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Impact of Organisational Demographic Characteristics on Knowledge Management Practices in Manufacturing Companies

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Abstract: *Purpose: Today's globalised and liberalized economy could rightly be called as knowledge economy. To survive and grow in this dynamic business environments calls for organizations to change their traditional ways of administration. A paradigm shift in the focus of administrators from tangible assets to intangible assets is essential. IT giants such as Wipro, TCS or Infosys and ITES in India have realized and practicing knowledge management. Even though large manufacturing companies, BHEL, TATA Motors and the like have given due importance to knowledge management, generally the situation in manufacturing companies becomes a matter of concern.*

Research methodology: Primary data was collected through questionnaire. 106 companies comprising micro, small, medium and large manufacturing from Tamil Nadu, India have participated in the survey.

Findings: While demographic characteristics such as age and size do not significant impact on the knowledge management practices, market orientation, size based on number of employees, annual turnover and nature of operations (ancillary or subsidiary) do have an impact.

Limitations: The study is carried out in manufacturing companies situated in Tamil Nadu only. Generalizations to all the manufacturing companies should be done with caution.

This paper explores the extent of adoption of knowledge management practices and the impact of demographic characteristics on knowledge management in manufacturing companies.

Keywords: *Knowledge, Knowledge management, demography, manufacturing companies*

1. Introduction

The knowledge era that we live in today necessitates the companies to build and exploit their core competencies in order to have sustainable competitive advantage. Sustainable competitive advantage is no longer rooted in physical assets and financial capital, but in effective channeling of intellectual capital (Seubert et al, 2001). "The performance capacity, of any organization in the knowledge society, will come increasingly to depend on quality of knowledge and the productivity of knowledge. And so will the performance capacity of any individual in the knowledge society." - Peter F. Drucker, The Age of Social Transformation, The Atlantic Monthly, November, 1994.

It is imperative to understand that the world is transforming from an independent and lightly linked society to one of inclusion with a larger, more deeply interconnected global community. World Competitiveness Report 2013 has ranked India at 59 which have slid down from 51st in 2010 and 56 in 2011. India stands in 41st position among 144 countries whereas the previous position was 39 (Schwab, World Economic Forum, 2013). Organizations could focus on knowledge management (KM) as one of innovative practices that provides competitive edge and fosters innovation.

2. Literature Review

2.1. Knowledge And Knowledge Management

Knowledge is defined in the dictionaries as "facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject". Different authors define knowledge in different contexts such as,

- "Justified true belief": Nonaka and Takeuchi, 1995
- "Knowledge is experience or information that can be communicated or shared" [Allee, 1997]
- Karl M. Wiig (1993) provides three definitions for knowledge:
 - "Knowledge can be thought of as the body of understandings, generalizations, and abstractions that we carry with us on a permanent or semi-permanent basis and apply to interpret and manage the world"

around us. ... we will consider knowledge to be the collection of mental units of all kinds that provides us with understanding and insights.”

- Knowledge is organized information, general understanding and insight, that may not be focused on application
- Major driver for organization to act intelligently

- "Knowledge is the capacity for effective action." (Chris Argyris, 1993)

Karl M. Wiig (1995) listed down the important characteristics of knowledge as intangible and difficult to measure, volatile (it can ‘disappear’ overnight), embodied in agents with will, not ‘consumed’ in a process, it increases through use, has wide ranging impacts in organizations (e.g. ‘knowledge is power’), cannot be bought on the market at any time, ‘non-rival’, it can be used by different processes at the same time. Hence managing knowledge could be dazzling and requires multifaceted concept. Knowledge management is often confused with data base management systems, Information systems or IT, information management, human resources management or Intellectual property rights management (Rajesh K Pillania, 2009).

Knowledge management can be broadly defined as the identification and management of processes for leveraging the intellectual capital of organizations over time and place. As such, it applies to every job function and process and seeks to capture institutional learning and share best practices for the benefit of the entire firm and its clients. Critical success factors (Kuan Yew Wong and Elaine Aspinwall, 2005) for KM implementation are viz. Management leadership and support (C. B. Crawford, Sanjay Kumar Singh (2008)), Culture ((Tuggle (2000), Heejun Park (2004), Uwe Wilkesmann (2009), Information technology (Kostas Metaxiotis (2009), Vătuia Virginia Elena, Mihai Draghic (2011)) , Strategy and purpose , Measurement , Organizational infrastructure , Processes and activities, Motivational aids (Mian Ajmal, 2010) , Resources , Training and education , Human resource management (Kuan Yew Wong and Elaine Aspinwall, 2005).

Effective knowledge management practices are directly related to organizational performance which in turn is related to financial performance (Michael Zack et al., 2009). Long term benefits like revenue growth, enhancing competitive advantage, employee development, product innovation and short term benefits like reducing costs, improving marketing strategies, enhancing customer focus and facilitating profit growth may be achieved by KM practices (Pang-Lo Liua (2005), Davenport and Grover (2001)). Vic Gilgeous et al. (2001) reports KM provides core competency for achieving manufacturing effectiveness and high performance (Pillania K. Rajesh, 2008). KM adoption facilitates tackling the increasingly fierce competition (Arnaldo Camuffo and Anna Comacchio, 2005) and is a prerequisite for success in the production environment (Pang-Lo Liu et al.).

2.2. Research in India

The contribution of manufacturing sector to country’s GDP is 17% which is estimated to be 25% in the forthcoming years. Mr. Anand Sharma, Minister for commerce and industry, Government of India (www.ietfindia.in, 6.8.2012) emphasized the importance of increased investment in training and skills development, research and development and in increasing manufacturing capacity of the sector. It was stated that the investment in innovation would be doubled in the near future. Government of India also unveiled the first national manufacturing policy.

The technological prowess of the manufacturing sector is enhanced by adopting Knowledge Management (KM) practices. It is claimed that the success of Japanese firms is not because of their manufacturing prowess, access to cheap capital, close relationship with customers, suppliers and government agencies but because of their skills and expertise at “Organizational knowledge creation”. (Nonaka and Takeuchi, 1995).

Even though the adoption of KM practices faces challenges like lack of awareness, financial constraints, expensive softwares etc., the benefits could be fully realized only by implementing it in organizations.

A formal KM is not practiced and a proper strategy is not available for KM implementation in Indian Small and Medium Enterprises but KM is practiced in a more unstructured and informal way (Lavanya Ranganathan, 2011). Deepak Chawla and Himanshu Doshi (2010) studied Knowledge Management (KM) implementation in Indian manufacturing, IT and IT Enabled Services (ITES) and power generation and distribution companies. Various dimensions of KM, namely: process, leadership, culture, technology, and measurement are compared across the three industries to understand the differences in KM practices. It was found that IT Enabled service organizations are ahead of both manufacturing, and power generation and distribution companies. Pillania (2006) reported after the study at Auto components Small and Medium Enterprises, that International automotive component manufacturers perceive the importance of KM practices more positively than their Indian counterparts. Singh et al. (2006) have found that in Indian manufacturing industry people do not share knowledge because they perceive that it may have an adverse impact on their job security. They found that employees lack adequate understanding of the importance of human and cultural aspects in the success of KM initiatives.

It was reported that by considering KM as a building block of the organization, would improve public sector services (Ekta Arora (2011) and KM coupled with TQM would improve the performance of the organizations. (Vinod Kumar Khanna (2009)). It was also reported that private organizations fair better than public sector organizations in KM perspective (Deepak Chawla and Himanshu Doshi (2010)). The studies show that the KM in Indian scenario is not very encouraging especially in manufacturing companies.

This paper attempts to study the extent to which KM is practiced in Indian manufacturing companies and the impact of demographic characteristics on them. This study contributes to the research of manufacturing companies focusing on the impact of demographic characteristics on the adoption of knowledge management practices. The paper is structured as follows: first, literature review; second, the methodology adopted for the study; and thirdly the analysis of the empirical research is presented. Conclusions of our findings and directions for future research are outlined.

3. Research Objectives and Methodology

The main aim of the study is to investigate understanding and perception of knowledge management in manufacturing companies. The empirical investigation on which this paper is based on, is done in manufacturing companies in India. 106 manufacturing companies have participated in the survey.

Questionnaire was developed based on the literature available on the topic. Different knowledge management assessment instruments are referred for the study. To mention a few,

- A Knowledge Management Program Self-Asses Small and Medium Enterprise (APQC)
- Knowledge Management: A New Zealand Survey into Current Practices, April 2004.
- The Knowledge Management Assessment Tool (KMAT) by American Quality Productivity Center, USA and Arthur Anderson- Consulting, USA (1995)
- Knowledge Management questionnaire developed by Filius R et. al(2000)
- OPM Knowledge Management Research Project Questionnaire (2008) etc.

The questionnaire was validated by academic and industry experts and it comprises of five sections representing the five KM dimensions: Knowledge capture (KC), Knowledge Creation (KCr), Knowledge Storage(KS), Knowledge Transfer(KT), and Knowledge application(KAP). Responses were measured on a 5 point Likert-type scale, ranging from strongly agree (1) to strongly disagree (5). The five KM dimensions are defined as follows:

- 1) KC-- Knowledge capture is defined as the retrieval of relevant and valuable knowledge from individuals that is then documented and transferred to other individuals, customers, or business partners (Lawson, 2003).
- 2) KCr-- It is an activity that creates new knowledge by suitably applying the acquired knowledge from outside and within the organization (Holsapple, 2001).
- 3) KS-- Knowledge storage is the process of accumulation of documented knowledge through information technology applications, written devices, or other mechanisms for future reference (Lawson, 2003).
- 4) KT -- Knowledge transfer is a process which involves flow of knowledge between individuals, from individual to group, from group to an individual or among groups (Al-Gharibeh, 2011).
- 5) KAP--the extent to which an individual or organization uses knowledge to improve processes, performance or products and services (Khalil, 2006).

3.1. Research Hypotheses

- H_{01} There is no significant difference in Knowledge management practices in terms of the age of the companies
- H_{02} . There is no significant difference in Knowledge management practices in terms of the size related factors (Size, number of employees and annual turnover) of the respondent firms
- H_{03} . There is no significant difference in Knowledge management practices in terms of the market related factors (Export, domestic or both)
- H_{04} There is no significant difference in knowledge management practices in terms of the companies' nature of operations (Ancillary, subsidiary, has global operations or others)

*knowledge management dimensions / practices / study constructs: Knowledge creation, Knowledge capture, knowledge storage, knowledge transfer and knowledge application

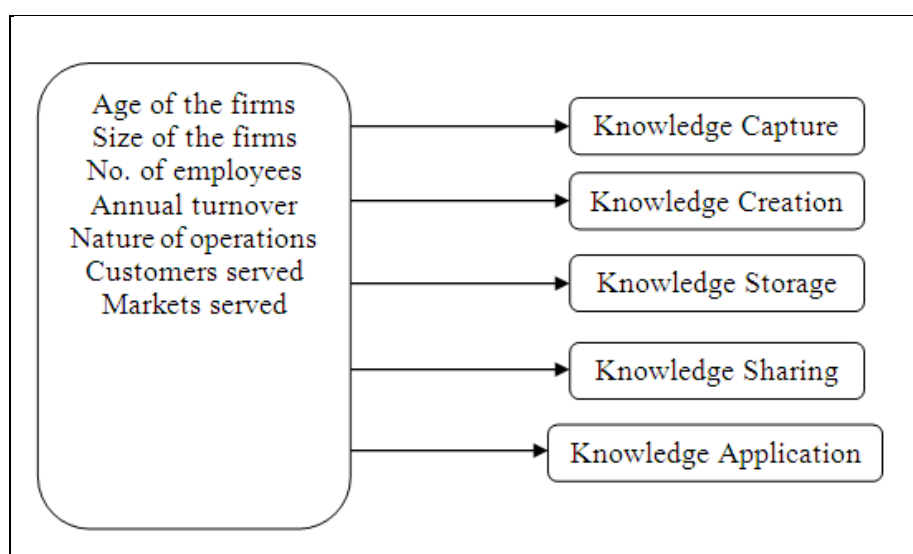


Figure 1: Research objectives

Research objective: To determine the influence of demographic characteristics on the knowledge management dimensions

4. Analysis and Results

4.1. Demographic Profile of the Respondents

Table 1 gives the detailed demographic profile of the respondent companies. More number of Small and Medium enterprises have participated and contribution of micro and large companies are less. Based on the markets for which the companies operate, around 60% of the companies operate for both domestic and export markets. Since the majority of the respondent companies belong to small and medium enterprises, obviously ancillary companies constitute 70%. While 70% of them have only industrial customers and 15% have only individual customers. The rest have both industrial and individual customers. 43% of the companies operate for more than 20 years and 8.5% are very young. 13% of them have more than 100 crores turnover and majority of them have turnover between 6 and 50 crores. 36.8% have less 50 employees and 21% have more than 150 employees. Thus there is a representation for each of the category which adds value to the study.

I Category	Percent
Tiny	4.7
Small	45.3
Medium	45.3
Large	4.7
II Markets	
100% domestic	39.6
Domestic and export oriented	60.4
100% export oriented	Nil
III Nature of operations	
Has global operations	12.3
Ancillary	70.8
Subsidiary	1.9
others	15.1
IV Customers	
B2B	69.8
B2C	14.2
both	16.0
V No. of employees	
<50	36.8
51-100	15.1
101-150	20.8
>150	21.7
VI Age of the firm	
<5	8.5
6-10	12.3
11-15	12.3
16-20	17.9
>20	43.4
VII Annual turnover (Cr.)	
<1	4.7
1-5	16.0
6-10	25.5
11-50	26.4
51-100	8.5
>100	13.2

Table 1: Demographic Profile of the Respondent Companies

4.2. Reliability

The data were analysed using SPSS. Firstly, reliability of the data was tested and cronbach's alpha tests the measure of internal consistency based on the inter-item correlation. With reliability analysis, one can obtain an overall index of the repeatability or internal consistency of the measurement scale as a whole, and identify problem items that should be excluded from the scale.

Study constructs	No. of items	Cronbach's alpha	Alpha if item deleted
Knowledge capture (KC)	9	0.615	-
Knowledge creation (KCr)	5	0.641	-
Knowledge storage (KS)	8	0.730	
Knowledge transfer (KT)	9	0.590	0.659 (if KT8 is deleted)
Knowledge application (KAp)	7	0.397	0.699 (if kAp4 is deleted)

Table 2: Reliability statistics of the constructs

The values are well above 0.6 for individual constructs and 0.892 for the overall data showing high reliability and internal consistency. Items KT8 and KAp4 are deleted from further analysis.

4.3. Correlations between the Constructs

Bi-variate correlations have been computed between various demographic and study constructs, in order to:

- facilitate the detection of significant associations that may assist later interpretation and insight, and
- reveal the potential presence of multicollinearity

The study has listed thirteen variables (eight demographic variables and five study constructs). Five of the demographic variables – category, markets, nature of operations, customers and product type - are categorical in nature and are not eligible for correlation analyses. The other three – Age, size and annual turnover – are included. Thus, correlations are computed between all pairs of 8 variables (three demographic and five study constructs) as shown. The results are as shown in Table 3:

	No. of employees	Age of the firm	Annual turnover in crores	KC	KCR	KS	KT	KAP
No. of employees	1							
Age of the firm	.272**	1						
Annual turnover in crores	.690**	.250*	1					
KC	.175	.134	.248*	1				
KCR	.347**	.104	.408**	.664**	1			
KS	.171	-.061	.261*	.633**	.477**	1		
KT	-.016	-.014	.113	.638**	.474**	.599**	1	
KAP	-.046	-.091	.010	.367**	.276**	.475**	.427**	1

Table 3 : Correlation Analysis

** correlation significant at 0.01 level ; * correlation significant at 0.05 level

It can be seen that the number of employees of the firm is significantly correlated with the study construct knowledge creation suggesting that more the number of employees in the firm more is the requisite intellectual capital and experience to create knowledge.

But surprisingly age of the firm is not significantly correlated to any of the study constructs. This may be because as majority of the respondents are Small and Medium Enterprises and most of them are ancillary units, their operations are in tune with the requirements of their customers and the scope for any knowledge management dimension is less.

Annual turnover of the companies are significantly related to the three of the study constructs, viz. Knowledge capture, knowledge creation and knowledge storage. Those companies which do not have any financial constraint would do much better in investing on intellectual capital and infrastructure.

All the five study constructs are significantly related to each other revealing the fact that the dimensions are highly inter related and are in accordance with knowledge management cycle (Capture – transfer - create – use).

4.4. Demographic Variables Vs Knowledge Management Practices

Analysis of variance (ANOVA) is a dependence technique for investigating the effects of independent variables that are categorical, on a dependent variable that is measured on an interval scale.

Constructs	Mean	Variance
KC	3.2821	.432
KCr	2.9686	.876
KS	3.7228	.928
KT	3.5862	.500
kap	3.8557	.541

Table 4: Descriptive statistics of the study constructs

The mean values suggest that irrespective of the companies' demographic characteristics, knowledge management practices are moderately adopted in the manufacturing companies. Whether there is any significant difference is tested using ANOVA.

4.4.1. Levene's Test

An important assumption of one-way ANOVA is that of homogeneity of variance, which requires equal variances of the Dependent Variable (DV) across the categories of the Independent Variable (IV). The Levene's test, which returns the Levene

statistic (denoted ‘L’ here) is performed to test for this assumption. If L is significant at $p < 0.05$, then it indicates a condition of heterogeneity of variance for that particular IV-DV combination, implying a violation of the homogeneity assumption.

The results of the Levene tests for each of the IV-DV combinations are shown in Table 5.

It is found that the homogeneity of variances assumption is satisfied in all the IV-DV pairings except three cases:

- Knowledge application as DV* and other independent variables.
- Product type as IV** and other DVs
- Annual turnover and KS
- Annual turnover and KT

Hence ANOVA is not performed for these pairs. The results of Levene’s test are given in Table 5.

(* Dependent variable ; ** Independent Variable)

Constructs	Category as IV		Market as IV		Nature of operations as IV		Customers as IV		Product type as IV		Age as IV		No. of employees as IV		Annual turnover as IV	
	L	Sig.	L	Sig.	L	Sig.	L	Sig.	L	Sig.	L	Sig.	L	Sig.	L	Sig.
Kc	1.647	.184	6.303	.184	3.339	.022	2.960	.056	3.055	.002	2.123	.084	2.587	.058	2.239	.057
Kcr	.364	.779	.009	.779	.806	.494	1.028	.362	3.445	.001	1.284	.282	.814	.490	.785	.563
Ks	1.490	.222	.729	.222	.297	.828	.084	.920	2.443	.010	1.260	.292	1.534	.211	3.791	.004
Kt	2.033	.114	.016	.114	1.327	.270	.095	.910	1.048	.412	1.856	.125	.503	.681	3.183	.011
kap	19.930	.000	4.736	.000	7.651	.000	2.008	.140	2.821	.003	2.657	.038	1.578	.200	3.541	.006

Table 5: Results of Levene’s Test

4.5. Results of Hypothesis Testing

H_{01} There is no difference Knowledge management practices in terms of the age of the companies

Age of the firm does not have any significant impact on the adoption of knowledge management practices. Significant values of ANOVA are all greater than 0.05 resulting in acceptance of null hypothesis. Mean values also are between 3 and 4 which means that knowledge management practices are adopted moderately, given in Table 5.

The reason may be attributed to the fact that the business world is characterized by uncertainty and is governed by technology. Access to technological prowess and the survival instinct may also be the reasons for adopting knowledge management practices. Null hypothesis H_{01} , i.e. There is no significant difference in Knowledge management practices in terms of the age of the companies is accepted.

Constructs	Age of the firm as IV	
	F	Sig.
KC	1.507	.207
KCr	1.578	.187
KS	.306	.873
KT	.187	.944

Table 6 : Results of ANOVA with age of the firm as Independent Variable

- H_{02} : There is no difference Knowledge management practices in terms of the size related factors (size, number of employees, annual turnover) of the respondent firms.

In India, firms are categorized as Micro, Small, Medium and Large enterprises based on their investments in plant and machinery. World Bank defined SMEs based on number of employees, assets and the annual turnover (Pandya, 2012). Number of employees working in the companies also stand as a measure to determine the size of the companies in many Asian countries, Cambodia, Malaysia, Indonesia, Philippines and Thailand (http://www.unescap.org/tid/publication/tipub2540_chap1.pdf), in Europe and in USA (Viral M. Pandya, 2012). In India the categorization is made only on the investment on plant and equipment. As annual turnover and number of employees of the firms also are related to determining the size of the firms, these factors are categorized as size related factors. Hypotheses H2a, H2b and H2b are formulated to verify the impact of size related factors on KM adoption in the respondent firms.

- H_{02a} . There is no significant difference in Knowledge management practices in terms of the size (based on the Ministry of Small And Medium Enterprise (MSMED Act, 2006), Government of India definition) of the companies

Ministry of MSME, Government of India, 2010 defined MSMEs based on investment in plant and machinery as follows:

- Micro enterprise should not exceed Rs. 25 lakhs
- Small enterprise more than Rs. 25 lakh but does not exceed Rs. 5 crore
- C. Medium enterprise more than Rs.5 crore but does not exceed Rs.10 crore

The results given in Table 7, show that three of the study constructs, knowledge capture, knowledge creation and knowledge storage differ significantly in terms of their size. The p values are 0.001, 0.002 and 0.018 respectively which is less than 0.05 and hence null hypothesis is rejected. It may be concluded that the size of the companies have a definite impact on the adoption of knowledge management practices. Closer observation of mean values for tiny, small, medium and large companies reveal that tiny companies hover between 2 and 3 which shows that knowledge management practices are not adopted to a significant extent. Small and medium enterprises have almost similar mean values between 3 and 3.5 whereas large companies have the mean value above 3.5.

Most of the knowledge management practices are not applicable to the tiny companies such as multi disciplinary teams, research and development, training, motivation etc., because the mobility of the employees is normally higher and the scope of their operations is very limited. Majority of the other two categories (Small And Medium Enterprises) are ancillary to large companies and has limited scope for adopting the knowledge management practices.

It should be noted that knowledge transfer do not differ significantly and null hypothesis is rejected as p value 0.312 which is greater than 0.05. Knowledge transfer is pivot for success in any organization. Irrespective of the size of the company, knowledge sharing happen continuously. In tiny and small companies, organizational structure is almost flat which facilitate knowledge transfer easily. In medium and large companies, training, networks, ICT (Information and communication technologies) infrastructure etc, aid knowledge transfer. Hence there is no significant difference between knowledge transfers (KT) among companies in terms of their size.

		Mean	Std. Deviation	F value	Sig.
Kc	Tiny	2.2000	.54092	6.433	.001**
	Small	3.2525	.68634		
	Medium	3.3796	.52469		
	large	3.6889	.72179		
Kcr	Tiny	1.6800	.94446	5.252	.002**
	Small	2.8864	.90312		
	Medium	3.1000	.86246		
	large	3.7200	.80747		
Ks	Tiny	2.4222	1.44743	3.518	.018**
	Small	3.7424	.89204		
	Medium	3.8251	.92114		
	large	3.8889	.71578		
kt	Tiny	3.1500	1.23870	1.205	.312
	Small	3.6766	.69850		
	Medium	3.5239	.64723		
	large	3.7750	.70378		

Table 7: Results of ANOVA with Size as Independent Variable

- H_{02b} . There is no difference Knowledge management practices with respect to annual turnover of the companies

Levene's test revealed that annual turnover of the company with dependent variables / study constructs, Knowledge storage and knowledge transfer violate the assumption on homogeneity of variances, ANOVA was not performed for either of the pairs. But annual turnover with the other two constructs are studied. The results show that annual turnover influence the extent of knowledge capture and knowledge creation practices. The ANOVA significant values are 0.047 and 0.000 which is less than 0.05 and hence the null hypothesis is rejected. Annual turnover of the companies may provide necessary infrastructure for adopting knowledge management practices.

- H_{02c} There is no significant difference in Knowledge management practices in terms of the number of employees working in the companies

As the results reveal there is no significant difference between practicing knowledge capture ($p = 0.086 > 0.05$) and knowledge storage ($p = 0.339 > 0.05$). This may be because knowledge capture or storage requires enablers such as management commitment, leadership, motivation, rewards, ICT adoption etc. But knowledge creation and knowledge transfer differ significantly in terms of number of employees. One should note here that both these dimensions need intellectual capital.

In fact, the mean values show that knowledge transfer dimension is 3.7 in companies having less than 50 employees and more than 150 employees. Lesser the number of employees, vertical structure in the organization, vanishes, facilitating knowledge transfer. More than 150 employees means the organization should either be large or medium, where the knowledge transfer happens systematically.

Null hypothesis H_{02c} is accepted in case of KC and KT whereas for KCr and KS it is rejected.

		Mean	Std. Deviation	F value	Sig.
komean	<50	3.2282	.78390	2.269	.086
	51-100	3.0625	.48850		
	101-150	3.1889	.57238		
	>150	3.5652	.56845		
kormean	<50	2.8000	1.01434	4.211	.008**
	51-100	2.9000	.59777		
	101-150	3.1300	.88799		
	>150	3.4174	.88403		
ksmean	<50	3.5706	1.09812	1.136	.339
	51-100	3.6889	.65627		
	101-150	3.6722	.89361		
	>150	4.0435	1.02753		
ktmean	<50	3.7804	.68046	5.471	.002**
	51-100	3.5750	.67612		
	101-150	3.0966	.57078		
	>150	3.7717	.74967		

Table 8: Results of ANOVA with number of employees as Independent Variable

- H_{03} There is no difference Knowledge management practices in terms of the markets related factors (markets served and customers served) of the respondent firms.

These two variables are considered for the analysis with the assumption that the requirements of industrial customers and individual customers vary and companies should have the ability to recognize the differing needs of the customers. Similarly the needs of the export markets are different from that of the domestic markets. KM will be a powerful tool to tackle the varying market conditions. Studies confirmed the influence of external environmental factors especially that of dynamic markets on the organizations' KM as significant (C.W. Holsapple, K.D. Joshi, 2000; van der Spek and Spijkervet, 1997). Also, the industry structure is related to markets (Deise et al., 2000) and the competitiveness of the firms is related to their market orientation (Ferraresi, 2012). Understanding and catering to the needs of customers enable them to provide higher value to their customers, which in turn lead to the retention of old and attraction of the new customers (Day, 1976).

- H_{03a} . There is no significant difference in Knowledge management practices in terms of the markets served (Export, domestic or both)

Hypothesis is tested using ANOVA and the results show that there is no significant difference between knowledge management practices in terms of their markets (domestic, export or both) except knowledge creation. Market orientation does not have any influence on adoption of knowledge management practices. Mean values are almost same and are between 3 and 4 for both the groups except on knowledge creation. It should be noted that none of the respondent companies are 100% export oriented.

Mean values of knowledge creation for the groups (domestic markets and both export and domestic markets) are 2.67 and 3.16 respectively. This may be because when the companies thrive to satisfy demands of customers other than from domestic markets, strive to survive in global environment which is highly dynamic and uncertain, the need to create new knowledge becomes crucial.

Constructs	Market orientation	Mean	Std. Deviation	F	Sig.
Kc	Domestic markets	3.1889	.77029	1.329	.252
	Export and domestic	3.3423	.57129		
Kcr	Domestic markets	2.6700	.96561	7.106	.009**
	Export and domestic	3.1613	.87053		
Ks	Domestic markets	3.5778	1.02275	1.508	.222
	Export and domestic	3.8179	.91827		
kt	Domestic markets	3.7469	.71583	3.457	.066
	Export and domestic	3.4841	.68814		

Table 9: Results of ANOVA with markets served as Independent Variable

- H3b There is no significant difference in knowledge management practices in terms of the companies’ customers (industrial or individual or both)

The results show that knowledge capture and knowledge transfer constructs differ significantly in in terms of their customers. But knowledge creation and storage, the null hypothesis is accepted and there is no significant difference.

Constructs	Customers as IV	
	F	Sig.
KC	3.812	.025**
KCr	1.277	.283
KS	1.798	.171
KT	3.315	.040**

Table 10: Results of ANOVA with customer type(B2B, B2C, both) as Independent Variable

- H04 There is no significant difference in knowledge management practices in terms of the companies’ nature of operations (Ancillary, subsidiary, has global operations or others)

Null hypothesis is rejected for KCr / KS / KT Vs nature of operations of the companies as the p values are less than 0.05. Those companies which have global operations practice knowledge management significantly. But mean values (between 2.6 and 3.1) of knowledge management dimensions for subsidiary companies show that KM is not adopted or practiced significantly. As they are bound to work for the parent company and so the free reign of creating new knowledge is not practically feasible. It should also be noted that there is no significant difference on knowledge capture construct with respect to the nature of operations.

		Mean	Std. Deviation	F Value	Sig.
kcrmean	has global operations	3.5556	.25514	1.650	.183
	Ancillary	3.2846	.68418		
	Subs idiary	2.6111	.86424		
	others	3.1407	.67386		
ksrmean	has global operations	3.6000	.65505	4.327	.007**
	Ancillary	2.8164	.92841		
	Subs idiary	2.0000	1.13137		
	others	3.3333	.84741		
ksrmean	has global operations	4.4722	.99958	3.631	.016**
	Ancillary	3.6867	.91764		
	Subs idiary	3.1111	1.09994		
	others	3.3778	.90345		
ktrmean	has global operations	4.0000	.47048	5.342	.002**
	Ancillary	3.6389	.69536		
	Subs idiary	3.1250	1.23744		
	others	3.0703	.60029		

Table 11: Results of ANOVA with nature of operations (Subsidiary, ancillary, global players) as Independent Variable

6. Discussion

The manufacturing companies participated in the survey differed significantly in various demographic attributes and products manufactured. But it could be concluded that the KM is practiced in all these companies from moderate to significant level even though these companies do not have a formal KM policy or KM officer for implementation. The extent of adoption varied based on their demographic profiles. One of the important characteristics of Small and Medium Enterprises is that their owner or management personnel are the knowledge source. Efforts to codification and storage is not given much attention. (Desouza, 2006). The informal culture in Small and Medium Enterprises facilitates knowledge transfer in the work environment. The results of this study ascertain that knowledge transfer is influenced by the number of employees and customers.

Size as defined by Ministry of Micro, small and medium enterprises, does not show any significant difference in adopting KM. Contrary to the study by Quaddus (2007) that there is no significant difference between the organizations in terms of their size, size based on investment, number of employees and annual turnover do have significant impact on few of the KM dimensions. Small And Medium Enterprises like the large organizations have focus on markets (McAdam and Reid, 2001). The study has taken market orientation (domestic markets / both export and domestic), customers (B2B/ B2C/ both) and nature of operations (ancillary/subsidiary) and found that based on the market there is no significant difference between large organizations and Small and Medium Enterprises. Summary of the results are shown in Table 12.

	Size			Age	Markets	customers	Nature of operations
	Based on investment	Based on number of employees	Based on annual turnover				
KC	✓		✓			✓	
KCr	✓	✓	✓		✓		✓
KT		✓				✓	✓
KS	✓						✓

Table 12: Summary of Results

Tick mark shows that significant difference exists.

It should be noted that interestingly, age does not have any influence on adoption to knowledge management. Tiny companies, subsidiary / ancillary companies, and companies those operate only in domestic markets have limited scope for KM practices as they have few selected customers and satisfy their demands. Medium and large companies practice KM moderately depending on their scale of operations.

7. Conclusion

Organizations, especially manufacturing companies, which are affected significantly by changes in the business environment should be aware of the benefits that could be derived by adopting KM. KM helps in increasing productivity and increased innovation by employees. It enhances the collaboration within the organization and within the industry. KM is crucial in addressing the communication gap in the organization. Hence the policy makers at the organizational, state and central level should conduct awareness programs to the companies and motivate them to adopt KM for betterment in all aspects.

8. References

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