been identified as globalization and information and communication technologies (ICTs), such as the Internet and intranets (e.g., Castells, 2000; Porter, 2001). Organizations often rely on acquired knowledge from past experiences to make higher quality decisions on business strategies for better future performance. In this context, Knowledge Management (KM) and Organizational Memory (OM) become a central issue to the effectiveness of strategic decision-making and organizational performance. This paper examines the relationship between the (re)use of knowledge/organizational memory (OM) and the effectiveness of strategic decision-making in devising corporate strategies. As part of an exploratory case study approach, a number of interviews are being conducted among top executives at a multi-national firm. As a framework, the components of the modified version of McLean's IS Success Model by Jennex & Olfman (2002) are being used to examine for the

impact of knowledge strategy and technological resources, along with the impact of individuals and members from wider organizational context on strategic decision making processes. These components are then analyzed within Galliers' (2002) IS Strategy Framework of emergent and deliberate strategizing. The analysis accounts for the inter-subjectivity of the concept of KM. Results from a continuous longitudinal study have clearly shown the significance of culture and human-driven knowledge requirements along side the use of an ERP system as part of an OMS. On-going findings of this study aim to contribute to a richer understanding of the impact of knowledge and OM/OMS on Organizational Learning (OL) and the effectiveness of managerial decision processes. In the context of the IS Success Model, this paper highlights the intermingled approaches to organizational knowledge management practices due to the contextual nature of knowledge and the human need for social interaction .

1. INTRODUCTION

The impact of globalization, ICT innovations and market integrations continue to change competitive business environments, making knowledge and expertise primary sources for competitive advantage, at

least in knowledge-intensive industries. In addition, rapid technological change affects dramatically the nature and pace of firms' competitive moves (e.g. Ball 2002).

The knowledge-based view of the firm perspective conceptualizes firms as bearers of tacit, social and path-dependent organizational knowledge (Hitt et al 1999). In competitive environments, the manner in which corporations learn from past performances and manage knowledge impacts future decisions. The extent to which advanced ICTs play a supportive or impeding role in the knowledge strategy of a firm depends not only on the knowledge infrastructure of a company, but also on the attitude of decision makers towards knowledge sharing, creation and use, as well as the technology itself. Related topics in literature concern the strategic games decision makers play (e.g. Brindle 1999), technological discontinuities (Tushman and Andersen 1986) and hypercompetition (D'Aveni 1994).

The literature on IS and Strategy places emphasis on either the 'hard' or the 'soft' approaches to managing knowledge and organizational memory. The former assumes that knowledge can be captured and stored in the organization's structure and technological systems, such as KMS. The softer approaches view organizations as social systems, and claim that knowledge is embedded within human minds, with growing attention to social networks and organizational culture, i.e. 'knowledge worker' (Drucker, 1995), 'social capital' (Davenport, 1998), and so forth.

We will present that organizational effectiveness arises from a complex interplay between deliberate decisions and on-going actions, rather than one or the other. Knowledge exploitation and exploration can be a powerful force when employed in tandem (Huang, et al., 2002; Galliers, 2002). Thus, decisions (deliberate or emergent) play a part in determining the strategic direction of the firm (cf. Mintzberg & Waters, 1983). For future frameworks to become more useful in practice there is a balance between these two extremes that needs to be struck.

In the light of the IS Success Model, this paper argues that effective decision-making depends on the use of quality information, including systems that capture lessons learned from past decisions and performances. Thus, it is assumed that organizational effectiveness depends, in part at least, on effective decision making based on the effective management and use of knowledge and OM. How much of which type of knowledge and resources are used by top management teams and boards during strategic analysis and choice remains a topic that requires further investigation.

2. LITERATURE REVIEW

Related to the issue of globalization and ICTs is the institutional context (e.g. Oliver, 1997). In attempting to explain variations in firm performance, Oliver (1997) extended the resource-based view on the firm to incorporate the institutional perspective, where sub-streams emerged. The research sub-streams have focused on specific types of resources inside a firm, three of which are tacit knowledge, strategic leadership and decision making (Hitt et al 1991).

2.1. KM & OM for Organizational Effectiveness

2.1.1. Knowledge Management

Modern conceptions of knowledge stem from the philosopher Michael Polanyi (1966) and have been applied to business and knowledge management by the Japanese management scholar Ikujiro Nonaka (Nonaka 1994). The latter suggests that tacit and explicit knowledge are important, while the former's emphasis is on tacit knowledge. Western firms have focused largely on managing explicit knowledge (Grover and Davenport 2001), however.

Explicit knowledge is by definition codified data and as such can be processed by modern ICT and stored for future retrieval. So far, the primary interest has been in the IT paradigm of KM (Haldin-Herrgard, 2000, Walsham 2001). However, the knowledge that differentiates companies from one another is mostly tacit in nature and embedded within human minds, processes, relationships, services and products. The conversion of the tacit into explicit knowledge - a process of externalization according to Nonaka and Takeuchi (1995) - allows knowledge to be codified, stored, and disseminated throughout the organization, facilitating organizational learning and knowledge creation. This process has to take place within a specific knowing context for organizations to create a memory base that can be leveraged to build upon past experiences as opposed to having to reinvent the wheel.

However, converting tacit knowledge from the human memory and processes into organizational memory is a challenging task to master (Gold et al 2001). The difficulty arises due to the intangible nature of tacit knowledge, which is personal, intuitive, and embedded within intangible resources. There is a well-established critique of technically-led KM practices, which involve codification strategies directed at making tacit knowledge explicit. Critics argue that tacit knowledge is embedded in contexts of social action and objectifying and storing it in repositories takes away its inherent value (Marshall and Brady 2001).

Hence, a critical concern for practitioners remains how to institutionalize individual tacit knowledge to secure the intangible assets that otherwise would remain hidden (Zack, 1999; and Augie and Vendelo 1999 quoted in Haldin-Herrgard, 2000). An integrated approach to KM and OM is seen as a means of squaring the circle between operational efficiency and organizational effectiveness (Baird and Cross 2000).

2.1.2. Organizational Memory

The concept of organizational memory is concerned with how to collect, store, and provide access to experience, skills and know-how. Effective use of this knowledge depends on the selective use of memory. This is a critical consideration if organizations are to benefit from the use of knowledge to impact organizational effectiveness. Indeed, interactions between all organizational dimensions are a requirement: technological, socio-technical and socio-emotional, cognitive, processes, strategies, cultural and structural issues.

Knowledge strategy is highly contextual and depends upon the purpose of its reuse, for example projects, processes, relationships and know-how. A critical enabling factor is to create a knowledge sharing organizational context by building a strong organizational knowledge infrastructure supported by knowledge networks and technologies (Galliers, 2002).

Exploitation of organizational knowledge for effective decision-making requires an integrated interactive approach, whereby ICT may act as a powerful facilitators. Dynamics of technology implementation focus on content and processes of knowledge integration. Organizational memory systems may provide to be useful depending on the type of knowledge (re)used and the organizational context. Externalization and diffusion of tacit knowledge have different requirements for knowledge repositories depending on the re-user and the purpose of knowledge reuse (Markus, 2001). Hence, architectural requirements for building a knowledge infrastructure, i.e. repositories, should only be regarded as enabler of a greater context of a knowledge sharing culture.

In the hyper-competitive global context, where learning, innovation and speed matter the most, strategy and decision-making are becoming inseparable. Throughout this paper, we try to emphasize that despite the emergent advanced ICT for managing knowledge, organizational memory and organizational learning are social processes and

effectiveness is achieved through a synergistic integration of a congruent knowledge infrastructure, culture and technological resources (Galliers 2002). The study is examining this argument in the context of strategic decision making to explore how executives (re)use various knowledge and resources to tackle strategic challenges. The research accounts for the impact of emerging technologies for OMS/KMS as well as their interaction with tacit knowledge and managerial discretion.

Hatten and Rosenthal (2001) argue that managing corporate knowledge should be a strategic activity and the responsibility of the CEO and board of Directors. A challenge facing executives is to spot paradigm shifts in their industry and recognize trends for the future direction of their company. This involves using their own and their organizations' knowledge memory to make more effective decisions to strategically leverage market opportunities.

2.2. The Role of Organizational Learning and Leadership in Strategic Decision-Making

2.2.1. Strategic decision-making

Strategic decision-making is characterized as a complex, unstructured, non-linear and fragmented process often based on conflicting information (Green et al. 1999), which is influenced by the input of individual biases, negotiation and political games (Bennett 1998). Information and knowledge upon which decisions are based come partly from individuals' memory and from organizational memory. OM systems may serve as repositories of data, information and knowledge, which are retrieved and used to build upon and make new decisions.

In the context of using knowledge in social processes, humans have different approaches to making decisions. Some lean more towards the rational positivistic approach of weighing facts, and others have the tendency for a more normative approach. The latter involves relying primarily on experience-based tacit knowledge, subjective judgments, intuition and 'gut feeling' as opposed to hard data. Although there is a tendency to view both as intermingled and complementary, the debate on rationality vs. relativism in the literature argues as to which sources are tapped by top managers to make sense of complex and uncertain situations in making strategic business decisions. In the light of organizational memory, this has considerable implications on the knowledge strategy, OM structure and systems.

2.2.2. *Organizational Learning*

New perspectives on learning and innovation arise from the knowledge-based view of the firm. For example, 'absorptive capacity' (Cohen and Levinthal 1990) refers to the ability of a firm to recognize the value of new, external information, and to use it for commercial value. Lei, Hitt, and Bettis (1996) suggest that competencies that lead to competitive advantage have dynamic qualities and create value only through continuous development. Increasingly, more executives are becoming aware of the potential benefits of KM and KMS for continuous organizational learning and retaining the lessons learned.

KM strategy involves the fostering of a learning organization (LO). The concept of the learning organization is based on the work of Chris Argyris (1978) and Senge (1990). Senge (1990) discusses the concept of generative learning, which is about adaptive learning and coping with accelerating pace of change. He introduces a view on leadership based on vision, which is to facilitate generative learning.

Mintzberg (1973) argues that strategy is less a rational plan arrived at the abstract than an emergent phenomenon. Furthermore, decision makers should continually learn about shifting business conditions and balance what is desired and what is feasible. Accordingly, the key is not getting the 'right' strategy but fostering strategic thinking, whereby it is important to achieve insight into the nature of the complexity and to formulate concepts and worldviews for coping with it.

2.2.3 *Impact of Systems Thinking on Decision-making and KM/OM*

OL theorists (e.g. Senge 1990) emphasize the systems perspective in attempting to explain the element of tacitness (i.e., tacit knowledge and hidden assumptions) as the underlying currents of decision-making and strategy formulation, especially where there is a lack of explicitness in terms of quantitative support for further analysis. This argument may provide one part of the explanation of why difference in knowledge reuse may have different impact on the effectiveness of decisions.

When confronted with a situation, the decision maker recalls memories of past performance and experiences that seem most relevant. This recollection acts as a reference and consciously or unconsciously influences current perception of the problem situation and hence subsequent behavior, (i.e. decisions made, style of communication and approaches to similar challenges). Here, OMS may serve as a powerful tool

to make selective choices on remembering past lessons learned.

Since context shapes human perception to a great extent, the way the initial tacit-to-tacit knowledge is communicated into the explicit determines how understanding is gained of the problems situation. The process of externalization, which Nonaka and Takeuchi (1995; 64) refer to as 'the process of articulating tacit knowledge into explicit concepts', takes the shape of metaphors, analogies, concepts, hypotheses, or models.

2.2.4. *Strategic Leadership*

Strategic leadership (Finkelstein and Hambrick 1996) is seen as a unique resource in the knowledge-based view of the firm. Strategic decision theory describes the role of top executives as organizing, coordinating, commanding, and controlling agents (Fayol 1949). This stream of literature views the strategic choice of executives based on their cognitions and values. From this stream, the concept of 'managerial discretion' emerges, which is linked with personal characteristics and organizational and environmental factors (Finkelstein and Hambrick 1996). The focus of such research is on CEOs, on groups (e.g., top management teams) or other governance bodies (e.g., board of directors).

Mintzberg (1973) classified managerial roles into: interpersonal, informational, and decisional. The premise is that decision maker's personal frame of reference, experiences, education, functional background, and other personal attributes have significant effects on their decisions and actions.

In regards to managerial discretion in decisions about strategic assets, Amit and Schoemaker (1990) highlight forces that influence the decision-making task under uncertainty, complexity and conflict. They refer to psychological theorists (Kahneman, Slovic, and Tversky 1982) who suggest that discretionary managerial decisions are affected by a range of cognitive biases toward the handling of uncertainty and complexity, and that shape the strategic direction of multi-national companies in the global markets.

These have significant implications on the manner OM is tapped for knowledge re-use to make more effective decisions. Interesting original findings from our longitudinal empirical work are presented in this paper. The analysis and discussion will be drawing insights from the relationship between decision-making strategies, whether emergent or deliberate (cf., Mintzberg & Waters, 1983) and KM/OM strategies, and the impact of the chosen OM strategies and

systems on the effectiveness of knowledge reuse in strategic decision-making processes.

Among others, Quinn (1980) has highlighted the incremental way in which managers usually deal with complexity. Emphasis on the contextual nature of organizational decision making has been made by Mintzberg (1978), Isenberg (1987) and Mintzberg and Waters (1983) to further highlight the role of the firm's implicit or tacit knowledge acquired throughout its history, and which it is not explicitly aware of. They (also Hamel and Prahalad, 1989) look at intentional choices and tacit forces within organizations. In a context where change is a given, the challenge for market leaders is to tap into their OM and acquired knowledge to sense and spot paradigm shifts and respond strategically. So far in this paper, we discussed the purpose of knowledge re-use serving decision makers in their interpretation and analysis of information to reach consensus and make appropriate choices among alternative scenarios by deriving appropriate assessments to enhance organizational performance (Long and Fahey 2000).

Agor (1986) and Scharmer (2001) claim that decision makers often rely on intuition when there is a high level of uncertainty, such as when facts are limited, ambiguous or incongruent with events, when variables are not scientifically predictable, when time is limited, when several alternatives seem plausible, and when the cost of failure is large. Recognizing the value of experienced-based intuition in decision environments, situational factors compel managers to focus more on this ability (Agor 1986, Behling and Eckel 1991, Wally and Baum 1994). An interesting question remains what impact OM/OIS may have on identifying and integrating knowledge into in strategic decisions.

2.3. The Role of Technology

Leveraging knowledge effectively has become a key organizational capability. The central issue to most companies is how to capture, share, retain, and reuse the knowledge that already exists within the organization effectively. In an attempt to capture and convert tacit knowledge organizations have tended to rely on technological solutions to create an institutional memory for knowledge networks. Organizational memory information systems (OMIS) have received considerable attention in the IS development and management. Such systems are a tangible conceptualization of the concept of knowledge, combining the attributes of culture, history, business

process, and human memory. Integrated systems can facilitate a major step in capturing knowledge assets.

Emerging ICT may provide powerful support for enabling both face-to-face and virtual human interaction and participation (Rolland et al 2000). Most of these solutions have been object-oriented methods for modeling organization memory (Wang 1999). Memory systems include social networks, knowledge centers and various computer-based programs (Olivera 2000). The promised benefits of using memory systems are to improve business performance by tapping into resources that contain acquired knowledge from past experiences and use this to make more knowledgeable analysis and wiser decisions.

Technology that supports collaboration is rapidly placed in the hands of users and represents a tool for building relationships and facilitating the exchange of ideas. Decision support systems (DSS), for example, involve on-line analytical processing of capturing the structure of the real world data in the form of multidimensional tables (MIS) and statistical systems specialists (West et al 2002). Manipulation and presentation of such information through graphical displays provide valuable support to the decision-maker. Data modeling, symbolic modeling and 'what if' analysis are phases of DSS (Koutsoukis et al 1999).

The role of these technologies in organizational memory is to convert and store expertise into databases, build a collective corporate memory that permeates processes, products, and services in digital networks and to facilitate its diffusion among users (Hackbarth et al 1999).

Digital systems also have gained considerable criticism concerning the limits of codification strategies (Walsham 2001). Such criticism focuses on a lack of interpretative conceptualization of inter-subjective understanding of tacit knowledge and its embeddedness in contexts of social action (Marshall and Brady 2001). Communication is a complex and multi-dimensional process and tacit knowledge can be shared most effectively in the real world (as opposed to virtual) to achieve an interpretation and mutual understanding (Walsham 2001).

Given that knowledge is highly context-specific while experience is both time- and context-sensitive (perceptions in a specific time under certain conditions), the downside to ICT-based organizational memory is that once the tacit knowledge from the past has been simplified and converted, users do not tend to question the underlying assumptions of the coded knowledge anymore once it is retrieved for future references. Hence, there may be a risk to

misinterpretation and misperception of the data coded. While it is clearly inefficient to reinvent the wheel every time a decision is made, the ever-changing environment requires a more critical view on information and knowledge and a more open-minded approach to consider issues anew as opposed to relying on past memory. In this case, ICT-based knowledge repositories may pose limits, biases, and rigidities to flexible and critical thinking.

On the one hand, adopting technological solutions facilitate greater control over intangible assets, speed and efficiency. But on the other, attempting to objectify and codify the tacit into IS or KMS may take away the dynamics of the ‘tacitness’ once it is locked into systems. How useful will that knowledge be once it is transformed? Are ICT systems capable of capturing and diffusing the tacit value of knowledge? What are some of the socio-technical consequences?

In practice, the application and impact of OMIS as part of a knowledge management strategy remains a challenge. First, it is important to identify where crucial forms of memory reside before a deliberate attempt to develop organizational memory. But is this at all possible? Not all knowledge and experience is necessarily valuable or worth being remembered and reused.

To know which knowledge would contribute to the company’s competitiveness, the first task is to strategically identify business-specific knowledge; that which differentiates the company from its competitors. Depending on the source, purpose and (re)users, the management of different types of expertise requires different cultural and technological requirements, and that is highly contextual. In addition, we should recall that tacit knowledge is both ‘sticky’ and difficult to identify.

3. THEORETICAL FRAMEWORK

The modified version of McLean’s IS Success Model by Jennex (2002) is applied in our case study at a multi-national firm. Furthermore, the components of the model are being analyzed within Galliers’ (2002) IS Strategy Framework to account for the emergent versus deliberate strategic application of knowledge in OM.

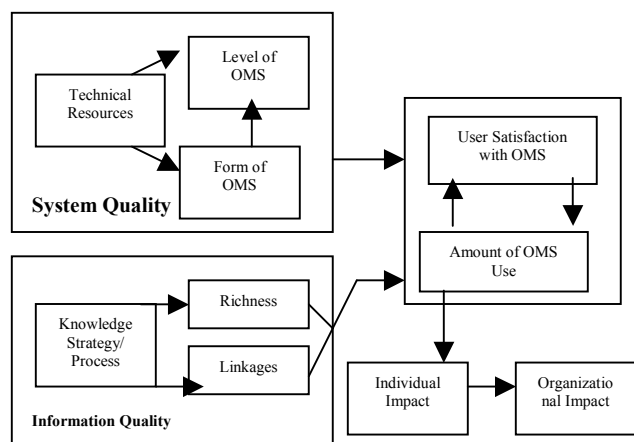
The IS Success Model

According to the model (see figure 1), the knowledge network infrastructure comprises two main blocks: systems quality emphasizing technical resources in terms of form and level of OMS, and

information quality, emphasizing the particular knowledge strategy or process in terms of richness and linkages of information and knowledge for use. The IS Success Model is seen as a good fit with the research aim because it accounts for both technical and non-technical issues of a knowledge strategy. The research seeks to find whether both approaches, the use of human tacit knowledge and systems and tools, as well as the use of emergent and deliberate KM are required for a synergistic re-use of knowledge and OM. The empirical study will identify any OM/KM infrastructure of the company and examine the extent to which managers use knowledge and memory as indicated in the IS Success Model and how their approach shape decisions.

Figure: The OM/KS Modified IS Success Model

Source: Adopted from Jennex & Olfman (2002)



The contribution of this study is to show that despite of sophistication of technological resources, the re-use of knowledge is a human process and the degree to which it may contribute to organizational effectiveness primarily depends on users.

4. METHODOLOGY

Organizational KM is a multi-paradigmatic discipline that requires various theoretical perspectives and methodologies (Hitt et al 1999) for a richer understanding. The underlying belief behind this research views the world as multi-dimensional, with dynamic and complex relationships based partly on socio-political influences in the social system. Recognizing the dynamics and complex nature of large high-performing enterprises, the case study requires drawing upon multiple theories and paradigms to seek a richer understanding.

The theory considers pragmatic interactions between social subjects, defined by Habermas (1984) as the ability to communicate and debate through language for achieving and maintaining understanding amongst those involved in the social system. The case presented case is a longitudinal study in progress and examines the phenomenon of knowledge leverage in decision making and strategizing.

5. EMPIRICAL RESEARCH

This research uses an exploratory case study on OK/OM and KMS/OMS usage in the context of management's strategic decision-making. Empirical data is being gathered through multiple interviews with the management team and document research is being conducted. As part of the case study analysis, observation is also being used to account for the behavior of human agencies in their natural social system and to make sense of the world of inter-subjectively created meanings among the agencies (Lee 1991).

The personalized responses from a multitude of interviews and observations provide us with enough unbiased raw data to interpret reality in terms of what it means to the people and to make sense of the phenomena under investigation - namely, how knowledge is being used for effective decision making and why this is so.

5.1 Case Description

A case is conducted in company "Innovative Chemical Limited" (ICL). ICL is one of the leading chemical specialists in Europe, and has its strong presence in providing customized compound to the pharmaceutical industry. ICL has more than 6,000 employees globally and is headquartered in the UK. Overseas offices, such as those in US, Malaysia and India, are primarily responsible for sales activities and low cost production of standard products. ICL is structured hierarchically, and comprised of 14 divisions, such as Central Administration, R&D, Manufacturing, Engineering, Sales and Logistics. According to four directors, prior to 1995, ICL was growing in a rather steady pace. Continuously growing demand started in late 1994 has triggered a series of expansion, in particular in ICL's manufacturing, engineering and R&D capacity. More than 1000 jobs were created as a result of such expansions.

Growing orders in 1995 and 1996 have also led to an increasing number of delays and complaints from its customers. Directors of Manufacturing, Engineering and Logistics commonly recalled that ICL was in a

stage of dysfunctional and chaotic, as the business process and management system were not adequate to cope with the growing demand. Also, it was noted by the General Manager that the lack of information integration has made the management of information and resources remarkably inefficient. The decision to implement an Enterprise Resource Planning (ERP) system, SAP R3, in late 1997 by an international IT consultancy giant was believed to be an effective solution to streamline ICL's business processes and improve its information management capability. Even though the implementation was lengthy, costly and problematic, the joint effort of ICL and the consultant team did manage to get the new ERP system running in June 2000.

Knowledge management (KM), one of the ERP modules implemented, was believed by the management as a systematic approach to mobilize, utilize and exchange knowledge dispersed in ICL. According to the IT Director, the KM module is able to produce very comprehensive reports based on information generated from ERP. Also, the information is dimensionalized and correlated in a new way that was not feasible when the sheer amount of legacy systems was run in isolation. The HR Director argued that the KM module is a very effective way of capturing best practices and disseminating knowledge throughout ICL.

5. DISCUSSIONS OF THE FINDINGS

While some directors, such as Finance, Quality, IT and HR, found the new system incredibly useful, many other directors, such as Engineering, Manufacturing and Logistics, claimed that they did not find the system directly relevant to their work. As observed in ICL, many directors did not stay in their offices long. Rather, most of their work was carried out in the meeting rooms, shop floor, testing laboratory or warehouse. This is because many decisions related to activities, such as production, scheduling and resource allocation, were made based on the agreements reached between divisional heads. Also, according to the Manufacturing Director, his role, like many other directors involved in the production process, was to plan and make decisions based on the input from the line managers in their own division, rather than solely based on information generated from ERP.

The impact of ERP on organizational memory was found to vary from division to division, in particular influenced by the location where knowledge is created and embedded. For instance, in the production related divisions, knowledge was generated

within the divisional boundary and integrated based on the task requirement. The dispersion of knowledge and the need for cross-functional knowledge integration has pinpointed the shortfall of using ERP. This is particularly apparent when such functionally specific knowledge is not codified in the new system. Information generated and managed by ERP did provide useful reference, such as inventory level, input and output, for decision makers across ICL. However, it is evident that the diversified nature of organizational memory cannot be fully comprehended by ERP alone. In particular, even though the management of divisional information can be centralized, knowledge sharing across divisions can only be enabled through the establishment of social network (Nahapiet and Ghoshal, 1998). This is evident in the strong collaborative culture observed in the production related divisions. Hence, even though ERP can be a useful tool to capture and share best practices generated within ICL, organizational learning, based on Huber's (1991) conceptualization of knowledge acquisition, distribution and interpretation, still relies on the social interaction of organizational members to apply, negotiate and refine the organizational knowledge.

Furthermore, it is found in the case that the way of which managers perceive the usefulness of ERP in relation to their decision making is largely influenced by the decision strategy (either deliberate or emergent). Findings from the case suggest that the differentiation between deliberate and emergent strategies can best be conceptualized as a continuum. In other words, managers do adopt both strategies, according to the task that they perform. When the decision requires a high degree of dependency on others' input, the decision strategy seems to shift towards the emergent end, while the decision that requires a lower dependency appears to be more deliberate.

In addition to the strategy deployed or favored by the decision makers, the way in which prior knowledge is used also shows its influence on the effectiveness of decision making. For instance, when knowledge is dispersed across and embedded in various divisions, integration of knowledge between different stakeholders to collectively form a decision is found to be paramount. This is particularly apparent in the production-related divisions where expertise is high, yet interdependence is high also. Under such circumstances, the decision making process can only be enabled through the sharing and integration of knowledge across different divisions through efficient means. As evident in the case, even though the implementation of ERP has made information flow

freely across divisional boundaries, it does not show that the social relationships that are vital for knowledge sharing and integration can be improved automatically. Hence, the implementation of ERP system can be interpreted as a radical change in ICL's OMS. It is crucial to be aware that the new system does not necessarily alter the social system through which knowledge is generated and used.

Referring to the IS success model, our findings indicate that technical resources can be drastically improved through the adoption of new technologies, in this case ERP. Nevertheless, the way in which knowledge is generated, utilized and managed for decision making will largely depend on how the social system facilitates or prohibits the linkage between different divisions to generate integrated knowledge. This model is particularly useful in explaining why the understanding of the technical and social dimensions of IS is extremely vital in illustrating the interplay between the use of ICT and knowledge and its effect on decision making.

6. LIMITATIONS AND BIASES

One challenge on the part of the researchers has been to be aware of managerial biases and recognize strategic games being played out during the decision making process. The fact that individuals tend to give their own perspective creates biases and different interpretations of an event in its context. This has theoretical, methodological and practical implications for the arguments outlined here and requires a multi-paradigm approach to research.

Some biases are inherent to the nature of the topic. The theoretical challenge is that the tacit, intangible and socially unconscious nature is never completely observed and objectified by either participants or observers. The intangible element may never be completely accessible and the tacit may never be made completely explicit. Hence, people cannot step out of their worlds, or objectify them in a supreme action of reflection (McCarthy c.2001).

7. CONCLUSIONS

In the context of global competition, a key to success is the ability to capture organizational learning, to effectively re-use the knowledge through efficient means, and to synthesize these into a more intelligent problem recognition, strategic analysis and choices in strategic decisions.

The IS literature deals little with the role of knowledge in strategizing and decision making that accounts for the interaction of technical and non-

technical knowledge resources and how these influence organizational learning. We are continuously examining what knowledge strategies and technological resources are used by decision makers to expand and tap into their organization's memory in order to make more intelligent business decisions.

A very useful model is the revised IS Success Model (Jennex 2002), which we are using in our longitudinal case study. By including our findings on an on-going basis, we attempt to continuously enhance the literature and contribute to a richer understanding in how information and knowledge are re-used and leveraged by means of knowledge strategies and OM systems.

As seen in the case, managers preferred to rely on their experience-based knowledge and practise managerial discretion to a self-satisfying extent. Technological resources and knowledge processes were used in an intermingled manner. The level as well as the form of the technology is highly dependent upon the nature of data, information, knowledge, upon the context and the urgency of the managerial decision. OM systems may serve as repositories of data, information and knowledge, which are retrieved by

users. However, the extent to which this has a strategic impact only depends on the context in which the knowledge is used within its cultural setting. Hence, architectural requirements for building knowledge infrastructures, the ERP system in our case, should only be regarded as an enabler of a greater context of a knowledge sharing culture. We have also observed that the knowledge strategy used as part of the organizational learning process is highly contextual and the richness and linkages to other processes depend upon the purpose of its reuse. We were able to confirm that organizational memory and learning are deeply embedded social processes and organizational effectiveness is achieved through a synergistic integration of a knowledge-sharing culture and technological resources (Galliers 2002).

It is our intention to continue to work in the area of how different knowledge strategies and emerging technologies may serve executives in decision making and strategy development. Future research along these lines may serve towards bringing some of the issues into the dialogue of academic research and managerial practices. ■

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