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Factors of Adoption and Diffusion of Knowledge Management Systems in Australia: a structural equation modelling approach

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Abstract

This study investigates the factors influencing the adoption and diffusion of Knowledge Management Systems (KMS) in Australia. The study uses a mixed methodology approach. The research was carried out in three stages: field study, pilot survey, and national survey (top 1,500 companies). The data of the national survey was analysed through Structural Equation Modelling approach (LISREL). Results indicate that "Individual factors" and "Task complexity" are the significant factors which influence the "Perceived usefulness" of KMS, which in turn significantly influences the "Intention" to adopt KMS and its diffusion process. Some unexpected results are also revealed. The results provide practical suggestions to those companies that are embarking on the adoption and diffusion of knowledge management systems in Australia or elsewhere.

Keywords

Knowledge management, Knowledge management systems, Adoption and Diffusion, Structural equation modelling

INTRODUCTION

There has been a major shift towards knowledge economy over the last decade. Coupled with extreme competition, shorter product life cycle, and rapid development in technology, organisations are paying more attention to safeguard their knowledge-based assets. Knowledge is now considered as the most important organizational asset to obtain sustainable competitive advantage (Wiig, 1997a).

Literature unveils that there has been a dramatic growth of knowledge management activities in organisations all over the world. According to Bonner (2000), in early 1999 about one-half of U.S. companies had some form of knowledge management activities in place. The author also mentions that corporate America's spending on KM activities jumped almost ten times from $410 million to $4.5 billon in the period from1994 to 1999. KPMG's (2000) research report on knowledge management also reflects the popularity of knowledge management in organisations. Among the 423 companies surveyed in Europe and the U.S., about four fifths (81%) had or were considering a KM program. In Australia there also had been a major shift from a resource-mining economy to a knowledge-based economy (Sveiby, 1995; Guthrie *et al*., 1999). For example, by the end of 1998, only two of Australian's ten largest companies are resource-based, while the remaining eight companies are knowledge-based companies. The same trend can also be observed in the Top 20 Australian companies (Guthrie *et al*., 1999).

Although knowledge and knowledge management are not new concepts, knowledge management systems (KMS), which involve the application of IT systems and other organisational resources to manage knowledge strategically in a more effective and systematic way, are relatively recent phenomenon. Given the fact that the KMSs (or some variations) are widely applied in organisations, the topic of KMS has not been well explored by researchers and scholars in an empirical way. Among the limited literature on KMS, which centres on cases of successes and failures of KM project applications and/ or presents factors of successes and/ or failures, there is a scarcity of empirical studies of KMS, especially in the area of adoption and diffusion of KMS. This research addresses this

gap via a quantitative empirical research in Australia. The primary focus of this research centres around the following two research questions:

1. What are the factors that influence Knowledge Management Systems (KMS) adoption and diffusion in Australian organizations?
2. What must be done to diffuse KMS successfully?

This paper is organised as follows. The following section presents relevant background to the study on knowledge management and knowledge management systems. The research method, which combines exploratory field study, empirical pilot study and the national survey are presented next. Following that the proposed hypotheses are presented. Next, results of the national survey are presented and discussed in great depth. Finally, conclusions and future directions are presented.

BACKGROUND

Knowledge management is not new. Human beings have been practicing knowledge management as early as 4,000 years ago when the earliest civilization evolved (Wiig, 1997b; Ives *et al.*, 1998). Even though interest on knowledge management did not take off until recently, in the last several years large literature on knowledge management have emerged. Literature has defined knowledge management in a number of ways (Scarbrough *et al.*, 1999; Cortada and Woods, 1999; Duke *et al.*, 1999; Bonner, 2000; Malhorta, 2000; among many others). In this study, we have adopted the definition by Ruggles (1998), which is as follows:

> *KM is… an approach to adding or creating value by more actively leveraging the know-how, experience, and judgment reside within and, in many cases, outside of an organization"*
>
> (Ruggles, 1998:80).

The above definition reflects two important dimensions of knowledge management: managing tacit knowledge and managing explicit knowledge. The know-how aspect of KM emphasises the "explicit knowledge" while the experience and judgment aspect of KM stresses the importance of "tacit knowledge".

In order to manage knowledge effectively and strategically, we need knowledge management systems. Knowledge Management System (KMS), therefore, is a broad way or approach to deal with the generation, preservation, and sharing of both tacit and explicit knowledge within and outside of the organization, which essentially involves the applications of Information Technology systems and other organizational resources (Alavi and Leidner, 1999).

Some of the common applications of KMS are: (1) organizing and sharing/ transferring of internal benchmarks/ best practices (2) constructing corporate knowledge directories, such as corporate yellow pages, people information archive, etc. (3) creating knowledge networks and knowledge maps; among many others (Alavi and Leidner, 1999). In the past, many information systems (IS), such as management information systems, executive information systems, decision support systems, knowledge-based systems, etc., have been focusing on codified/ explicit knowledge. Knowledge management systems provide the opportunities to extend the operating scope of information systems through facilitating the organization's effort in managing both tacit and explicit knowledge (Alvi and Leidner, 2000).

Some examples of KMS applications in organisations include: Beckman Laboratory's "K-Entex" to share and disseminate knowledge (Pan and Scarborough, 1998); Xerox's "Eureka" to allow its 25,000 service representatives to share their collective technical wisdom (Bowen, 1999); Ernst & Young's "Ernie", an Internet based consulting service, resulting in a complete redefinition of the consulting industry and leading to what could be called "retail consulting" (Sarvary, 1999); Amp's "AMP Connect", a multilingual Internet catalogue of AMP products, to allow customers to access the information 24 hours a day; British Petroleum's "Virtual Teamwork Project" using videoconferencing to speed up the solution of critical operation problems by saving millions of dollars in travel costs and downtime each year; Andersen consulting's "Knowledge Exchange" to assist its clients in using knowledge to improve their

operations and develop long-range strategies; Kim's "K-World" to manage knowledge globally (Thierauf, 1999); among many others.

Although KMS has been studied widely over the last several years, it has not received considerable scholarly attention. The existing research and work on KMS consist primarily of general and conceptual principles of KMS and case descriptions of such systems in a handful of leading organisations. Those case descriptions also mainly focus on the issues of the process of implementing KMS (e.g., Davenport, 1998; Ernst & Young, 1999), objectives of KMS (e.g., Davenport, 1998; Thierauf, 1999), critical factors of the successful KMS (e.g., Davenport, 1998; Skyrme and Amidon, 1998; Brand, 1998; Pan and Scarbrough, 1998), the characteristics of KMS leaders and laggards (e.g., Skyrme and Amidon, 1998), KMS applications in various business areas (e.g., Thierauf, 1999). The majority of research (such as Thierauf, 1999; Chait, 1999; Pan and Scarbrough, 1999; Sarvary 1999), have only covered the general and conceptual principles of building/ creating and implementing knowledge management systems. Literature on KMS diffusion could not be found at present, except the work by Scarbrough and Swan (2001). The authors used the management fashion model to explain the diffusion of knowledge management.

In this study we concentrate on the adoption and diffusion of KMS in Australian organisations. Specifically, we want to find the significant factors of the KMS adoption and diffusion process.

Many of the past studies on innovation diffusion have applied the model(s) by Ajzen and Fishbein (1980) (Theory of Reasoned Action (TRA)) and Davis (1986) (Technology Acceptance Model (TAM)). Basically these researchers have suggested that some external factors influence the perceptions on an innovation, which in turn affect the diffusion of the innovation, i.e. "External Factors" → "Perceptions" → "Diffusion". This simple model is generic in nature and is likely to be applicable, with some adjustments, in various innovation diffusion processes. In our study we adapt this high level generic model in KMS adoption and diffusion process in Australian organisations.

RESEARCH METHOD

This study uses a mixed methodology approach. The research was carried out in three stages. In the first stage, we produced a comprehensive model of KMS diffusion in organisations through a combination of literature review and qualitative field study. Six companies took part in this phase, which resulted in eight interviews with key person(s) in the companies. The researchers transcribed the interviews and the contents were analysed thoroughly using a structured process. The content analysis and further refinement resulted in 16 factors and 72 unique variables. Company specific individual diffusion models were first developed which were then combined to develop a comprehensive KMS diffusion model. The detailed results can be found in Xu *et al.*, (2001).

In the second stage, a questionnaire was developed based on the combined model. Twelve West Australian companies were randomly selected for the pilot study. The questionnaire was distributed to 125 functional and senior level managers in these companies. Twenty-five valid responses were received thus giving a 20% response rate. The results of the pilot survey proved the effectiveness of the questionnaire. The information on the pilot study can be found in Quaddus *et al.*, (2002).

In the third phase, a national mail survey was conducted with top 1,500 (based on revenue) organisations in Australia. The data of the national survey was analysed through Structural Equation Modelling approach using LISREL, resulting in a valid model of KMS adoption and diffusion.

HYPOTHESES DEVELOPMENT

Based on the literature review, field study, and other exploratory research, the following hypotheses were proposed. Hypotheses have been grouped under External Factors, Perceptions and Diffusion to reflect the high level generic model. Figure 1, described in the next section, presents the hypotheses in the form of a research model. Due to page limitations the constructs are not described fully in the paper. However, they are quite intuitive.

Hypotheses related to External Factors

H1: "External Inspiring" factor positively influences the "Perceived Usefulness" of KMS.

H2: "Individual factor" positively influences the "Perceived Usefulness" of KMS.

H3: "Organisational factor" positively influences the "Perceived Usefulness" of KMS.

H4: "Management Support" positively influences the "Perceived Usefulness" of KMS.

H5: "KMS Characteristics" positively influence the "Perceived Usefulness" of KMS.

H6: "Task Complexity" factor positively influences the "Perceived Usefulness" of KMS.

Hypotheses related to Perceptions regarding KMS

H7: "Perceived User-Friendliness" of KMS positively influences the "Perceived Usefulness" of KMS.

H8: "Perceived User-Friendliness" of KMS positively influences the "Organic Growth" of KMS in organisations.

H9: "Voluntary use" of KMS positively influences the "Organic Growth" of KMS in organisations.

H10: Use of KMS via organisational "norm" positively influences the "Organic Growth" of KMS.

H11: "Perceived Usefulness" of KMS positively influences the "Initiation" of KMS in organisations.

Hypotheses related to Diffusion of KMS

H12: Successful "Initiation" of KMS positively influences the "Adoption" of KMS in organisations.

H13: Successful "Adoption" of KMS positively influences the "Pilot Implementation" of KMS in organisations.

H14: Successful "Pilot Implementation" of KMS positively influences the "Organic Growth" of KMS in organisations.

H15: "Organic Growth" of KMS positively influences the "Organisation-wide Implementation" of KMS.

H16: "Organisation-wide Implementation" of KMS positively influences the "Diffusion" of KMS in organisations.

RESULTS OF NATIONAL SURVEY

Demographic Information and Preliminary Analysis

The national survey was conducted among top 1,500 (based on revenue) organisations in Australia. The questionnaires were distributed to 1,500 managers in those companies, who appeared to be most relevant to our study. The mailing list of the top 1,500 companies was created from Dun and Bradstreet's The Business Who's Who of Australia database (online version). The first round packages of survey were sent out in late October 2001. The second round (follow-up) packages were sent out in late November 2001. The cut-off date was Christmas of 2001. In the first round, each package included a cover letter, copy of questionnaire, pre-paid return envelope, and self-made gift. In the second round, each package consisted of reminder letter, copy of questionnaire, and pre-paid return envelope.

In the end, 304 questionnaires were returned, 19 of them were found to be incomplete. This resulted in 285 valid responses. There were also 196 undelivered questionnaires and 55 firms declined to participate in the study. Thus the final effective response rate was 23%.

The responses comprised of 82.5% male and 17.5% female. Twenty-two point eight percent of the respondents were in the age group of 30 to 39, 47.4% in 40 to 49 and 24.6% in 50 to 59. Twenty-one point two percent of the respondents were holding the position of middle functional managers, 38.9% were senior managers, 16.3% were KM coordinator/ KM manager/ Chief Knowledge Officers and 23.7% were Chief Information Officer (CIO)/ IS and IT Manager/ IS and IT Director. Seventy-five point eight percent of the respondents had at least a bachelor's degree, with 17.2% having Graduate Diploma, 18.2% having a Masters degree and 4.2% having a doctorate degree. Eighty-seven percent of the respondents declared that KM is part of his/ her job.

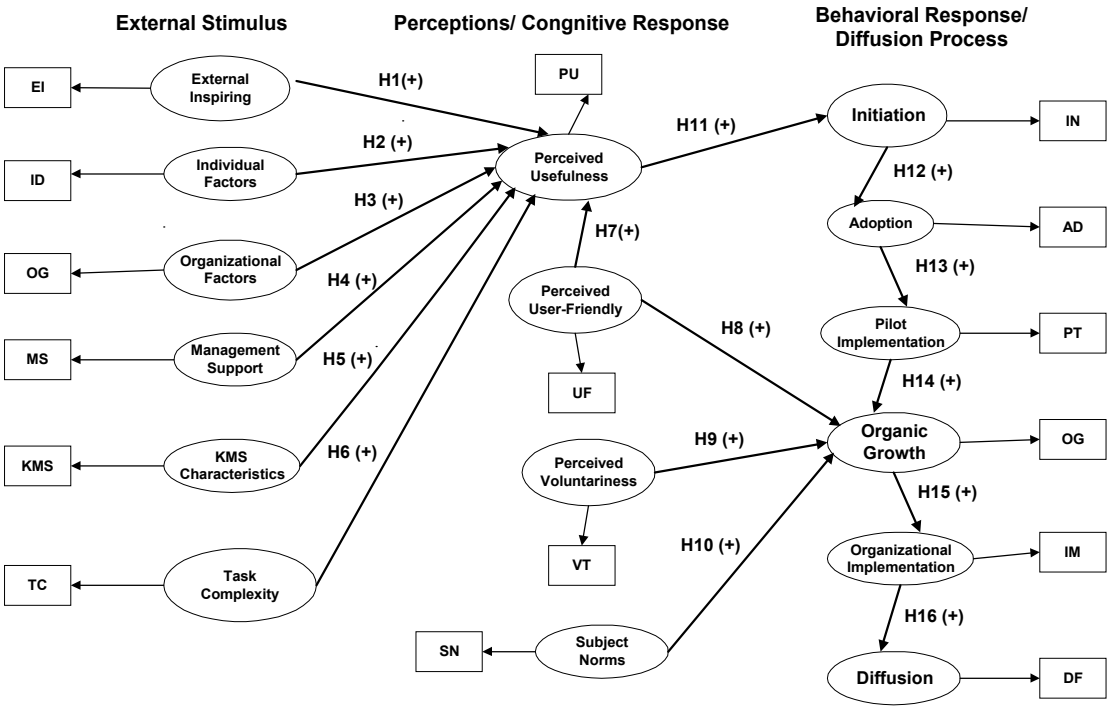

Figure 1: Structural Model for Hypothesis Testing

Distribution of the respondents by industry was as follows: 4.2% in Agriculture/ Forestry/ Fishing, 11.6% in Mining, 7.7% in Construction, 22.5% in Electricity/ Gas/ Water, 6.7% in Whole Trade, 5.3% in Retail Trade, 3.9% in Transportation and Storage, 3.2% in Communication Services, 9% in Finance, 3.5% in Property and Business Services, 3.2% in Health and Community Services, 1.8% in Cultural and Recreational Services, 11.2% in Personal and other Services. The distribution of company size by employee number was as follows: 21.8% between 100 to 300, 16.8% between 301 and 500 and 50.9% more than 500. 97.5% of companies' revenue in the financial year 2000-2001 exceeded AU$50 million. Twenty-six point three percent were in the range of AU$51 to 100 million, 29.8% were in the range of AU$101 to 300 million, 10.2% were in the range of AU$301 million to 500 million, 10.5% were in the range of AU$501 to 1,000 million, 6.0% were in the range of AU$1,001 to 1,500 million and 15.1% were more than AU$1,500 million.

Sixty-nine point three percent of the respondents said their organisations are currently conducting some form of knowledge management. In most cases (47.5%) the CEO/ CFO/ Senior VPs were the initiators of knowledge management, followed by senior functional managers and directors (19.8%) and IS and IT Director and Manager (18.1%). It is therefore noted that 67.3% of the time the knowledge management has been initiated by senior executives.

People tend to have different understanding and perception of knowledge management and knowledge management systems. The different perspectives on KM were: Manage people's tacit knowledge (12.3%), Manage explicit knowledge (28.8%), Manage both tacit and explicit knowledge (51.2%), Organisational learning (2.8%). The various views regarding KMS were: Computer systems (19.6%), Process to make KM happen (8.8%), Policies and procedures

for managing knowledge (2.5), Information Systems (14.4%), and a broad way to manage knowledge (48.1%).

The top ten most widely used KMS technologies were (in order): E-mail and Communication Systems (91.9%), Internet (89.5%), Databases (86.0%), Intranet (80.0%), Document Management Systems (60.0%), Customer Management Systems (48.1%), Video Conference (43.2%), Online Discussion Forum (40.4%), Workflow Systems (38.6%), Data warehousing/mining (36.5%) and Search and Retrieval tools (36%).

Data Analysis Using the SEM (LISREL) Approach

The national survey data was analysed by Structural Equation Modelling approach using LISREL software (version 8.5). Before the data were analysed, it was necessary to assess its properties. The raw data showed some missing values, which were then imputed using Estimated Means (EM) method. Next, the data were tested for assumption of normality. Although the results showed that skewness and kurtosis of each variable fell within the acceptable range, the Kolomogorov-Smirnov normality test showed the distribution anomalies in all items. Also, the observed variables were measured by 1 to 7 Likert Scales, which according to Jorkesog and Sorbom (1996b), and Jorkesog (2001a; 2001b) are ordinal in nature. Hence, the most appropriate estimation method is Weighted Least Squares (WLS) technique of LISREL (Joreskog and Sorbom 1996b; Joreskog, 2001a; 2001b; Holmes-Smith, 2001; Byrne, 1998; Cramer, 1998).

The full structural equation model consists of two parts: measurement model and structural model (Anderson and Gerbing, 1982; 1988; Joreskog and Sorbom, 1984; 1996a; Joreskog,1993). The measurement model measures the relationships of observed variables with their underlying constructs. The structural model examines the casual relations between constructs. Computer packages such as LISREL, EQS are able to carry out the full-information estimation, where the measurement model and structural model can be estimated simultaneously. But the full-information estimation approach requires a large sample size (Anderson and Gerbing, 1988).

There are 72 observed variables and 16 latent constructs in the study. The required minimum sample size for full-information estimation in WLS is 72(72-1)/2= 2556 (the input matrix is polychoric correlation matrix). Since our sample size is far less than the required minimum the full-information estimation method cannot be carried out. One remedy is to use the congeneric measurement model approach (Holmes-Smith, 2001; Jorsekog, 1971) to reduce the number of variables for the purpose of obtaining a manageable number of composite variables, which can be used in subsequent structural model testing. The congeneric measurement model approach also improves the validity and reliability of composite variables for subsequent structural model measurement (Holmes-Smith, 2001). It is noted that the sample size of 285 is large enough for both measurement models and the subsequent structural model test of the relations between 16 composite variables.

The structural equation model assessment adopted a two-step strategy (Joreskog, 1993; 1971; 1996a; 2001b; Sethi and King, 1994; Venkatraman and Ramanujam, 1987; Holmes-Smith, 2001). In step one, uni-dimensionality was tested. One factor congeneric measurement model was applied to each of the construct to confirm the relationship between the observed variables and their underlying latent constructs. The model re-specification steps were then used to improve the model fit. The model re-specification involved the deletion of non-significant estimated parameters and freeing the parameters that share large error variance according to modification index. The model re-specification and modification were continued until parameters estimates and overall measures were judged to be statistically and substantially satisfactory (Sethi and King, 1994). The modelling approach that this study adopted was model confirmatory rather than “data driven exploratory model fitting” (Segars and Grover, 1993). Thus before proceeding to subsequent structural model analysis, the reliability and validity of measurement properties were tested. In step two, the structural relations between latent variables were tested and improved through re-specification. The process of model re-specification was repeated until the satisfactory model fit was achieved and there were no statistical and theoretical justification for further modification.

There are a variety of model assessment indices (goodness of fit) available in the LISREL program. For example, LISREL 8 can report 18 indices of model fit (Kelloway, 1998). In this study, the assessment of overall model fit was based on six indices available in LISREL output. Four of them are to measure the absolute model fit: Chi-square (χ^2) test, root mean square residual, root mean square error of approximation, goodness-of-fit index/adjusted goodness-of-fit index. The remaining two indices are used to measure comparative model fit: comparative fit index and expected value of the cross-validation index.

In the structural model, there are 9 independent latent factors (exogenous variables) and 7 dependent factors (endogenous variables) (see Figure 1). The 9 independent latent factors are: External Inspiring, Individual Factors, Organisational Factors, Management Support, KMS Characteristics, Task Complexity, User-Friendly, Perceived Voluntary Use, Subject Norm. The 7 dependent latent factors are Perceived Usefulness, Initiation, Adoption, Pilot Implementation, Organic Growth, Organisational Implementation, and Diffusion.

Sixteen hypotheses presented in section 4 are tested here. The relationships amongst the dependent and independent variables are shown in LISREL path diagram (see Figure 1), which is drawn using standard SEM conventions (Hoyle, 1995; Joreskog and Sorbom, 1996a). Rectangles indicate observed variables and circles represent latent constructs. The single-headed arrows were used to indicate the effect of latent variables on observed variables and the effect of independent latent variables on the dependent latent variables (Holmes-Smith, 2001). It is noted that each latent variable has only one composite observed variable.

Each hypothesis (path) in Figure 1 is tested using the t-value. The path is statistically valid or significant at the level of 5% if the t-value is greater than ±1.96. The non-significant parameters and paths can be fixed to zero in a revised model in the process of model re-specification. Results of the structural model can be seen in Table 1. In Table 1, the results of squared multiple correlations for structural equations are also reported, which indicate the strength of linear relationship in the structural model (Joreskog, 1993).

Overall Fit Indices (Recommended Value)	**Final Revised Model**	**R^2 for Structural Equations**	
Chi-Square /df	90.205/73	Perceived Usefulness	0.985
P-value (>0.05)	0.084	Initiation	0.948
Chi-square/df (>1 and <3)	1.2357	Adoption	0.760
RMESA (<0.05)	0.0288	Pilot Implementation	0.838
RMR (<0.1)	0.11	Organic Growth	0.988
GFI (>0.9)	0.987	Implementation	0.987
AGFI (>0.9)	0.975	Diffusion	0.990
ECVI	0.761		
ECVI for Saturated Model	0.958		
ECVI for Independence Model	7.943		
CFI (>0.90)	0.992		

Table 1: Overall Model Fit and Squared Multiple Correlations Results for the Structural Model

DISCUSSION

Hypothesis Testing and Analyses

Although the overall model fit is satisfactory (see Table 1), not all the hypotheses are supported. Five hypotheses, H1, H3, H4, H5, and H10, are not significant. The results of hypotheses testing are presented in Table 2.

Structural Relations **Independent → Dependent Variables**	**Hypothesis**	**Standardised Path** **Coefficient (t-value)**	**Significance of Hypothesis** **(5% level)**
External Inspiring →Perceived Usefulness	H1	0.029 (0.331)	No
Individual Factors →Perceived Usefulness	H2	0.593 (2.771)	Yes
Organisational Factors →Perceived Usefulness	H3	-0.288 (-1.343)	No
Management Support →Perceived Usefulness	H4	0.179 (1.241)	No
KMS Characteristics →Perceived Usefulness	H5	-0.246 (-1.176)	No
Task Complexity →Perceived Usefulness	H6	0.316 (3.002)	Yes
User Friendly →Perceived Usefulness	H7	0.596 (4.302)	Yes
User Friendly →Organic Growth	H8	0.469 (5.924)	Yes
Perceived Voluntary Use →Organic Growth	H9	0.187 (2.013)	Yes
Subject Norms →Organic Growth	H10	0.189 (1.585)	No
Perceived Usefulness →Initiation	H11	0.970 (21.973)	Yes
Initiation → Adoption	H12	0.886 (20.723)	Yes
Adoption → Pilot Implementation	H13	0.978 (23.151)	Yes
Pilot Implementation → Organic Growth	H14	0.303 (3.462)	Yes
Organic Growth → Organisational Implementation	H15	0.984 (31.243)	Yes
Organisational Implementation → Diffusion	H16	0.998 (30.851)	Yes

Table 2: Results of Hypothesis Testing

It is interesting to observe that four hypotheses related to “External factors” (H1 – H6) are not significant. Our analyses show that “external inspiring”, “organisational factors”, “management support”, and “KMS characteristics” do not influence individual perception of “usefulness” of KMS. It is most unexpected to see that organisational factors and KMS characteristics do not influence the perceived usefulness of KMS, which previous literature found to be significant in other technology adoption/ diffusion studies. It is observed that in KMS adoption/ diffusion “individual factors” of the users and “task complexity” are the significant factors in influencing the perceived usefulness of KMS. This provides an interesting challenge for the would-be adopters of KMS in Australian organisations. Top-level executives of these organisations should plan it carefully as their support does not guarantee the positive influence on the usefulness of KMS. They must look deeply into the task factors and the end-users to see if these factors are conducive to KMS use.

The second set of hypotheses (H7–H11) is related to the perception of KMS influencing the diffusion process of it (see Figure 1 and section 4). It is observed that "subject norm" (H10) does not influence "organic growth" of KMS in an organisation. That is any kind of pressure (direct or indirect) is not likely to influence the voluntary use and hence growth of KMS in organisations. Initiation of KMS in organisations is likely to be significantly influenced by perceived usefulness of it (H11; note that the t-value is very high). While Initiation is the first phase of the diffusion process (see Figure 1), it was hypothesised that "organic growth" (an intermediate phase) is likely to be directly influenced by some user-perception related variables (see Figure 1). Our results show that "perceived user-friendliness" and "perceived voluntariness" significantly influence the "organic growth" of KMS in organisations. On the other hand "perceived user-friendliness" also influences the "perceived usefulness" of KMS. In summary, three of the most significant perception related variables in KMS adoption/ diffusion process are "usefulness of KMS", "user-friendliness of KMS" and "voluntariness of KMS". This is an important information for the adopters and developers of KMS in Australia. The KMS system has to be extremely user-friendly for any level of users to use it effectively, it has to be useful for the task to be dealt with (see previous discussion) and policy must be implemented to be used it as a voluntary basis. Any kind of norm (pressure) creation is unlikely to make it grow effectively within the organisation.

The last set of hypotheses (H12–H16) deals with the diffusion process of KMS. A number of previous studies have dealt with various stages of the diffusion process in general and in specific applications (see Rogers, 1995 and Quaddus, 1995; among many others). To the best of our knowledge no empirical test of the sequences of these stages are available in the literature. Almost every diffusion process starts with initiation of some kind and ends with the large scale spread in use of the technology. We have taken similar approach in determining the diffusion stages of KMS. However, it is noted that our diffusion stages are first determined from the literature and then further refined during the qualitative field study process. In our study we provide empirical test of the sequence of the diffusion process. Our results show that all the hypotheses related to the sequence of the KMS diffusion process (H12–H16; see Figure 1 and Table 2) are significant. This is an important and significant finding. It clearly demonstrates how KMS adoption and diffusion should be planned in Australian organisations. A clear planned sequence must be adopted for the effective adoption and diffusion process of KMS.

Limitation

The major limitation of our research is relatively small sample size, which resulted in the composite variable approach. While composite variable approach is very rigorous from statistical point of view, it tends to lose the opportunity of examining the individual observed variable relationships with other constructs.

CONCLUSIONS

This study uses a mixed methodology approach to study the variables affecting the adoption and diffusion of KMS in Australian organisations. It first produces a comprehensive model of KMS diffusion in organisations. Six companies took part in this phase, which resulted in eight interviews with key person(s) in the companies. The researchers transcribed the interviews and the contents were analysed thoroughly using a structured process.

In the second phase, a questionnaire was developed based on the combined model and pilot-tested in West Australian organisations via survey. The results of the pilot test proved the effectiveness of the questionnaire. In the third phase, a national survey was conducted in top 1,500 companies in Australia and the data were analysed through Structural Equation Modelling (LISREL) approach. We provided detailed data analyses procedure that would be useful for other researchers.

We also provide the results in detail. The results have both managerial and research implications. The results of this study will add value to the literature of knowledge management. Organisations, that are practicing knowledge management or are planning to embark on knowledge management, can use the important variables of the study and conduct an internal audit to find out how they fare in terms of these variables. This study basically tested the whole model. In future more detailed study can be applied to part of the

model, such as relationship between perceptions and diffusion sections, the impact of external factors on the perceptions, the influence of external factors on the initiation of KMS.

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