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Abstract

Researchers and practitioners have reported on the factors said to influence the design and implementation of Knowledge Management Systems (KMS). Factors such as strategy, culture, information technology, people and organisational structure have arisen as key dimensions to be considered in KMS implementation. However, researchers have tended to explore these factors in isolation, and have, by and large, achieved little in the way of success in establishing relationships between them. Using a research framework derived from the literature, this paper investigates the key factors affecting the implementation of KMS and explores the links between these factors. A field study approach incorporating 12 large organisations that have implemented KMS is adopted to study the phenomenon. Significantly, feedback from KM practitioners provided direct guidance on the model's practical relevance and led to a refined and extended model of KMS implementation factors. Hence, the findings provide a foundation for understanding the key factors that organisations face as they implement Knowledge Management Systems.

Keywords: Knowledge Management, Knowledge Management System, Strategy, Information Technology

1 INTRODUCTION

Knowledge management (KM) initiatives fail more often than they succeed (Storey & Barnett 2000, McDermott & O'Dell 2001). In theorizing on the causes of KMS failure, Malhotra (2002) argues that the enablers and constraints in implementing Knowledge Management Systems (KMS) are business and technology strategy, organization control, information sharing culture, knowledge representation, organization structure, management command and control, and economic returns. Some researchers argue that extant problems arise due to imbalanced approaches to KMS implementation that either put too much emphasis on technology issues at the expense of social and organisational factors, or neglect technology-related matters by placing primary emphasis on organisational and social dimensions (Moffett & McAdam & Parkinson 2003: cf. McDermott & O'Dell 2001, Storey & Quintas 2001, Hahn & Subramani, 2003). Accordingly, Holsapple and Joshi (2000) argue that extant KM frameworks are limited in many respects. Storey and Barnett (2000) maintain that one reason for such limitations is that implementation frameworks are by driven by IT professionals who neglect the people management and organisational processes involved. It is clear that a balanced, comprehensive framework for KMS implementation has not emerged from previous research (Sunassee & Sewry 2002). Thus it may be argued that the web of conditions and factors surrounding the implementation KMS are not clearly understood (Storey & Barnett 2001, Sambamnurthy & Subramanil 2005), with organisations being unsure of the best approach to adopt in implementing KMS (Moffett et al. 2003). This paper considers the role KM plays in an organisation and the pitfalls and obstacles associated with implementing a KMS. The study's objective is to arrive at a comprehensive model of KMS implementation by comparing and contrasting extant research with the findings of an empirical field study of KMS implementation in 12 large organisations. This study therefore attempts to deepen the understanding of IS research and praxis of the web of conditions and factors that influence the success of KMS implementation.

2 TOWARDS A MODEL OF KMS IMPLEMENTATION

This paper argues that a comprehensive KMS implementation framework that incorporates factors which focus on issues of strategy, structure, people and IT can benefit research, in terms of highlighting areas for further study, and practice in formulating KM strategies and in implementing KMS.

2.1 Strategy

While knowledge is recognized as a critical resource for sustained competitive advantages, successful knowledge management remains a key challenge to organisations (Nonaka & Takeuchi 1995, Teece 1996, Grant 1996, Wiig 1997, Davenport & Prusak 1998). KM requires the application of significant organisational resources, techniques and tools which requires solid planning from the beginning (Davenport & Prusak 1998): thus, Zack (1999) states that KM strategy must be closely aligned to business strategy. Unfortunately, Malhotra and Galletta (2003) suggest that many organisations used pre-existing information systems planning methods for deploying and implementing KMS. They argue that KM strategies should be able to address such organisation factors as structure, culture and people.

2.2 Structure

Although structures are intended to rationalize individual functions or units within an organisation, they have often had the inadvertent result of inhibiting collaboration and sharing of knowledge across

internal organisational boundaries (O'Dell & Grayson, 1998). Structures for example, encourage individualistic behaviour in which locations, divisions, and functions are rewarded for "hoarding" information and inhibiting successful KM across the organisation (McDermott & O' Dell 2001). Structures place limits on communications and can create intentional or unintentional obstacles (Nonaka & Takeuchi 1995, Malhotra and Galletta 2003). Gold, Malhotra and Segars (2001) state that the optimisation of knowledge sharing within a functional area can increasingly sub-optimize the sharing of knowledge across the firm. Two distinct structures have received constructive analysis with reference to effective KM (Gold et al., 2001). Gold et al. (2001) argue that a modular organisational design combined with a modular product design can diminish the costs of coordination and adaptation, thereby increasing flexibility. Nonaka and Takeuchi (1995) posit a hypertext organisation which enables their five-stage process of knowledge creation to occur ecologically within the organisation. Gold et al. (2001) combine the above structures to identify a formal organisational structure and a non-hierarchical, self-organizing organisational structure as the most appropriate from KM.

2.3 People

The recent wave in KM literature has begun to focus on the importance of people in relation to KMS (Moffett et al. 2003). Bhatt (2001) argues that 56 per cent of executives believe that changing people's behaviour is one of the most critical elements in KMS implementations. Malhotra and Galletta (2003) research found that some companies invest millions of dollars in KMS, these fail to whet the interest of employees; paradoxically, some of these employees spend a large part of their day sharing knowledge on external online communities. Davenport and Prusak (1998) established that employees have more loyalty to peers in other organisations than to their own organisation. Furthermore, with the rate of employee turnover increasing, it is now more important than ever to capture employee's knowledge (Carlson 1999). Therefore, managing people who are willing to create and share knowledge is important (McDermott & O' Dell 2001). Getting employees to share knowledge is regarded as critical for successful KM (Nonaka & Takeuchi 1995, Davenport & Prusak 1998, Hansen & Nohria & Tierney 1999, McDermott & O' Dell 2001).

2.4 Information Technology

Davenport and Prusak (1998) state that Information Technology (IT) can be viewed both as a key contributor to and as an enabler of KM. IT can be widely employed to connect people to reusable codified knowledge, and IT should facilitate conversations to create new knowledge (Alavi and Leidner 2001, Malhotra & Galletta 2003). IT affects knowledge sharing in a variety of ways (Bhatt, 2001). First, IT facilitates rapid collection, storage, and exchange of knowledge on a scale not practicable in the past, thereby assisting the knowledge creation process (Alavi & Leidner 2001, Gold et al., 2001). Second, a well developed technology infrastructure integrates fragmented flows of knowledge (Gold et al. 2001). This integration can eliminate barriers to communication among departments in an organization. Third, IT fosters all modes of knowledge creation and is not limited to the transfer of explicit knowledge (Alavi & Leidner 2001). For instance, InfoTEST's enhanced product realization (EPR) project employs electronic white boarding and videoconferencing to enhance exchanges of tacit knowledge (Gold et al. 2001).

2.5 An Knowledge Management System Implementation Model

Based on forgoing arguments, a theoretical model (Figure 1) is proposed to guide the conduct of the present study. Both it and its associated framework (which is constituted by the model's elements) are based on observations drawn from extant research on KM. First, it conceptualises KM strategy as a high level strategic plan, which is aligned to corporate goals and organisational objectives (Hackett 2000). KM strategy embraces and is supported by technology, organisational structure and people (incorporating culture) to implement a KMS (Ibid.). Technology and structure are seen as supporting

and enabling people to communicate with each other (Sunassee & Sewry 2002). Combining KM strategy with technology, people and structure is argued to enable successful KMS implementation (Hackett 2000).

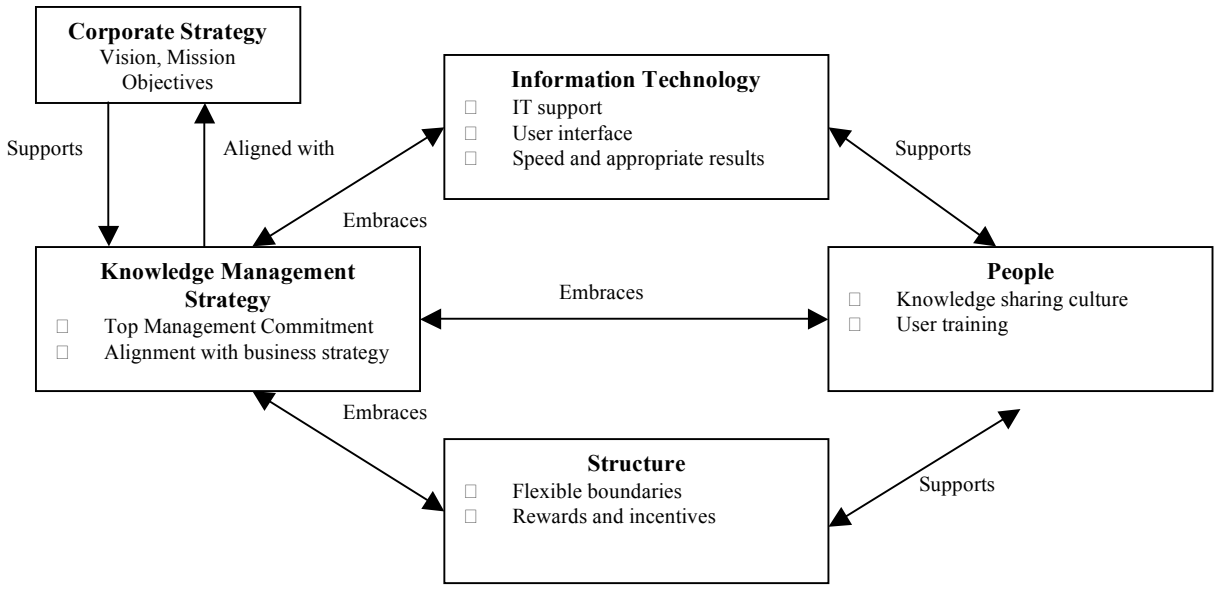

Figure 1. Factors influencing the Implementation of a Knowledge Management System

In Figure 1, the relationships between KM strategy, technology, organisational structure and people are two-way relationships. This is indicative of learning and feedback loops in KM. The model also allows for both top-down (strategically aligned) and bottom up (knowledge workers/grass roots) approaches to KMS implementation; it also incorporates a role for continuous learning and feedback capabilities. The framework transcends inherent problems in previous KMS implementation frameworks that focused on either technical or non-technical issues, by seeking a balance between non-technical and technical issues associated with KM by identifying the critical technical and non-technical elements, while having a KM strategy to outline what must be done, to successfully implement a KMS (Holsapple & Joshi 2000, Hackett 2000, Sunassee & Sewry 2002).

3 RESEARCH APPROACH

In order to examine the factors that affect the implementation of Knowledge Management Systems in several organisations, a field study approach was undertaken. This allowed researchers to investigate the key issues where KMS have been implemented and perceived as either a success or a failure in a cross section of organisations (Jenkins 1985). Given the exploratory nature of the study, semi-structured interviews were conducted: however, an interview guide was derived from the model presented in Figure 1 to direct the conduct of each interview (Patton 1990). Organisations that had implemented Knowledge Management Systems were purposively selected to participate in the study. Fifteen interviews were conducted and the interviewees were chosen using reputational and positional selection or the key informant approach (Knoke 1994). Each interview was taped and up to two hours in duration. The model and research framework was used to generate seed categories for the content and comparative analysis of interview transcripts and company documentation (Patton 1990) and for data reduction and display (Miles and Huberman 1994).

Code	Informant Roles	Industrial Sector	KMS
A	E-Service & KM Co-Coordinator	Information Management and Storage	Primas is a database-driven web interface system which stores knowledge on all of the firm's technical components and their set-up. It is a search-based driven system where users search for errors by entering the error number or error description and the system returns the most appropriate results. If a user has new knowledge about an error, he/she can add their knowledge to the error category directly using the system. Primas is also connected to the organisation's global KMS which allows knowledge to be shared and accessed globally.
B	IT Development Manager	Professional Services	This KMS is a database-driven system with a web interface, the system categorises and stores knowledge based on the functions within the organisation. Users can view and add documents on the best practices within the organisation. The intranet contains a categorised list of experts within the organisation and their contact details. Discussion group are established on a continuous basis in key areas of interests
C	Learning & Leadership Manager	Mobile Technology	Compass is a global intranet, which acts as a central repository for a wide range of knowledge, and as a place for small workgroup collaboration and general enterprise-level communication. Knowledge is added in the form of solution reports relating to various problems, and users can view, add and edit these solution reports. The firm extended Compass as an extranet to help the company collaborate more closely with customers, improving communication and overall service.
*D	Knowledge & Information Manager Assistant Information Manager	Professional Services	The Lotus Notes/Domino-based system is web-based which contains various discussion databases and document libraries. The discussion databases support the various discussion networks and focus groups within the organisation. The system enables portable knowledge repositories which can be downloaded onto a laptop for consultants.
E	KM Group Manager	Professional Services	Eolais is a portal based system mainly developed through FrontPage. It allows users to access knowledge relating to company clients and procedures and is broken down by the various functions within the organisation. It has a document control section (called e-library) which manages all the knowledge documents that are added to the system. It also has links to the orgs UK knowledge management website.
F	IT helpdesk Manager & Local KM Manager	Mobile Technology	K-Motion is a database driven web site which caters for the uploading and viewing of knowledge documents. It has a forum based section which allows users to actively communicate to each other and to share knowledge.
G	Development Manager Automation Manager	Pharmaceutics	This firm has an internal website which is compiled by experts within the company. It is designed based on web pages and is fully searchable. A layering system is used in where links are used to drill down to the appropriate data. Some of the layers extend externally to the global KM system. Documentum stores core knowledge about the products, receipts about the

			products.
H	Leader of the Knowledge Management Consulting Community. Communications Manager for Learning & Knowledge	Global consulting and outsourcing	Knowledge View is based on the Lotus Notes/Domino platform. It is a portal based system which is driven by large backend Lotus databases. It has an online communities section which enables people to share and talk to different users who have similar interests. All local databases (e.g. databases in France) must have an English version in order to be shared globally. They also use Hyperknowledge, which a tool for gathering expert insight, to try to capture knowledge of key. It is then translated into a step-by-step formula that makes knowledge globally accessible.
I	Knowledge Management Program Manager	Manufacturing	PHBrain uses databases to archive knowledge and documents and uses a web front-end to provide access to design specifications and problem solving reports on a global basis. Any knowledge / information that supports identified knowledge areas (such as research and conference papers) are also encouraged to be shared. The KMS contains product information, competitive intelligence, white papers, and ready-to-deliver marketing presentations. Social techniques such as story-telling, peer-reviews and periodic reviews, are also well established within the organisation to help share knowledge.
J	Local Supervisor of Knowledge Management.	Pharmaceutics	Visual Supply Chain is a database driven KMS with a web front-end. The system is seen as rigid as users are limited to the knowledge they input. Initially the system was very open and the databases filled with irrelevant knowledge.
K	Section Manager and manager of KM Initiatives in the Product Development Department	Manufacturing	The Dock KMS is based on capturing codified-design knowledge of the projects undertaken. The system is database driven with a web front end. For each document entered a title, subject, description, type, source, relation, coverage must be included. It contains a list of experts within the organisation (Yellow pages). Participation is usually voluntary (i.e. no automatic profile creation) for this list. Users can create and maintain their profile's visibility and access.
L	Senior Partner	Global consulting and outsourcing	Knowledge Xchange is a portal interface to access a variety of discussion and stored knowledge. It contains a Yellow Pages Directory that lists all of the company offices and executive personnel in the firm. It has library databases which contain support information; e.g. market unit and competency knowledge, technical and functional designs, work plans, presentations, white papers, proposals, etc.

Table 1. Summary of the KMS implemented in each organisation

4 FIELD STUDY FINDINGS

The organisations included in this study have all implemented KMS. Table 1 lists the organisations and details the functionality of their respective KMS. In order to respect non-disclosure agreements entered into with some of these firms, the table provides a code for each of the participating

organisations; the table also specifies the role of the key informants and identifies the industrial sector in which each company operates. Table 2 provides a checklist of factors that emerged from the research data. Note the hierarchy of factors and groupings under nested headings. The X signifies whether the factor was considered during the KMS implementation process in the organisations (A-L) studied. The following section discusses the extent to which these factors were considered important to the KMS roll out in each of the organisations.

Checklist of Factors/Companies	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Strategic Factors												
Aligning KM with Corporate Strategy	X	X	X	X	X	X	X	X	X	X		X
Defining & Communicating Objectives	X		X	X	X		X	X	X	X		X
Diverse KM Team	X	X	X		X	X	X	X		X	X	X
Taxonomy of Knowledge		X		X			X	X		X		X
KM budget						X	X			X		
Driven by Top/Middle Management	X				X			X				
Top Management Commitment	X	X	X	X	X	X	X	X	X	X	X	X
New Roles & Responsibilities		X	X	X				X				X
Information Technology												
Design												
Ease of Use	X	X	X	X	X	X	X	X	X	X	X	X
Web Technologies					X		X	X				
Accurate & Appropriate Results		X			X		X					X
Security & Openness			X				X		X			
Role of IT Department												
Strong presence throughout	X								X		X	
Evolving		X			X		X	X		X		X
Minimal			X	X		X						
User Involvement		X	X	X	X	X	X	X	X	X	X	X
Organisational Factors												
Knowledge Sharing Culture												
Type of people											X	X
Team Oriented Culture	X					X			X		X	X
Trust		X						X	X			
User Training			X	X	X	X	X	X			X	X
Incentives & Rewards												
Monetary	X		X					X		X		
Non-Monetary		X		X	X	X	X		X		X	X
Organisational Structure		X	X		X		X					

Table 2. Factors found to influence KMS implementation in the organisations studied

4.1 Strategic Considerations

The practices of defining, aligning, and communicating KM benefits and goals were present in each of the organisations studied, except Company K. In these firms, KM objectives were linked to corporate goals: e.g. innovation, attaining competitive advantage, and so on. In Company B, for example, the main objective of KM (capturing solutions to reoccurring problems) was linked to the corporate goal of preventing the 'reinvention of the wheel'. Organisations adopted similar approaches (e.g. meetings, coffee mornings, workshops, user involvement and establishing KM slogans) to actively communicate the goals and benefits of KM to the target groups. The E-Service & KM Co-Coordinator of Company A stated, for example, that "you must have clear objectives and goals before you implement the system or else it will not work. Employees must be able to see the clear goals and benefits of a KMS". Company A established team meetings and coffee room sessions to communicate KM goals, while

also advertising KM on their intranet and making users actively involved in the KM process. The Information Manager of Company D echoed this view and stated: "There has to be a vision, a goal, and you have to see the benefits that you can get out it. If we do x, y, z, and implement it this way then we will get a, b, c out of it". In the cases where there was poor communication of benefits (Companies B & F, for example) practitioners recommended increased awareness to improve system use and success. Many of the organisations established new roles and responsibilities (e.g. Knowledge Champions/Knowledge Managers) to monitor and support KMS content. Practitioners considered these roles as a "must have" for KM success. The use of appropriate knowledge taxonomies was identified by six of the KM practitioners as key to the success of a KMS. However, all fifteen KM practitioners identified a need for a process to cleanse and categorise captured knowledge. In each of the organisations this process was assigned to the relevant owners (e.g. knowledge champions/managers).

In the majority of the organisations, KM initiatives were implemented as organisational-wide programs requiring input from all levels and functions of the organisation. Organisations achieved this through the establishment of a diverse, cross-functional KM teams that drove KM strategies. A distinct overlap arose between establishing diverse KM teams and the involvement of top, middle and lower level management. KM Practitioners in these organisations involved different management levels into the KM teams. They agreed that a successful KM team relied heavily on users who were positioned to have good contact with the different levels within their respective function or community-of-practice. In essence, members of the KM team represented their function levels (top to lower management) and gained valuable feedback from their respective functions.

All KM practitioners emphasised the importance of top management commitment and support. The interviewee from Company H put it thus: "People respond to what their immediate manager asks them to do. If managers are a part of KM and are committed to KM, this will be passed to lower-level management and employees". KM practitioners strongly linked top management to driving both required cultural and systems changes. Top management also emerged as having considerable bearing on budget allocation and employee acceptance of the system. KM practitioners from Companies F, G and J viewed a direct relationship between KM budget and top management commitment. It was established that where top management were committed to the KM project, budget did not arise as a barrier. However, where the KM practitioners questioned the level of top management commitment, they also felt insufficient budget was allocated.

4.2 The Role of Information Technology in KM

Ease of use was established as vital ingredient for the success of KMS. All KM practitioners were of the opinion that ease of use (e.g. user interface navigation, flexibility, user-friendliness, usability and speed) was crucial to the success of a KMS. The ease of use of the system extended to all stages of the knowledge lifecycle from submitting, reviewing, distributing, and searching/locating relevant knowledge. Ease of use was generally established through approaches that incorporated simulated test environments, user involvement, deploying web technologies and returning appropriate and accurate results. In Company D, for example, the design phase involved users testing for ease of use in simulated test systems. A number of the systems also replicated their organisational structures to provide categorisation for the knowledge repository. Organisations also developed KM roles to monitor data input and categorisation. The result of this effort led to the establishment of new roles and responsibilities. This was manifested by maintaining specific categories and through data cleansing (as an assigned responsibility for KM practitioners). The KM practitioner in Company G supported stated that "the knowledge returned must be precise, current and accurate to be of any use to employees."

Security and openness were also identified as important factors in the design of a KMS. Users "must have access to as much knowledge as possible but only access to knowledge that is relevant to their needs" (KM Practitioner Company C). In the case of Companies A, B, C, D, E, F, G, H, K and L, KM

practitioners stated that access to the knowledge repositories and sub-systems belonging to other functional units or departments was typically achieved by obtaining permissions and access rights from the departmental head though email or telephone.

User involvement was seen as crucial, in both defining user requirements while also creating awareness among users. Many of the organisations achieved user involvement through the establishment of the cross-functional KM teams and assigning responsibility to key users to link back feedback and developments to the business. It was indicated that users should be involved the start. Significantly, it emerged that the stronger the user involvement was in the analysis, design and testing, of KMS the higher the degree of KM success The Communications Manager for Learning & Knowledge in Company H pointed out: "Users were involved in giving input in designing the system. They were involved in testing and prototyping the system. Once the system was running they were involved in giving any feedback on the system". Many of the organisations established user groups or steering groups for their respective KM project. Company E, for example, established an organisational wide KM team where employees were rotated on a constant basis through user groups to gain extensive feedback. Company D set up a global team to monitor user feedback and to interface with developers user requirements.

The IT function's role varied within the organisations studied. IT played a supporting role in KM in all 10 organisations, but in pharmaceutical sector (Companies G & J) IT played an important role in the decision-making processes surrounding KMS implementation. Many of the KM practitioners viewed the IT function as being directed by the KM strategy while feeding into this strategy with IT architecture plans, technical advances and knowledge of any previous systems implementations.

4.3 Organisational Factors and their Impact

Creating a knowledge sharing culture was seen by all KM practitioners as being imperative to embedding knowledge sharing in employees. KM practitioners repeated mantra-like that "People made it happen: They have the knowledge, and they make the decision to share their knowledge" (KM Practitioner Company E). Making highly visibly the commitment of top management, hiring knowledge hungry people, communicating the benefits knowledge sharing, creating team-oriented structures, and building an environment of trust and openness were techniques identified by KM practitioners in establishing a knowledge sharing culture. All organisations were progressing to team-oriented and high-trust cultures prior to the introduction of KM. KM practitioners saw this as a fundamental cultural change, regardless of the need to implement a KMS. It was also noted by KM practitioners that a team-oriented and high-trust culture was central to the success of knowledge sharing. KM practitioners from companies A and K, however, noted that knowledge sharing appeared to be problematic across teams: this was linked to the lack of KM-related roles in their organisations. This points to the importance of new roles and responsibilities as key drivers in knowledge sharing cultures and also highlights the importance of the link between KM strategy and People dimensions.

User training was highlighted in all organisations as a vital factor in KMS implementation. Several organisations conducted KM workshops, training courses, online tutorials and open discussion groups to deliver user training. The Leader of the Knowledge Management Consulting Community of Company H explained: "User training is imperative, it's key. It's got to be comfortable for users and one way of making it comfortable is training. If is doesn't integrate well with people, then you got to have more training". The KM practitioner from Company F (where no formal training took place) viewed the failure of their KMS directly related to lack of training. This KM practitioner received informal feedback indicating the users did not know how to use the system.

In both pharmaceutical organisations, incentives and monetary rewards were not instituted for the use of KMS; however, knowledge sharing was incorporated into each employee's roles. Both professional services organisations (Company D and E) were attempting to move away from incentives and establish knowledge sharing as a core element in job descriptions. The KM practitioners from the software organisations (Company A, C, H and I) revealed that rewards were offered to employees who

actively share knowledge. Organisations that had poorly developed knowledge sharing cultures (e.g. Company A, C, H) relied heavily on the use of incentives & rewards, while pharmaceuticals organisations who have well established knowledge sharing culture, do not require incentives & rewards.

Organisational structure did not arise in this study as a barrier to, or critical factor for, KMS implementation. However several KM practitioners reported that the logical design of their KMS reflected closely the structure of their organisation. The KM Group Manager of Company E explained "Our Knowledge Management System mirrors where the knowledge is physically stored in the organisation by aligning the layout of the Knowledge Management System to the organisational structure". Also, the knowledge taxonomy of Company E's KMS maps readily to core functions in their organisational structure (e.g. Tax, Finance, etc). The IT Development Manager of Company B pointed out that they designed their KMS around audit, tax, management consulting, and financial advisory consulting which reflects this company's logical structure.

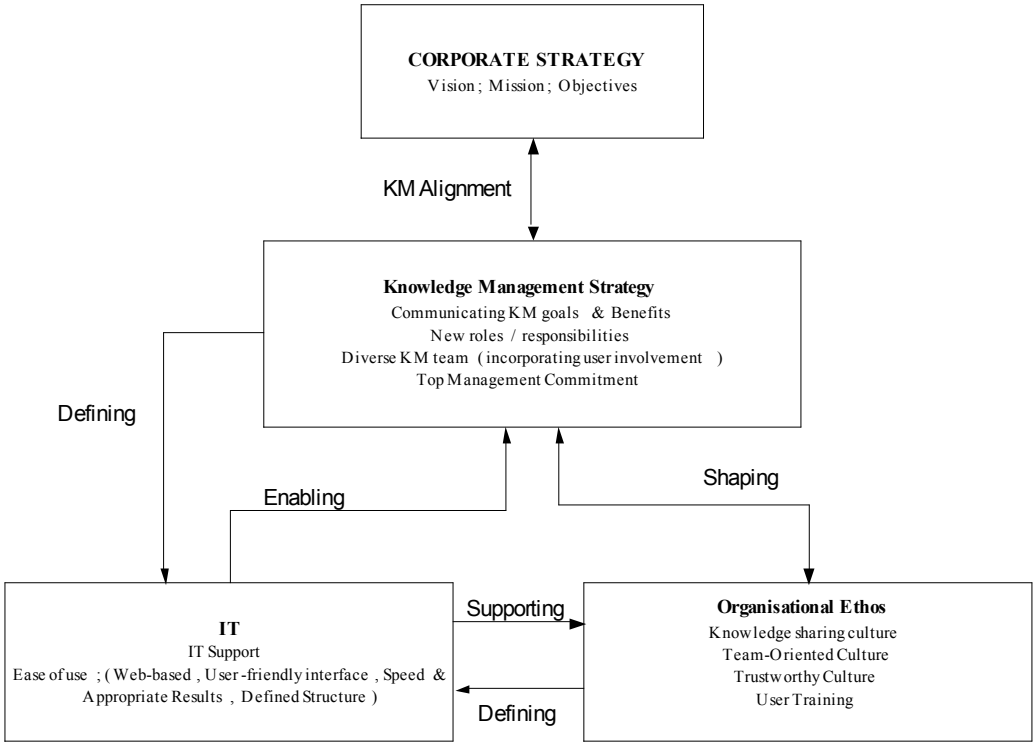

Figure 2.Factors influencing the Implementation of KMS in Praxis

5 DISCUSSION AND CONCLUSIONS

The findings of this study permit the model presented in Figure 1 to be modified and extended (see Figure 2). The practical relevance of the model and framework presented in Section 2 was debated in each of the fifteen interviews. KM practitioners agreed with the validity and importance of the majority of the factors identified in the framework. Some suggestions were made as to the inclusion of additional factors and the reconfiguration of the model, each of these was carefully considered with relation to the original model and framework. Significantly, this resulted in the amalgamation of the Structure and People dimensions, which KM practitioners found to be vague into an overarching category of Organisational Factors. Hence, the key change to the framework is the exclusion of organisational structure as a significant dimension in and of itself. Table 2 fleshes out the model in terms of presenting its various dimensions in a framework format for application.

It is significant that, with respect to the emphasis on structure in the model presented in Figure 1, advances in IT had, with some exceptions, overcome these once restricting barriers of organisational structure (e.g. number of layers, rigid boundaries etc.) to knowledge sharing. The power of IT in this role was attributed to enabling transparency across organisational sub-units and functions as structure. As indicated, however, the logical design of KMS (i.e. the knowledge taxonomy for the system) mapped onto organisational structures. In addition, KM practitioners emphasised the importance of communicating goals and benefits to KM strategy as it appeared in the original model. In Figure 1, the establishment of new roles and responsibilities was not included; this factor is incorporated into the revised framework as it was identified as critical by the majority of the KM practitioners in the organisations studied. There was also a consensus that establishing a knowledge taxonomy should not be included as a critical factor within the framework, but should be a key assigned responsibility in organisational-related KM roles.

The existence of diverse, cross-functional KM teams on project success merited the inclusion of this factor in the modified model. IT-related factors—user-friendly interface, speed & appropriate results, along with web-based technology—are included under the heading ease of use. KM practitioners indicated that the stronger user involvement was, in the analysis, design and testing of the KMS, the higher was the degree of KM success. This reinforces the reciprocal link between KM strategy, IT and People within the framework. In addition, the use of incentives and rewards has been omitted from the modified model, as it was only the software focused organisations (Company A, C) that offered incentives & rewards, while all other organisations focused on establishing a knowledge sharing culture and on building knowledge sharing into day-to-day operational routines. Finally, while it is recognised that the type of people employed by organisations is an important factor in the success of KM initiatives, it did not receive strong support from KM practitioners to merit its inclusion in the new model.

In conclusion, this study identified factors deemed to be critical for the implementation of KMS in organisations across several sectors (see Table 2). Butler (2003) observes that the factors that shape the development and implementation of traditional IS are also present in the development and implementation of new breeds of information systems; the findings of the present study on KMS provides general support for this observation, although it is evident that the deployment of a KMS brings its own particular challenges.The field study approach adopted permitted key informants in 12 organisations to provide rich insights into the phenomenon of KMS implementation. Drawing on the evidence provided from KM practitioners, this paper posits that the key to the successful deployment of KMS draws on a range of closely related factors that operate at all levels and functions within an organisation, the most important of which is, perhaps, the incorporation of knowledge sharing into the culture of an organisation. The refined model presented in Figure 2 incorporates these factors and may, therefore, be employed to guide future research (i.e. be tested and confirmed/elaborated) and practice (highlight important factors to KM practitioners) on the challenges faced in implementing KMS.

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