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Factors Influencing Adoption of Knowledge Management Systems in India from a Micro, Small and Medium Enterprise's Perspective[1]

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ABSTRACT

This study focuses on investigating factors which influence successful espousal of knowledge management (KM) systems (KMS) in India from a micro, small and medium enterprise's (MSME's) viewpoint. MSME sector in India contributes about 7.5% of India's gross domestic product accounting for about 38% of the manufacturing output and 40% of the exports of the country. The study reviews MSME sector in India, literature pertaining to emergent KMS and proposes a conceptual model having qualities of technology acceptance model, theory of reasoned action and social cognitive theory. The prelude findings of the study based on literature aids us in laying out factors influencing successful espousal of KMS in a developing country like India from a MSME's viewpoint. Empirical inquiry of the developed model in future would have practical implication and will facilitate MSMEs (which are major contributors to improvement of the economy) in successful espousal of KMS and garner the latent benefits.

Keywords: Micro, Small and Medium Enterprises, India, Knowledge Management Systems, Technology Acceptance Model, Theory of Reasoned Action, Social Cognitive Theory
JEL Classifications: D80, D82, L21, L22, L25, O30

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1. INTRODUCTION

Today, we live in a world where fundamental economic resources are not capital, land or labor, but in its place is knowledge, which is entrenched in the knowledge employees who execute job-specific tasks offering high competitive worth to an organization (Drucker, 1999). Knowledge is widely renowned as a key organizational quality for sustaining organizational competitiveness in the competitive market-place (Huber, 2001). With this heightened acknowledgement of knowledge as a critical organizational plus point, the issue of how to handle and control this knowledge appropriately plays a critical role. It has been observed that there is a greater than ever demand for organizations to put into practice knowledge management (KM) systems (KMS) at a brisk speed (Nevo and Chan, 2007). The main intent of KMS has been to support the edifice, allotment, and operation of knowledge in organizations (Alavi and Leidner, 1999). In today's world, embracing KMS is the need of the hour.

Unlike general-purpose information systems (IS) meant for efficiently storing huge amounts of data and routinely arranging them into precise format and outcomes for enhancing operational management accomplishment, KMSs are intended to successfully maintain organizational KM activities. KMS is a kind of IS that supports and enhances KM processes associated with formation, storage, recovery, diffusion and application of knowledge inside

and external to the organization (Alavi and Leidner, 2001). KMS is composed of various components such as database management system, intranet, groupware, search engines and additional technologies which are robustly fixed to the organizational practice of KM. These technologies are used to show the way for organizations to improved decision making, better productivity and continued competitive advantage (Alavi and Leidner, 2001). Testimony to the growing importance of KMS is the fact that many organizations around the world are embracing KM initiatives by making sizeable investments in deploying KMS (O'brien and Marakas, 2006).

Nonetheless, many KM projects have also ended up with less than desirable outcomes due mismatching between system design and realistic knowledge actions (Hahn and Wang, 2009) emphasizing the fact that triumph of KMS relies on organizations conniving appropriate patterns of the systems in-order to fulfill the ways in which they are being used especially during the tasks dispensation (Nonaka et al., 1998). A well-designed KMS ought to be able to keep the patterns of knowledge behaviors in place and also further institutionalize them successfully. The users will be reluctant to understand a new technology if the technology is not well-matched with their current work practice (Rogers, 1995). The victory of KMS, just like any other IS, depends on the support of management (Butler and Murphy, 2007).

A successful KMS ought to take in and deal with broad cultural and organizational issues, and not just essential technology delivery (Alavi and Leidner, 2001). Bearing in mind the troubles of the IS implementation, management support is extremely significant for endorsing the KMS and shifting employee attitudes (Al-Busaidi and Olfman, 2005). Managers of course persuade IT adoption by a desirable quality of their formal influence (Tarafdar and Vaidya, 2006) and therefore their leadership approach plays a significant role in winning IT adoption (Stone, 1994). Micro, small and medium enterprises (MSME's) sector in India contributes about 8% of India's gross domestic product (GDP) accounting for about 45% of the manufacturing output and 40% of the exports of the country (MSME - Government of India Annual Report, 2009). The role of this sector is critical especially because of the fact that these MSME's are the nurseries for budding entrepreneurs.

Even though KMSs have been studied extensively over the last few years, there is a lack of literature on the factors influencing adoption of KMSs especially from a MSME perspective in a developing nation like India. In this study we attempt to addresses this gap. The rest of the paper is structured as follows: In Section 2 we introduce MSME sector in India. In Section 3 we propose a model inspired from and having qualities of technology acceptance model (TAM), theory of reasoned action (TRA) and social cognitive theory (SCT) and conclude our study in Section 4.

2. MSME SECTOR IN INDIA

MSME's sector in India contributes approximately 7.5% of India's GDP accounting for nearly 38% of the manufacturing output and 40% of the exports of India (MSME - Government of India Annual Report, 2009). The role of MSME sector is critical especially because of the fact that these MSME's are the nurseries for budding entrepreneurs. According to MSME Development Act 2006: (a) A micro enterprise is an enterprise having investments in plant and machinery not exceeding Rs. 25 lakh, (b) a small enterprise is an enterprise having investments in plant and machinery more than Rs. 25 lakh but not exceeding Rs. 5 crore, (c) a medium enterprise is an enterprise having investments in plant and machinery more than Rs. 5 crore but not exceeding Rs. 10 crore. Table 1 reports the performance of MSME sector in India in terms of number of units, employment, investments and gross output. Table 2 highlights the contribution of manufacturing output of MSME in GDP of India over the years and Table 3 gives details about state or union territory wise distribution of number of enterprises and employment in India. Figure 1 gives details about leading industries under MSME sector in India.

Irrespective of whether firms are large or small, there is dire necessity of generating knowledge, sharing knowledge and implementing knowledge gained for maximizing a firm's competitiveness and its continued existence chances in today's contemporary information society (Nunes et al., 2006). As described by Zanjani et al. (2008), MSMEs at each and every stage have to make operational decisions, tactical decisions and strategic decisions which would be very difficult without accurate information. It's unfortunate that MSMEs still seem to be very reluctant in taking KM for decision making (Nunes et al., 2006).

Table 1: Performance of MSME sector in India in terms of number of units, employment, investments and gross output

Year	Number of MSME's (in lakhs)	Total employment (in lakhs)	Market value of fixed assets (in Rs. crore)
2001-02	105.21	249.33	154,349.00
2002-03	109.49	260.21	162,317.00
2003-04	113.95	271.42	170,219.00
2004-05	118.59	282.57	178,699.00
2005-06	123.42	294.91	188,113.00
2006-07	361.76	805.23	868,543.79
2007-08	377.36	842	920,459.84
2008-09	393.7	880.84	977,114.72
2009-10	410.8	921.79	1,038,546.08
2010-11	428.73	965.15	1,105,934.09
2011-12	447.66	1011.80	1,183,332.00
2012-13	467.56	1061.52	1,269,338.02

Source: MSME report, Government of India, MSME's: Micro, small and medium enterprise's

Table 2: Contribution of manufacturing output of MSME in GDP

Year	Gross value of output in Rs. crore	Percentage share of MSME	
		Total manufacturing output	GDP
2006-07	1,198,818	42.02	7.73
2007-08	1,322,960	41.98	7.81
2008-09	1,375,699	40.79	7.52
2009-10	1,488,390	39.63	7.49
2010-11	1,655,581	38.48	7.42
2011-12	1,790,805	37.52	7.28

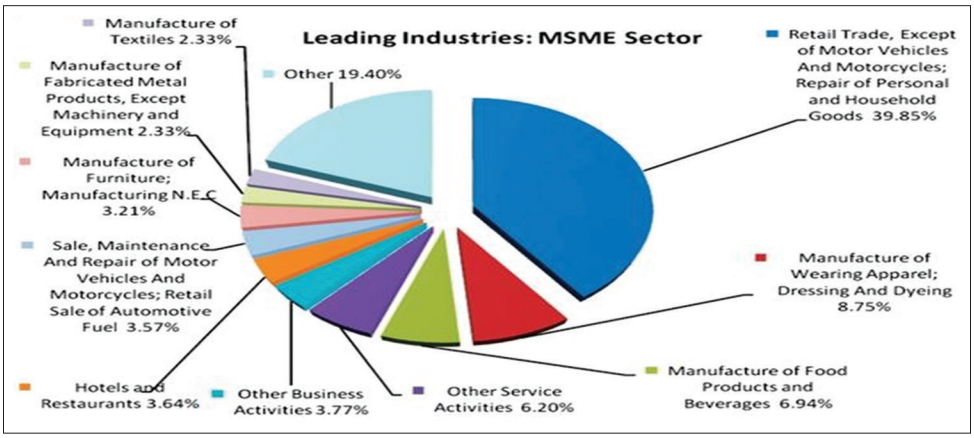
Source: MSME report, Government of India, MSME's: Micro, small and medium enterprise's, GDP: Gross domestic product

Table 3: State or union territory wise distribution of number of enterprises and employment in India

State/union territory	Number of enterprises (in lakhs)			Total	Employment (in lakhs)			Total
	Registered sector	Unregistered sector			Registered sector	Unregistered sector		
		Sample	EC 2005			Sample	EC 2005	
Jammu and Kashmir	0.15	1.18	1.68	3.01	0.9	2.17	2.68	5.75
Himachal Pradesh	0.12	1.6	1.16	2.87	0.65	2.27	1.76	4.68
Punjab	0.48	9.66	4.32	14.46	4.16	14.16	8.48	26.79
Chandigarh	0.01	0.28	0.2	0.49	0.12	0.58	0.53	1.23
Uttarakhand	0.24	2	1.51	3.74	0.8	3.62	2.54	6.96
Haryana	0.33	4.87	3.46	8.66	3.82	8.41	6.61	18.84
Delhi	0.04	1.75	3.74	5.52	0.58	5.94	13.29	19.81
Rajasthan	0.55	9.14	6.96	16.64	3.42	15	12.37	30.79
Uttar Pradesh	1.88	22.34	19.82	44.03	7.55	51.76	33.06	92.36
Bihar	0.5	7.48	6.72	14.7	1.48	15.97	10.81	28.26
Sikkim	0	0.06	0.1	0.17	0.01	0.56	0.22	0.79
Arunachal Pradesh	0	0.25	0.15	0.41	0.05	0.82	0.31	1.19
Nagaland	0.01	0.16	0.21	0.39	0.16	1	0.54	1.71
Manipur	0.04	0.44	0.43	0.91	0.2	1.38	0.78	2.36
Mizoram	0.04	0.1	0.16	0.29	0.26	0.3	0.25	0.81
Tripura	0.01	0.26	0.7	0.98	0.23	0.53	0.99	1.75
Meghalaya	0.03	0.47	0.38	0.88	0.13	1.04	0.75	1.92
Assam	0.2	2.14	4.28	6.62	2.11	4.48	7.66	14.25
West Bengal	0.43	20.8	13.41	34.64	3.6	54.93	27.24	85.78
Jharkhand	0.18	4.25	2.32	6.75	0.75	8.24	3.92	12.91
Odisha	0.2	9.77	5.76	15.73	1.73	21.94	9.57	33.24
Chhattisgarh	0.23	2.78	2.19	5.2	0.75	4.68	4.09	9.52
Madhya Pradesh	1.07	11.5	6.76	19.33	2.98	17.32	13.36	33.66
Gujarat	2.3	13.03	6.46	21.78	12.45	21.97	13.31	47.73
Daman and Diu	0.01	0.01	0.04	0.06	0.26	0.03	0.09	0.37
Dadra and Nagar Haveli	0.02	0.04	0.03	0.09	0.26	0.07	0.07	0.41
Maharashtra	0.87	14.45	15.31	30.63	10.89	24.72	34.43	70.04
Andhra Pradesh	0.46	14.9	10.6	25.96	3.83	35.15	31.71	70.69
Karnataka	1.36	11.12	7.7	20.19	7.89	22.58	16.24	46.72
Goa	0.03	0.56	0.27	0.86	0.33	0.87	0.68	1.88
Lakshadweep	0	0.01	0.01	0.02	0	0.05	0.02	0.06
Kerala	1.5	12.94	7.69	22.13	6.21	26.98	16.42	49.62
Tamil Nadu	2.34	18.21	12.58	33.13	14.26	38.89	27.82	80.98
Puducherry	0.01	0.13	0.21	0.35	0.21	0.25	0.55	1.01
Andaman and Nicobar Islands	0.01	0.07	0.07	0.14	0.06	0.18	0.15	0.38
All India	15.64	198.74	147.38	361.7	93.09	408.84	303.31	805.24

Source: MSME report, Government of India, MSME: Micro, small and medium enterprise

Figure 1: Leading industries under micro, small and medium enterprise sector in India



3. PROPOSED CONCEPTUAL MODEL FOR ADOPTION OF KMS

In the midst of the diverse research models developed in the effort to appreciate user approval of technologies, TAM has turned out to be one of the most extensively used models for IT espousal (Venkatesh and Bala, 2008). Davis (1989) developed TAM as a variation of the TRA and estimated that TAM explains latent user behavioural intention (BI) to use a technological uniqueness. TAM posits that individuals' intentions to make use of an IT is

determined by two viewpoints, perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989). PU is defined as the amount to which a person believes that, a particular system will increase his or her job performance (Davis, 1989). PEOU is defined as the extent to which a person believes that using the target system will be free of effort (Davis, 1989). Both PU and PEOU persuade BI with PU having a stronger outcome on promoting the use of IT (Davis, 1989). TAM showed that PEOU has a direct influence on PU. The easier a system is to utilize, the less exertion is needed to achieve certain tasks. TAM explains about 40% of the difference in individuals' objective to utilize and authentic usage (Venkatesh and Bala, 2008) and has confirmed to be a substantial theoretical model that helps to clarify and appreciate individual behaviour in IT adoption. It is applicable across different technologies and user contexts and can provide researchers and practitioners with realistic efficacy (Bueno and Salmeron, 2008). Because espousal of KMS in organizations involves accepting the behaviour intent of individuals, TAM can probably provide a reasonable representation of user intention to utilize KMS. The two key constructs in TAM, namely, PU and PEOU are the significant basic determinants which explain the individual's adoption of KMS in this study. In our study we focus on the adoption of KMSs. Therefore, it is also essential to have a good understanding of why people refuse to accept adopting a KMS.

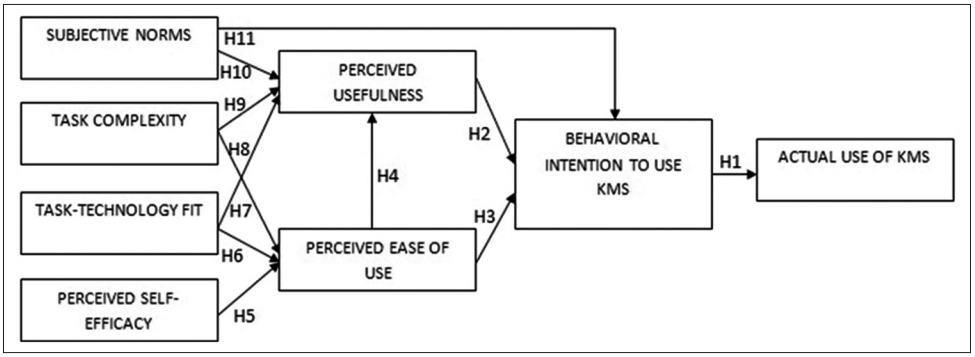
Ajzen and Fishbein's (1980) TRA is "a well-researched intention model that has proven triumphant in predicting and explaining behavior across a wide variety of domains" (Davis, 1989). TRA is "designed to explain virtually any human behavior" (Ajzen and Fishbein, 1980). Therefore, TRA ought to also be an apt model for studying the factors affecting the espousal of KMSs. The TRA has extensive applicability in varied disciplines and has gone through meticulous testing that has proved to be robust in predicting intentions and conduct (Davis, 1989). TRA assumes that human beings are usually quite balanced and make methodical use of the information accessible to them (Ajzen and Fishbein, 1980). The theory views a person's aim to execute (or not execute) a behavior as the instant determinant of the deed. Adding up, a person's attitude or perceptions about the characteristics are predecessor to behavior aim to accept and use the system (Agarwal and Prasad, 1997). According to TRA, a person's intent is a function of two basic determinants, one "personal" in nature and the other reflecting "social influence" (Ajzen and Fishbein, 1980). The personal factor is the individual's optimistic or pessimistic assessment of performing the deeds, which is called "attitude toward the behavior" and refers to attitudinal factors. The next determinant of intention is the person's discernment of the social demands put on him/her to carry out or not to carry out the actions in question. This factor is termed "subjective norm" dealing with supposed prescriptions and relates to the normative considerations (Ajzen and Fishbein, 1980). It is quite possible to expect and add some understanding of a person's intent by measuring his or her attitude in the direction of performing the behavior, his/her subjective norm, and the relative weights.

The ability of technology to support a chore is identified as task technology fit (TTF), which is defined to be the amount to which the capabilities of the technology match the demands of the chore (Goodhue and Thompson, 1995). The TTF model theorizes that a fit amongst the chore, the technology and the users optimistically influence utilization and performance. A technology will be used well only when the functions of that technology can hold up the users' requirements (Goodhue and Thompson, 1995). Rational users will approve the technology that enables them to complete their tasks with maximum advantage. IT that does not offer adequate benefit will not be used (Strong and Dishaw, 1999). Preceding studies show that the TTF model has been extended by attitude/behavior models, providing a better elucidation of user reception of technology. According to SCT given by Bandura (1997), people will be more willing to adopt technologies if they have a greater sense of control over it. This sense of control over ones environment is captured by the self-efficacy construct. Self-efficacy viewpoint are cognitions that establish whether behavior transform will be initiated, how much endeavor will be exhausted and how extensive will it be unrelenting in the face of obstacles and failures. Self-efficacy influences the endeavor one puts forth to transform risk behavior and the perseverance to carry on striving despite barriers and setbacks that may weaken motivation. Self-efficacy is straightforwardly related to espousal behavior, but it also affects espousal behaviors in a roundabout way through its impact on PEOU. Self-efficacy influences the challenges that people take on as well as how soaring they set their goals.

Several researchers have studied MSMEs in the context of KM (Salojärvi et al., 2005). Yee-Loong Chong et al. (2013) found that KM processes affected SMEs resolution to espouse E-business practices in their supply chain. 11 decisive success factors for adopting KM in SMEs were identified and studied by Wong and Aspinwall (2005). KM in SMEs has become the budding area in the development of business strategies (Lee and Lan, 2013). KM can be used by organizations for smooth business operations but for this organizations must recognize the benefits associated with KM implementation (Lee and Lan, 2013). SMEs in India are key contributors to growth of the nation (Gupta and Gupta, 2013). SMEs should involve in KM practices to reap the benefits of that has been mentioned in the literature. In the pursuit of innovation, technology advancement or profitability SMEs have to tackle a lot of challenges (Gupta and Gupta, 2013). Due to the lack of resources and several budget constraints SMEs are not able to take the full advantage of KM (Lee and Lan, 2013). In our study we propose a conceptual model that could help SMEs in espousal of KM based on the literature reviewed and using the rationale of TAM, TRA and SCT.

Figure 2 encapsulates the Proposed model for adoption of knowledge management systems from micro, small and medium enterprise's perspective. TAM has turned out to be one of the most extensively used models for IT espousal (Venkatesh and Bala, 2008). Davis (1989) developed TAM as a variation of the TRA and estimated that TAM explains latent user BI to use a technological uniqueness. The basic model has not only been used for many diverse types of technology but has also been extended with other factors that supposedly either directly or indirectly influenced intention to use or usage. With the following premise it can be investigated whether "Behavioral intention to use KMS will positively affect actual use of KMS in case of MSMEs" (H1). In

Figure 2: Proposed model for adoption of knowledge management systems from micro, small and medium enterprise's perspective



the framework of KMS, if users recognize that the system enables them to resolve problems more successfully and improves their efficiency or job performance, there will probably be a strong intent to further use the system. With this rationale, it can be investigated whether "PU and PEOU will positively affect BI to use KMS in case of MSMEs" (H2, H3) and "PEOU will positively affect PU of KMS in case of MSMEs" (H4). According to SCT given by Bandura (1997) a personal sense of control facilitates a change of adoption behavior. Self-efficacy pertains to a sense of control over one's environment and behavior. With this rationale, it can be investigated whether "perceived self-efficacy positively affects PEOU" (H5). Research has shown that TTF consistently relates to PU and PEOU. It is expected then that users will perceive the tools to be useful and easy to use when such tools are helpful for completing their tasks. With this rationale, it can be investigated whether "TTF will positively affect the PEOU of KMS in case of MSMEs" (H6) and "TTF will positively affect the PU of KMS in case of MSMEs" (H7).

Task complexity is defined as the effort required for completing a specific task. The perceptions concerning the innovation, which are called perceived uniqueness in Roger's theory (1995) about innovation diffusion, are relative benefit (how the novelty is seen compared to the one which is at present in place), compatibility (how reliable is the innovation with individual's standards and familiarity), complexity (the intricacy of learning and using the innovation), trialability (the aptitude to be weathered before implementation), and observability (the capability of being able to exhibit the outcome of using the innovation). With this rationale, it can be investigated whether "Task complexity negatively affects PEOU in case of MSMEs" (H8) and "Task complexity negatively affects PU in case of MSMEs" (H9). Subjective norm is seen as a combination of perceived expectations from relevant individuals or groups along with intentions to comply with these expectations. When technology use was voluntary, subjective norms influenced PU but did not have a direct influence on behavioral intention. With this rationale, it can be investigated whether "Subjective norm positively affects PU of KMS in case of MSMEs" (H10) and whether "Subjective norms positively affect BI of KMS in case of MSMEs" (H11).

4. CONCLUDING REMARKS

Although KMSs have been deliberated broadly over the last several years, there is deficiency of literature on the factors influencing espousal of KMSs especially from a MSME perspective in a developing nation like India. In this study we investigated factors which influence successful espousal of KMS in India from a MSME's viewpoint and proposed a theoretical model having qualities of TAM, TRA and SCT. With MSME sector in India contributing about 7.5% of India's GDP accounting for about 38% of the manufacturing output and 40% of the exports of the country, the proposed model if empirically investigated would have realistic implication and will facilitate MSMEs (which are major contributors to development of the economy) in successful espousal of KMS and garner the latent benefits.

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