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Abstract

This study investigates the factors influencing the adoption and diffusion of Knowledge Management Systems (KMS) in Western Australia. The study uses a mixed methodology approach. The research was carried out in three stages: field study, pilot survey, and state wide survey (top 300 companies). The data of the survey in Western Australia was analyzed through Partial Least Square Approach (PLS). Results indicate that "Individual factors", "External Inspiring", "Organizational 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 who are embarking on the adoption and diffusion of knowledge management systems in Western Australia or elsewhere.

Keywords: Knowledge management, Knowledge management systems, Adoption and Diffusion, Partial Least Square, Structural equation modelling

1. Introduction

When a business faces competitors that perform well in areas such as planning, marketing, products, customer services, structure, organizational resources management, effective management of knowledge may be the only weapon to win the competition (Davenport et al. 1998). Although knowledge and knowledge management are not new concepts, knowledge management systems (KMS), which involve the application of IT systems and other organizational 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 the 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 centers around the following two research questions:

(i) what are the factors that influence Knowledge Management Systems (KMS) adoption and diffusion in Western Australian organizations?, and
(ii) what must be done to diffuse KMS successfully?

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

2. Background

Knowledge management refers to a systematic and organizational specific framework to capture, acquire, organize, and communicate both tacit and explicit knowledge of employees so that other employees may utilize them to be more effective and productive in their work and maximize organization's knowledge (Alavi & Leidner 1999; Davenport et al. 1998). To add value with knowledge management there is a need for knowledge management systems (KMS), which facilitates the generation, preservation and sharing of knowledge (Duke et al., Bonner 2000). Knowledge Management System (KMS) 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 & 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 & Leidner, 2001). Compared to other previous systems, such as document management systems, knowledge management system can provide better help in avoiding duplicating research effort and assist in the systematic way of capturing people's knowledge and experience (Philips Fox 1998).

Some examples of KMS applications in organizations include: Beckman Laboratory's "K-Entex" to share and disseminate knowledge (Pan & Scarborough, 1999); 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 lead 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; Anderson-consulting's "Knowledge Exchange" to assist its clients in using knowledge to improve their operations and develop long-range strategies; KPMG'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 organizations. Literature on the KMS diffusion could not be found at present, except the work by Scarbrough & Swan (2001). The authors used management fashion model to explain the diffusion of knowledge management. In this study we concentrate on the adoption and diffusion of KMS in Western Australian organizations. 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 & 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 about an innovation, which in turn affect the diffusion of the innovation, ie. "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 Western Australian organizations.

3. 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 organizations 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 interviews were transcribed by the researchers and the contents were analyzed 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. 25 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 state-wide survey was conducted with top 300 (based on revenue) organizations in Western Australia. The data of the state wide survey was analyzed through Partial Least Square based structural equation modeling approach.

4. 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 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.

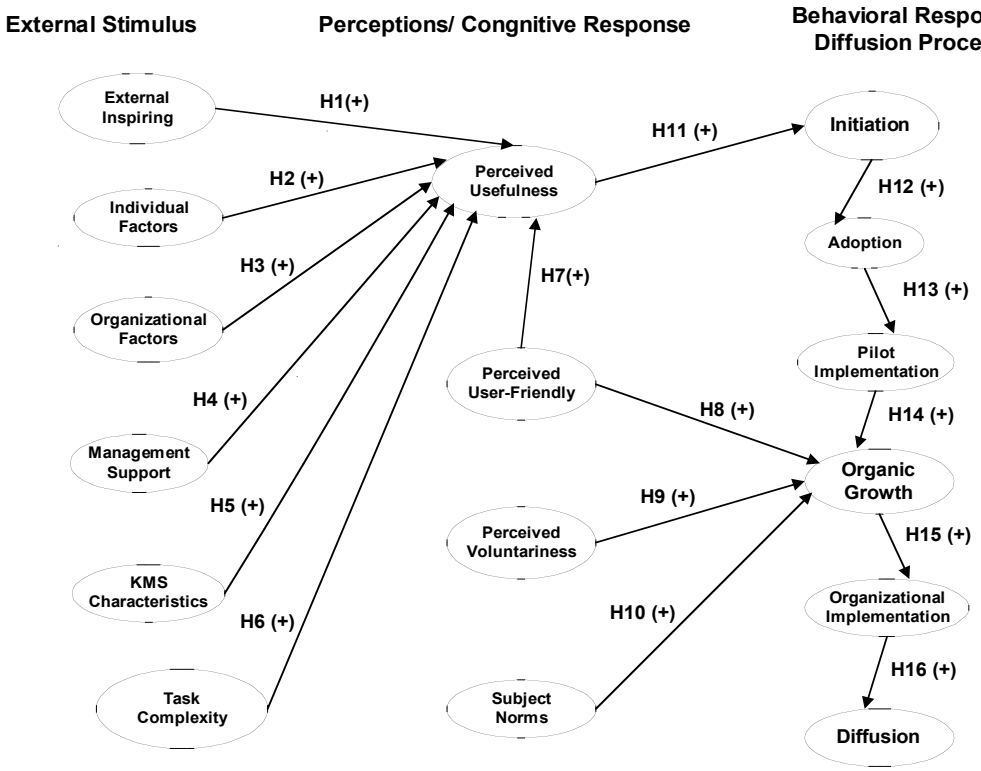

Figure-1 Structural Model for Hypotheses Testing

4.1 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: "Organizational 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.

4.2 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 organizations.
H9: "Voluntary use" of KMS positively influences the "Organic Growth" of KMS in organizations.
H10: Use of KMS via organizational "norm" positively influences the "Organic Growth" of KMS.
H11: "Perceived Usefulness" of KMS positively influences the "Initiation" of KMS in organizations.

4.3 Hypotheses related to Diffusion of KMS:

H12: Successful "Initiation" of KMS positively influences the "Adoption" of KMS in organizations.
H13: Successful "Adoption" of KMS positively influences the "Pilot Implementation" of KMS in organizations.
H14: Successful "Pilot Implementation" of KMS positively influences the "Organic Growth" of KMS in organizations.
H15: "Organic Growth" of KMS positively influences the "Organization-wide Implementation" of KMS.
H16: "Organization-wide Implementation" of KMS positively influences the "Diffusion" of KMS in organizations.

5. Results of Survey

5.1 Demographic Information

The state wide survey was conducted among the top 300 (based on revenue) organizations in Western Australia. The questionnaires were distributed to 600 managers (two managers are selected from each firm) in those companies, who appeared to be most relevant to our study. In the end, 159 questionnaires were returned, 10 of them were found to be incomplete. This resulted in 149 valid responses. Thus the final effective response rate was 24.8%.

The responses comprised of 83.2% male and 16.8% female. 14.8% of the respondents were in the age group of 30 to 39, 49% in 40 to 49 and 30.9% in 50 to 59. 31.7% of the respondents were holding the position of middle functional managers, 51.7% were senior managers, 4.1% were KM coordinator/KM manager/Chief Knowledge Officers and 12.4% were Chief Information Officer (CIO)/IS & IT Manager/IS & IT Director. 67% of the respondents had at least a bachelor's degree, with 12.2% having Graduate Diploma, 11.5% having a Masters degree and 6.1% having a doctorate degree. 86.9% of the respondents declared that KM is part of his/her job.

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: 33.6% less than 100, 25.5% between 100 to 300, 8.7% between 301 and 500 and 32.2% more than 500. 83% of companies' revenue in the financial year 2000-2001 exceeded AU$ 10 million.26.5% were in the range of AU$ 10 to 50 million, 13.6% were in the range of AU$ 51 to 100 million, 20.4% were in the range of AU$ 101 to 300 million, 4.8% were in the range of AU$ 301 million to 500 million, 4.8% were in the range of AU$ 501 to 1,000 million, 2.9% were in the range of AU$ 1,001 to 1,500 million and 10.9% were more than AU$ 1,500 million.

66.2% of the respondents said their organizations are currently conducting some form of knowledge management. In most cases (44.4%) CEO/CFO/Senior VPs were the initiators of knowledge management, followed by senior functional managers and directors (28.9%) and IS & IT Director and Manager (16.7%). It is therefore noted that 73.3% of the time the knowledge management has been initiated by the senior executives.

5.2 Data Analysis Using the PLS Approach

The sate wide survey data was analysed by Structural Equation Modelling approach using PLS-Graph 3.0 (www.plsgraph.com). Before the data were analysed, it was necessary to assess its properties. The raw data showed some missing values, which then was imputed using Estimated Means (EM) method. Next, the data were tested for assumption of multinormality. Although the Kolomogorov-Smirnov normality test showed the distribution anomalies in all items, the skewness and kurtosis of each item fell within the acceptable range (± 2).

In terms of number of cases, some researchers argued the minimum cases to run structural equation analysis was about 200 and/or ten times the number of observed variables in the most complex construct. The recent article by Gefen et al. (2000), however, demonstrated that the required minimal sample size was around 100-150 cases. Moreover, PLS is specially appropriate for small sample analysis (Chin & Newsted, 1999). This study with 149 cases is therefore considered to be appropriate for the analysis using PLS.

5.3 Assessment of Measurement Properties

As per Barclay et al. (1995) item reliability, internal consistency and discriminant validity were used as criteria to make sure that the model has acceptable measurement properties. The initial model with 59 observed variables was tested first using PLS. The individual item reliability was assessed by examining the loadings of the items. A minimum value of 0.4 was used as criterion to accept the reliability of individual items (Igbaria et al. 1997). Results of the initial model showed that two items under 'individual factor' construct, one factor under 'organizational factor' and one factor under 'user friendliness' had loadings less than 0.4. These items were thus dropped from further analyses in order to improve the item reliabilities. The revised model with observed variables was again tested using PLS and all loadings (item reliabilities) were found to be above the cut-off point of 0.4. Table-1 shows the final item loadings. T-values of the items were also found to be high, indicating that the items are loaded significantly with their corresponding constructs.

Table-1: Item Loadings

Items (observed variables)	Loading	Items (observed variables)	Loading
EX1	0.6984	PU6	0.7102
EX2	0.7360	PU7	0.6795
EX3	0.5945	PU8	0.4118
EX4	0.5450	PU9	0.6512
ID1	0.6408	UF1	0.8788
ID2	0.6581	UF3	0.9072
ID3	0.7501	UF4	0.6905
ID4	0.6853	SN1	0.5980
ID5	0.7299	SN2	0.7395
ID6	0.6816	SN3	0.8373
OG1	0.5312	SN4	0.8106
OG2	0.6887	SN5	0.6469
OG3	0.7360	VT1	0.5320
OG4	0.8045	VT2	0.8259
OG5	0.8138	VT3	0.7581
OG6	0.7577	IN1	0.9231

TC1	0.7268	IN2	0.4099
TC2	0.8416	AD1	0.8693
TC3	0.8512	AD2	0.8727
MS1	0.7631	AD3	0.7802
MS2	0.6343	PT1	0.8354
MS3	0.6892	PT2	0.8618
MS4	0.7857	PT3	0.8429
MS5	0.8290	GR1	0.9312
KM1	0.5466	GR2	0.9300
KM2	0.8051	GR3	0.5432
KM3	0.8251	IM1	0.6597
KM4	0.8254	IM2	0.7422
KM5	0.6591	IM3	0.7913
PU1	0.6493	IM4	0.8290
PU2	0.7748	DF1	0.7105
PU3	0.6133	DF2	0.6883
PU4	0.7933	DF3	0.8680
PU5	0.7270	DF4	0.7254

Internal consistency of the latent variables was measured following the procedure of Fornell and Larcker (1981). The cut-off point for internal consistency is normally taken as 0.7. Table-2 shows that all the latent variables, except 'Initiation' construct, have internal consistencies above 0.7, indicating that the constructs are internally consistent and hence reliable. Initiation contract's internal consistency is 0.606, which is lower than the recommended bench marker of 0.7. However it is kept in the model since the literature and the field studies have brought up the importance of initiation stage in the technology innovation diffusion process.

Table-2: Internal Consistencies

Latent Variables	**Internal Consistencies**	**Latent Variables**	**Internal Consistencies**
External Inspiring	0.757	Usefulness	0.885
Individual Factors	0.852	User-friendliness	0.873
Organizational Factors	0.871	Initiation	0.606
Management Support	0.860	Adoption	0.879
KMS Characteristics	0.857	Pilot Implementation	0.887
Task Complexity	0.855	Organizational Implementation	0.845
Subject Norms	0.857	Organic Growth	0.860
Voluntariness	0.768	Diffusion	0.838

Discriminant validity of the latent variables was tested using the procedure of Fornell and Larcker (1981). Average variance extracted (AVE) was found for each latent variable. Square roots of AVE were then compared against the correlations among the latent variables (see Table-3). Square roots of the AVEs are shown in the main diagonal of Table-4. The off-diagonal elements are the correlations among the latent variables. For adequate discriminant validity square root of the AVE should be greater than the off-diagonal elements in the corresponding rows and columns (Barclay et al. 1995). Table-3 indicates that the discriminant

validity of the latent variables are met, which means that all the latent variables are different from each other.

Table-3 Correlations among Constructs

	EX	ID	OG	MS	KM	TC	PU	UF	VT	SN	IN	AD	PT	GR	IM	DF
EX	**0.663***															
ID	0.372	**0.700**														
OG	0.434	0.629	**0.731**													
MS	0.318	0.614	0.655	**0.744**												
KM	0.303	0.601	0.477	0.599	**0.743**											
TC	0.258	0.570	0.495	0.469	0.547	**0.814**										
PU	0.464	0.547	0.601	0.507	0.402	0.488	**0.683**									
UF	0.067	0.394	0.325	0.356	0.420	0.311	0.226	**0.835**								
VT	0.255	0.500	0.509	0.360	0.414	0.289	0.311	0.410	**0.729**							
SN	0.281	0.437	0.534	0.531	0.347	0.447	0.539	0.268	0.292	**0.740**						
IN	0.157	0.286	0.269	0.318	0.311	0.157	0.317	0.247	0.331	0.363	**0.719**					
AD	0.281	0.528	0.488	0.504	0.536	0.392	0.288	0.368	0.229	0.346	0.229	**0.841**				
PT	0.248	0.500	0.506	0.525	0.526	0.420	0.591	0.396	0.400	0.395	0.413	0.751	**0.850**			
GR	0.366	0.453	0.469	0.457	0.312	0.281	0.500	0.312	0.458	0.424	0.341	0.421	0.481	**0.826**		
IM	0.361	0.403	0.531	0.442	0.444	0.368	0.462	0.359	0.482	0.470	0.465	0.486	0.591	0.556	**0.760**	
DF	0.236	0.539	0.523	0.512	0.525	0.355	0.452	0.482	0.486	0.482	0.433	0.583	0.666	0.566	0.573	**0.753**

(* the bold elements in the main diagonal are the square roots of AVE)

5.4 The Structural Model and Tests of Hypotheses

Table-4 shows the results of the structural model. It is observed that not all the hypotheses are supported. Four hypotheses, H4, H5, H7 and H8, are not supported to be significant. In the mean time, the model explains 47.5% of the variance of perceived usefulness, 10.1% of variance of initiation, 5.3% of adoption, 56.5% of pilot implementation, 35.5% of organic growth, 31.0% of implementation and 33.3% of diffusion (see Figure-1 and Table-4).

Table-4 Results of Hypothesis Testing

Structural Relations Independent → Dependent Variables	**Hypothesis**	**Standardized Path Coefficient (t-value)**	**Significance of Hypothesis**
External Inspiring →Perceived Usefulness	H1	0.220 (3.054)	Yes***
Individual Factors →Perceived Usefulness	H2	0.154 (1.772)	Yes*
Organizational Factors →Perceived Usefulness	H3	0.269 (2.658)	Yes***
Management Support →Perceived Usefulness	H4	0.112 (1.110)	No
KMS Characteristics →Perceived Usefulness	H5	-0.051 (-0.496)	No
Task Complexity →Perceived Usefulness	H6	0.189 (2.454)	Yes**
User Friendly →Perceived Usefulness	H7	-0.014 (-0.143)	No
User Friendly →Organic Growth	H8	0.043 (0.556)	No
Perceived Voluntary Use →Organic Growth	H9	0.258 (2.931)	Yes***
Subject Norms →Organic Growth	H10	0.238 (1.915)	Yes*
Perceived Usefulness →Initiation	H11	0.317 (3.555)	Yes***
Initiation → Adoption	H12	0.229 (2.047)	Yes**
Adoption → Pilot Implementation	H13	0.751 (15.933)	Yes***
Pilot Implementation → Organic Growth	H14	0.252 (2.078)	Yes**
Organic Growth → Organizational Implementation	H15	0.556 (9.651)	Yes***
Organizational Implementation → Diffusion	H16	0.573 (8.075)	Yes***

Note: *p < 0.05; ** p < 0.025; *** p < 0.0005

R^2 for Perceived Usefulness= 0.475, R^2 for Pilot Implementation =0.5645, R^2 for Organic Growth =0.3545, R^2 for Implementation = 0.310, R^2 for Diffusion = 0.333

6. Discussion

6.1 Hypothesis Testing and Analyses

6.1.1 Hypotheses H1-H6

It is interesting to observe that two hypotheses related to "External factors" (H1 – H6) are not significant. Our analyses show that "management support", and "KMS characteristics" do not influence perception of "usefulness" of KMS, which previous literature found to be significant in other technology adoption/diffusion studies. It is also observed that in KMS adoption/diffusion "individual factors" of the users, organizational factors, external influence and "task complexity" are the significant factors in influencing the perceived usefulness of KMS. One possible explanation for the non-significance of KMS characteristics is that required technologies (intranet, databases, communication tools, etc) for managing knowledge is already in place and are available to people. Everyone has thus become familiar with those technologies. As a result, people may tend to take this availability for granted and hence is the indifference to KMS Characteristics as an influencing factor in the KMS adoption. It is most unexpected to see that management support factor does not influence the perceived usefulness of KMS.

This provides an interesting challenge for the would-be adopters of KMS in West Australian organizations. Top-level executives of these organizations 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. They must also seek the advice from outside experts and closely monitor the industry's best practices. They also have to work with their business partners and customers on KMS to incorporation their expected benefits of KMS into system and promote the benefits of KMS to them (Sarvary 1999).

In the mean time in today's highly competitive market environment, all the companies have to practice knowledge management and it is quite impossible to survive the severe competition without managing knowledge in the knowledge economy. But the details of KM will be different in various industries and organizations. There is no single approach to knowledge management. Organizations should contemplate their knowledge management activities and projects in line with their business nature, business processes and strategic goals.

6.1.2 Hypotheses H7-H11

The second set of hypotheses (H7 –H11) is related to the perception of KMS influencing the diffusion process of it (see Figur-1). The proposed positive influence of User-friendliness on usefulness of KMS and individuals' acceptance and use of KMS is not supported by the survey data. One possible explanation is that the usefulness of KMS is a more important determinant of adoption decision of KMS. At the organizational level since KMS needs investment and brings in some changes to the current practices, companies will not adopt the KMS until they can clearly see the benefits of the systems. At the individual level, use of KMS is an extra burden/work for them. Furthermore, many people still believe that "knowledge is power (for job security, negotiation, promotion, respect, etc)', and they are not

willing to share what they have with others. They will ask questions such as "what is in it for me?'. Unless they can clearly see the benefits of KMS for themselves (such as improved effectiveness, easier learning and training, enhanced productivity, better creativity and innovativeness, etc), they will not accept and use the system even though the system is user-friendly. In the mean time, people in organizations now-a-days have very good computing skills, which have become necessary skills for getting a job and survive in the job. As a result, user-friendliness becomes a less important attractor than usefulness when they are making adoption decision of KMS.

Initiation of KMS in organizations is likely to be significantly influenced by perceived usefulness of it (H11). 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 voluntariness" significantly influence the "organic growth" of KMS in organizations. However our results reveal that "perceived user-friendliness" dose not have significant influences on the "perceived usefulness" of KMS. In summary, two most significant perception related variables in KMS adoption/diffusion process are "usefulness 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 useful for the task to be dealt with and policy must be implemented to be used it as a voluntary basis. Some norm (pressure) creation (i.e., influence from leader and respected people and encouragement from superiors and subordinates) will also make the use of KMS grow effectively within the organization.

6.1.3 Hypotheses H12-H16

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-4) are significant. This is an important and significant finding. It clearly demonstrates how KMS adoption and diffusion should be planned in Western Australian organizations. A clear planned sequence must be adopted for the effective adoption and diffusion process of KMS.

The relative low values of variances explained by the model (see Table-4) indicate the future research should incorporate other potential variables and links that were not measured in this study (Igbaria et al., 1997).

7. Conclusions and Future Research Directions

This research tested a comprehensive model of KMS adoption and diffusion (see Figure-1) via surveying 300 Western Australian firms. This model is unique in the sense that it has been developed based on the data obtained from both case studies and literature, also many factors and variables are different and very specific to KMS diffusion. The data were analysed

through Structural Equation Modelling (PLS) approach. One of the most important findings was the identification of six-stages of KMS diffusion process. In prior studies, researchers have come out with various stage models of innovation diffusion. But this study brings out a new stage of diffusion, organic growth, which reflects the individual learning and use of KMS. It also highlighted the need for pilot implementation before the whole organizational implementation. The KMS adoption and diffusion model shows the detailed stages of KMS diffusion from "initiation" to "sustained use". The direction of arrow indicates the sequence of the KMS diffusion stages. Another significant contribution is that the KMS adoption and diffusion model has incorporated external factors, perceptions, and diffusion into one model, which has not been done before.

The results of this research can help organizations, which are currently practicing knowledge management or are planning to embark on knowledge management systems, via enhancing their understanding of knowledge management systems and providing them a checklist by referring to the important variables in the KMS adoption and diffusion model and do an internal audit to find out how they fare in terms of these variables. The results of this research also provide suggestions and guidelines on successfully implementing the KMS in organizations. Although this research was conducted in Western Australian organizations, its results will apply to different organizations in various countries across the globe because of its generic approach.

The major research limitation of this study is the relatively small sample size, although it was perfect to analyze the model using PLS approach. This study basically tested the entire research model. In the future, parts of the model could be extracted and investigated in detail. Another interesting future study could be looking at the differentiation among the types of KMS adopters.

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