TECHMIND RESEARCH
ISSN No. 2291-2118

International Journal of Research in Business and Technology
Volume 2 No. 3 June 2013

Effect of Demographic Variables on IT Enabled Knowledge Management: An Empirical Study of Pharmaceutical SMEs of North India

Dr. RITIKA
Assistant Professor, DAV College, Chandigarh.
ritika.er@gmail.com

Abstract-*The purpose of this study was to assess the relationship between the level of adoption of IT Enabled Knowledge Management Practices and the demographic variables like gender, age and qualification level. Following Descriptive analysis, Mann Whitney and Kruskal Wallis test, the study sourced its data from 80 Pharmaceutical SMEs of North India. IT Enabled Knowledge Management practices were measured using an instrument sourced from the existing literature.*
It has been found that there was statistically significant relationship between usage of IT enabled KM practices and gender, age and qualification of the respondents. Thus, according to these findings, demographic variables appear to be important determinants in implementation of IT enabled Knowledge Management practices in Pharmaceutical SMEs.

Keywords- *Knowledge; Knowledge Management (KM); Knowledge Management System (KMS); Information Technology; IT Tools; Small and Medium Enterprises (SMEs)*

1. INTRODUCTION

The advancement in Information Technology had created the opportunity for organizations to use information systems to collect, organize, and synthesize knowledge in a manner that creates competitive advantage. Information technology (IT) is widely employed to connect people with reusable codified knowledge and it facilitates conversations. It qualifies as a natural medium for knowledge flow. Knowledge Management's growth within organizations is closely aligned with the development of intranet, internet, emails and web technologies. Many organizations have employed information technologies, known as Knowledge Management systems (KMS) for managing organizational knowledge. These IT-based systems support and enhance the organizational processes of knowledge creation, storage, retrieval, transfer, distribution, application, indexing, categorizing, seeking related content and flexibly expressing the content based on the various utilization backgrounds (Safa, et al 2006, Cavana, et. al. 2001). Intranets and the internet are IT tools which allow communication by using applications like electronic mail, online discussions, and document management. Knowledge Management Portals and other Knowledge Management systems provide discussion boards for employee communication and collaboration. The various specialist software houses have developed complete Knowledge Management solutions and large software companies such as Microsoft and Lotus have marketed their groupware and Intranet products as supporting Knowledge Management Practices.

2. LITERATURE REVIEW

The applicability of Information technology in Knowledge Management implementation has been identified and proved by the researchers:
Agrawal[1] (2010) advocated thateffective Knowledge Management requires an appropriate combination of institutional, social and managerial initiatives along with deployment of appropriate technology. The study concluded that IT based Knowledge Management interventions increased opportunities for interdisciplinary research, provide updated information about new areas and fields of research, improved Practices based on research findings, enhanced networking with various organizations and improved corporate image. Knowledge Management principles along with Information Technology tools improved research results in commercialization and reduce turnaround time for research.
Crilly[2] (2010) stated that IT support and enhanced the organizational processes of knowledge creation, storage, retrieval and transfer by coding and sharing of best Practices, e.g. benchmarks; the creation of corporate knowledge directories, or mapping of internal expertise; and the creation of knowledge networks, e.g. online forums in specialist areas. Technologies that support the Knowledge Management Practices include knowledge directories e.g., yellow pages and knowledge networks e.g., electronic communities of practice, electronic knowledge repositories (EKRs), which store codified knowledge for future reuse including databases about

client and customers, industry best Practices and product knowledge.

Vaccaro[3] (2010) analyzed the impact of Knowledge Management tools (KMTs) on the performance of business units involved in inter-firm collaborative innovation projects. It developed and empirically tested a model where: 1) the use of KMTs was affected by critical organizational variables, and 2) KMTs can impact the innovation and financial performance of business units. The research found that a more intense use of KMTs has a direct positive effect on new product performance and speed to market, as well as on financial performance. They elaborated that in addition, tools can help employees in reducing time of transfer knowledge, achieving higher efficiency, quality and enhancing employees' participation.

Mathew[4] (2009) defined that Information technology played a crucial role in organizing, sharing, collaboration, categorizing, dissemination and storing of knowledge which can later be retrieved and accessible as meaningful across different contexts.

Matlay& Martin[5] (2009) examined through an illustrative longitudinal case study of a pan-European virtual team comprising of 24 E-Entrepreneur members and evaluated emergent collaborative and competitive strategies used in small e-Businesses. It reported that SMEs use internet to facilitate online knowledge-sharing in extensions of existing networks or entirely new 'virtual' initiatives.

Schneckenberg[6] (2009) discussed that IT Tools like Web 2.0 tools, in particular Wikis, Blogs, and Real Simple Syndication (RSS) enhance communication with the customers and suppliers on core business processes like product design and development and they encourage collaboration and knowledge exchange between employees.

Song[7] (2009) demonstrated in their research paper that IT infrastructure facilitates knowledge sharing, knowledge creation, knowledge storage and knowledge transfer through better internal communication flows. Andersson[8] (2009) highlighted in their conceptual framework, IT systems as one of the seven potential mechanisms to assimilate repatriate knowledge.

Sáenz[9] (2009) applied Structural Equation Modeling (SEM) based on partial least squares (PLS) and highlighted that information technology, employees and processes have a positive effect on knowledge sharing effectiveness. Technology intensity moderates the degree of relevance of each innovation capability in value creation.

Ahmad[10] (2009) used the qualitative approach by interviewing software industries. It concluded that information technology may served as a cost effective and fast mediumto acquire, store, share and transfer knowledge. Information technology played a role in leveraging knowledge in the company and helps to create new knowledge.

Guerra[11] (2009) used multilevel analysis on thirty-two participants among managers and employees from the eight international subsidiaries of the PROACT Group and discussed that IT systemwas a mechanism that through a intranet platform allow to different units transfer, access and adopt knowledge in a efficient way in terms of cost reduction, time saving, information storage and increasing networking.

Based on this, the following hypotheses were developed:

H1: Information Technology is an indispensable part of Knowledge Management Practices.

The respondents' demographic are an important factor in analyzing the adoption of IT Enabled Knowledge Management Practices. There were mixed responses of researchers on the effect of demographics factors such as gender, age and qualification on the adoption of IT tools in Knowledge Management Practices. Thus, to examined varying usage of IT tools with regard to demographic factors of the respondents the following hypotheses have been set.

$H2_{a:}$ There is no difference in usage of Internet among the males and the females with regard to Knowledge ManagementPractices.

$H2_{b:}$ There is no difference in usage of Intranet among the males and the females with regard to Knowledge Management Practices.

$H2_{c:}$ There is no difference in usage of KM Portals among the males and the females with regard to Knowledge Management Practices.

$H2_{d:}$ There is no difference in usage of DBMS/Knowledge Base System among the males and the females with regard to Knowledge Management Practices.

$H2_{e:}$ There is no difference in usage of Groupware among the males and the females with regard to Knowledge Management Practices.

$H2_{f:}$ There is no difference in usage of Data warehousing/mining among the males and the females with regard to Knowledge Management Practices.

$H2_{g:}$ There is no difference in usage of E-Document Management System among the males and the females with regard to Knowledge Management Practices.

$H2_{h:}$ There is no difference in usage of Dedicated KM software among the males and the females with regard to Knowledge Management Practices.

The following hypotheses have been set to examine the varying usage of IT tools among the different age group:

$H3_{a:}$ There is no difference in usage of Internet among different age groups with regard to Knowledge Management Practices.

$H3_{b:}$ There is no difference in usage of Intranet among different age groups with regard to Knowledge Management Practices.

$H3_c$: There is no difference in usage of Portals among different age groups with regard to Knowledge Management Practices.

$H3_d$: There is no difference in usage of DBMS/KBS among different age groups with regard to Knowledge Management Practices.

$H3_e$: There is no difference in usage of Groupware among different age groups with regard to Knowledge Management Practices.

$H3_f$: There is no difference in usage of Data warehousing/mining among different age groups with regard to Knowledge Management Practices.

$H3_g$: There is no difference in usage of E-Document Management System among different age groups with regard to Knowledge Management Practices.

$H3_h$: There is no difference in usage of Dedicated KM software among different age groups with regard to Knowledge Management Practices.

The following hypotheses have been set to examine the varying usage of IT tools among the respondents of different qualification:

$H4_a$: There is no difference in usage of Internet among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_b$: There is no difference in usage of Intranet among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_c$: There is no difference in usage of Portals among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_d$: There is no difference in usage of DBMS/KBS among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_e$: There is no difference in usage of Groupware among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_f$: There is no difference in usage of Data warehousing/mining among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_g$: There is no difference in usage of E-Document Management System among the respondents with different qualification with regard to Knowledge Management Practices.

$H4_h$: There is no difference in usage of Dedicated KM software among the respondents with different qualification with regard to Knowledge Management Practices.

3. RESEARCH METHODOLOGY

The study had been conducted by using both primary data which was collected through structured questionnaire. The primary data is supported by the secondary data collected from various research articles, company websites and annual reports, internet, magazines, newspapers and other publications.

100 pharmaceutical SMEs with successful Knowledge Management practices had been taken by a judgmental cum convenience sampling. Out of the 100 SMEs in our sample, 85 responses were received. Out of 85 responses, 5 responses were invalid as questionnaire was not complete. 80 responses were found to be usable. The response rate was 80%. The top level managers like Chief Executives, Chief Knowledge Officers (CKO), Chief Information Officers (CIO), HR executives and other management experts of the organization were contacted to get the questionnaire filled.

3.1. Research Instrument

The structured questionnaire was used for collecting primary data. The first part of the questionnaire asked the demographics of the respondents. The sample covered respondents of different gender, age and educational background.

The second part of questionnaire dealt with the applicability of IT tools for Knowledge Management implementation. The eight tools were selected from literature review that suited to the environment of SMEs. These were rated on five point Likert scale ranging from Very high (5) to Very low (1) (Table 1).

Table 1 Information Technology Tools used in Knowledge Management Practices

Label	Item	Sources
TO1	Intranet	Murat Sezgin[12] (2009),Patricia[11] (2009), Robertson (2009), Nie[13] et al. (2007), Ruikar[14] et al., (2007), Gooderham[15] (2007)
TO2	Internet	Matlay& Martin[5] (2009),Murat Sezgin[12] (2009), Saito[16] et al., (2007), Hsia[17] et al., (2006)
TO3	KM Portals	Priti Jain[19] (2009), Saito[16] (2007), Daghfous& Kah[18] (2006)
TO4	DBMS/KBS	Murat Sezgin[12] (2009), Agbeja and Fajemisin[20] (2008), Ruikar[14]et al., (2007),Hsia[17] et al., (2006)
TO5	Groupware	Janson[21] et al (2008), Cheah[22] (2007)
TO6	Data Warehouse/ Mining	Murat Sezgin[12] (2009),Nie[13] (2007),Ruikar[14] (2007), Hsia[17] et al., (2006)
TO7	E- Document Management System	Crilly[2] et al (2010), Murat Sezgin[12] (2009), Hsia[17] et al., (2006), Bernard[23] (2006)
TO8	Dedicated KM tools/ software	Omona[24](2010), Gurteen[25] (2008)

3.2 Normality of the Instrument

The Normality tests were used to determine whether the data resembles the normal distribution and suited for parametric or non-parametric tests. The Kolmogorov SmirnovTestandShapiro Wilk Test were used to determine the normalcy of the data. The results of theShapiro-Wilk test (**Table 2**) showed data for all the items in the study was not normally distributed (significance value < 0.05) and could be analyzed using non-parametric tests.

3.2. Reliability of the Instrument

The reliability test was carried out to determine the quality of the measurement items. Cronbach's Alpha method was used to assess the reliability of the instrument. The results showed that Cronbach's alpha of the construct equal t**o** 0.80 thatindicates satisfactory internal consistency reliability.

Table 2: Test of Normality on Items

Sr no	Item	Kolmogorov Smirnov[a]			Shapiro Wilk		
		Statistic	df	Sig	Statistic	df	Sig
1	TO1	0.255	250	0.000	0.804	250	0.000
2	TO2	0.307	250	0.000	0.753	250	0.000
3	TO3	0.179	250	0.000	0.912	250	0.000
4	TO4	0.182	250	0.000	0.908	250	0.000
5	TO5	0.188	250	0.000	0.906	250	0.000
6	TO6	0.188	250	0.000	0.912	250	0.000
7	TO7	0.188	250	0.000	0.864	250	0.000
8	TO8	0.206	250	0.000	0.849	250	0.000

4.FINDINGS OF THE STUDY

The descriptive statistics were used to identify the use of various IT tools in Knowledge Management implementation (Table 3).

The respondents from the Pharmaceutical SMEs (91.25%) used Internet relatively high. They used them for internal communications, searching for business information, and communication with customers and suppliers. Pharmaceutical SMEs used the search engines, intelligent database; electronic whiteboards and web houses for knowledge capturing. 48.75% of the respondents used the intranet for capturing, sharing, transferring and reusing the knowledge. The figure 1 represented that other tools were not much widely used by Pharmaceutical SMEs.

Table 3: Use of IT tools in Knowledge Management Practices

Label	Very Low (%)	Low (%)	Neutral (%)	High (%)	Very high (%)
TO1	-	-	41(51.25)	23(28.75)	16(20)
TO2	-	-	7(8.75)	34(42.5)	39(48.75)
TO3	-	18(22.5)	35(43.75)	20(25)	7(8.75)
TO4	-	18(22.5)	35(43.75)	20(25)	7(8.75)
TO5	3(3.75)	36(45)	32(40)	9(11.25)	-
TO6	1(1.25)	11(13.75)	34(42.5)	29(36.25)	5(6.25)
TO7	-	-	28(35)	25(31.25)	27(33.75)
TO8	3(3.75)	27(33.75)	41(51.25)	9(11.25)	-

Source: Field investigation (SPSS 16.0)

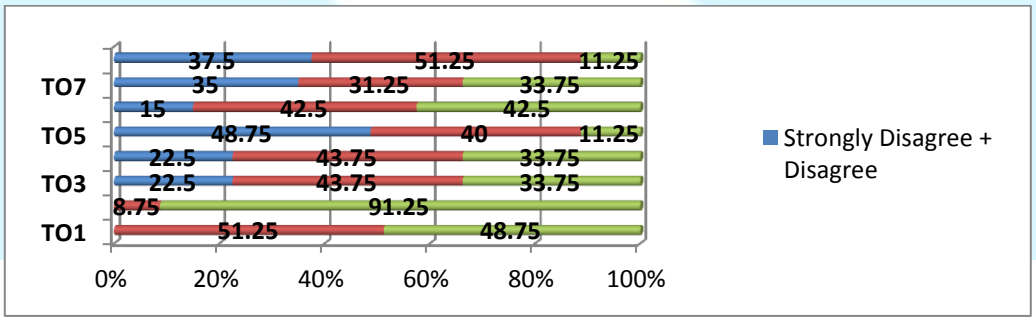

Figure 1: IT Tools Used in Knowledge Management Practices by Pharmaceutical SMEs
Source: Field investigation

4.1. Relationship between the usage of IT EnabledKM Practices and Gender

There were 65 male and 15 female respondents from the Pharmaceutical SMEs out of total 80 respondents. The percentage of males was 81% and females were 19%. The Mann-Whitney testwas conducted to assess whether there was difference in the perception of male and female group with regard to use of IT tools (Table 4 and 5).

From the table 5, it could be concluded that there were mixed responses of the male and female group's perception in the use of IT tools.

The Mann-Whitney testcoefficientof internet and intranet equals to 362.50 and 394.50 respectively. The *P* value suggested that median difference between the male and female group in use of these tools was not statistically significant (P_{internet} =0.09, P_{intranet} =0.21).Hence, $H2_a$ and$H2_b$ may be accepted in Pharmaceutical SMEs and there was no difference in usage of internet and intranet in Knowledge Management Practices by male and female group.

Further, the *U* =320.50 of KM Portal and DBMS/KBS was significant with $P_{\text{KM portal}}$=0.03 and $P_{\text{DBMS/KBS}}$=0.03 which show that there was difference between the male and female group's median. Thus, $H2_c$ and $H2_d$ was be rejected and there was difference in perception of male and female group with regard to use of KM portals and DBMS/KBS by in Pharmaceutical SMEs.

Table 4 Relationship between Usage of IT EnabledKM Practices and Gender

Label	Item	Gender	Mean Rank	Sum of Ranks
TO1	Intranet	**Male**	39.07	2539.5
		Female	46.70	700.5
TO2	Internet	**Male**	38.58	2507.5
		Female	48.83	732.5
TO3	KM portal	**Male**	37.93	2465.5
		Female	51.63	774.5
TO4	DBMS	**Male**	37.93	2465.5
		Female	51.63	774.5
TO5	Groupware	**Male**	41.22	2679.5
		Female	37.37	560.5
TO6	Data warehousing/mining	**Male**	41.17	2676
		Female	37.60	564
TO7	E-Document Management System	**Male**	38.82	2523
		Female	47.80	717
TO8	Dedicated KM software	**Male**	42.26	2747
		Female	32.87	493

Source: Field investigation (SPSS 16.0)

Table 5 Mann Whitney test

Label	Item	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
TO1	Intranet	394.50	2539.50	-1.26	0.21
TO2	Internet	362.50	2507.50	-1.72	0.09
TO3	KM portal	320.50	2465.50	-2.18	0.03
TO4	DBMS	320.50	2465.50	-2.18	0.03
TO5	Groupware	440.50	560.50	-0.63	0.53
TO6	Data warehousing/mining	444.00	564.00	-0.57	0.57
TO7	E-Document Mgmt System	378.00	2523.00	-1.43	0.15
TO8	Dedicated KM software	373.00	493.00	-1.55	0.12

a. Grouping Variable: Gender

The Mann Whitney coefficient value equals to 440.50 with $P_{\text{groupware}}$ = 0.53 revealed that there was no median difference in the male and female group with mean rank of 41.22 and 37.37. Therefore, $H2_e$ was accepted in Pharmaceutical SMEs.

The results of Mann Whitney test narrated that there was no difference in the perception of male and female respondents with regard to usage of data-warehousing, E-documentation and Dedicated KM tools getting $P>.05$ ($P_{\text{Data-warehousing}}=0.57$, $P_{\text{E-documentation}} = 0.15$ and $P_{\text{Dedicated KM tools}} =0.12$). Hence $H2_f$, $H2_g$ and $H2_h$ were accepted with context to Pharmaceutical SMEs.

It has been found that the both the gender equally use Internet, Intranet, groupware, Data warehousing/mining, E-Document Management System and Dedicated KM software in knowledge capturing, sharing, transferring, storing and reuse but there was difference in the use of KM portals and DBMS/KBS techniques by them in Pharmaceutical SMEs.

4.2. Relationship between Usage of IT EnabledKM Practices and Age

The age of respondents had been classified into three levels i.e. 25-45 years, 45-65 years and Above 65 yrs. Out of the total 80 respondents, 54% of the respondents were of age level 45-65 years.21% of the respondents were above 65 years and only 25% lies between the age level of 25-45 years . It was evident that more significant prominence was in the 45-65 years level.

Kruskal Wallis test was used to ascertain whether there was any significant difference among different age levels with regard to use of IT tools for Knowledge Management Practices.

The result of Kruskal Wallis test (Table 6) reported that there was statistically significant median difference between the different age group with regard to intranet, internet, KM portals, DBMS/KBS and E-Document Management System getting ($P < 0.05$). The young people more actively used IT tools as compared to old people.

The Kruskal Wallis coefficient H (2) of internet equals to 22.24 was significant ($P_{\text{internet}} =0.00$) with a mean rank of 59.18 for 25-45 years, 32.67 for 45-65 years and 38.32 for above 65 years. Therefore, $H3_a$ may be rejected in Pharmaceutical SMEs and there was difference in perception of different age groups in usage of internet in Knowledge Management Practices.

Table 6 Relationship Between Usage of IT EnabledKM Practices and Age of the Respondents

Label	Item	Mean Rank			Chi-Square	Asymp. Sig.
		25-45 yrs	45-65 yrs	Above 65 yrs		
TO1	Intranet	59.28	35.30	31.56	21.26	0.00
TO2	Internet	59.18	32.67	38.32	22.24	0.00
TO3	KM portal	52.58	39.70	28.32	11.39	0.00
TO4	DBMS	52.58	39.70	28.32	11.39	0.00
TO5	Groupware	36.85	43.34	37.62	1.65	0.44
TO6	Data warehousing/ mining	40.70	39.67	42.35	0.19	0.91
TO7	E-Document Mgt System	53.90	39.02	28.47	12.81	0.00
TO8	Dedicated KM software	39.60	41.05	40.18	0.07	0.97

Source: Field investigation (SPSS 16.0)

The intranet Kruskal Wallis coefficient (H (2) = 21.26) was also statistically significant getting $P<.05$ ($P_{\text{Intranet}} =.00$) which meant there was significant difference in perception of different age groups in usage of Intranet. Thus, $H3_b$ was be rejected in Pharmaceutical SMEs.

Further, the results suggested that coefficient of KM portal and DBMS (H (2) = 3.132) was significant with $P =0.00$ which means there was significant difference in perception of different age groups with regard to usage of KM portal and DBMS by different age group. Also the difference between the group median of E-Document Management System was significant getting $P_{\text{E-Doc}}=.000$. Thus, $H3_c$, $H3_d$ and $H3_g$ were be rejected in Pharmaceutical SMEs

The groupware, Data warehousing/ mining techniques and Dedicated KM software have Kruskal coefficient equals to 1.65, 0.19 and 0.07 with $P_{\text{groupware}} =0.44$, $P_{\text{Data warehousing/ mining}} =0.91$ and $P_{\text{Dedicated KM software}} =0.97$. These value reports that there was no difference in perception of different age groups in their usage and hence $H3_e$, $H3_f$ and $H3_h$ were accepted in Pharmaceutical SMEs (Table 7).

Table 7 narrated that there was significant median difference between the different age group with regard to use of intranet, internet, KM portals, DBMS/KBS and E-Document Management System. Thus $H3_a$, $H3_b$, $H3_c$, $H3_d$, $H3_g$ were rejected in Pharmaceutical SMEs. There was difference in the use of these IT tools in KM Practices by the people of different age groups. However, there was no significant median difference between the different age group with regard to use of groupware, Data warehousing/ mining techniques and Dedicated KM software and $H3_e$, $H3_f$ and $H3_{h\ were}$ accepted.

Table 7 Relationship between Usage of IT EnabledKM Practices and Qualification of the Respondents

Label	Item	Mean Rank			Chi-Square	Asymp. Sig.
		Graduates	Post Graduates	Professional		
TO1	Intranet	44.23	39.56	39.93	0.48	0.78
TO2	Internet	42.58	48.67	34.31	7.78	0.02
TO3	KM portal	44.54	41.78	38.33	0.93	0.63
TO4	DBMS	44.54	41.78	38.33	0.93	0.63
TO5	Groupware	44.08	35.93	42.43	1.93	0.38
TO6	Data warehousing/ mining	29.15	40.59	44.13	4.67	0.10
TO7	E-Document Mgmt System	34.73	48.57	36.93	5.64	0.06
TO8	Dedicated KM software	43.23	36.96	42.00	1.18	0.56

4.3. Relationship between Usage of IT EnabledKM Practices and Qualification

They respondents were divided into three categories on the basic of their qualifications i.e. graduates, post graduate and professionally qualified. The significant percentage was formed by professionally qualified (50%) followed by postgraduates (34%), and thirdly by graduates (16%).

Kruskal-Wallis H Test (Table 7)was used to ascertain whether there was any significant difference among the respondents with different qualification in the usage of IT Enabled KM Practices.

The result of Kruskal-Wallis Test reported no statistically significant median difference between the different education levels in usage of IT tools ($P > 0.05$) except the 'internet'.

The results revealed that Kruskal-Wallis coefficient of Internet (H (2) = 7.78) was statistically significant (P_{Internet} =0.02) with a mean rank of 42.58 for graduates, 48.67 for post graduates and 34.31 for professionally qualified people. In this case, $H4_{a\ \text{was}}$ rejected at significant value in Pharmaceutical SMEs and there was difference in usage of internet in Knowledge Management Practices by people with different qualifications.

The H (2) = 0.48 of Intranet with P_{Intranet} = 0.78 suggested no significant median difference among graduates, post graduates and professionally qualified peoplewith a meanrank of 44.23, 39.56 and 39.93 respectively in usage of Intranet. Thus, $H4_b$ wasaccepted and there was no difference in usage of Intranet in Knowledge Management Practices by respondents with different qualifications in Pharmaceutical SMEs.

The results suggested that Kruskal-Wallis coefficient equal to 0.93 of KM portal and DBMS/KBS was not significant (P =0.63) which narrated no significant difference in usage of KM portal and DBMS/KBS by graduates, post graduates and professionally qualified people with a mean rank of 44.58, 41.78, and 38.33 respectively. Thus, $H4_c$ and$H4_d$ were also accepted and there was no difference in usage of KM portal DBMS/KBS in Knowledge Management Practices by them in Pharmaceutical SMEs.

The groupware coefficient of Kruskal-Wallis (1.93) with P equal to 0.38 suggested no difference between their usage by respondents with different degrees and hence Hypothesis $H4_e$ was accepted in Pharmaceutical SMEs. The Data warehousing/ mining techniques had coefficient of 4.67 at P =0.10 with mean rank of 29.15, 40.59, 44.13 of graduates, post graduates and professionally qualified people. These values reported that there was no difference in their usage and hence $H4_f$ were accepted in Pharmaceutical SMEs.

The value of Kruskal-Wallis coefficient (5.64) of E-documentation Management System at significant value (P =0.06) depicted that the median difference was not statistically significantand Hypotheses $H4_g$ may be accepted in Pharmaceutical SMEs. The coefficient (1.18) at P = 0.56 of Dedicated KM tools depicted that there was no difference in the usage of this tool by different qualified people. The mean ranks of three groups were 43.23, 36.96 and 42.00respectively and hence $H4_h$ was accepted in Pharmaceutical SMEs.

The significant values of all the items except Internet were more than .05 which revealed that the hypotheses $H4_b$ to $H4_h$ with regard to qualification were accepted in context of Pharmaceutical SMEs. There was difference in usage of internet in the Knowledge Management Practices by respondents of all the education levels and $H4_a$ was rejected.

5. CONCLUSION

In Pharmaceutical SMEs, Information technology facilitated the processes of capturing, categorizing, storing, and retrieving knowledge and ideas in the organization. These tools increase the accuracy and speed of classifying knowledge, enhance the visibility of knowledge, provide systematic storage and quickly found documents and people in the organization who have specific knowledge. IT tools facilitated communications regardless of time and place and reduced the risks of not finding key knowledge.

The Internet was widely used by Pharmaceutical SMEs for Knowledge Management Practices and to remove barriers

in knowledge flow. They used them for internal communications, searching for business information, and communication with customers and suppliers. Pharmaceutical SMEs used the search engines, intelligent database; electronic whiteboards and web houses for knowledge capturing. They also used the intranet for capturing, sharing, transferring and reusing the knowledge. However the tools like KM portals, DBMS/KBS, groupware technologies, e-documentation system and dedicated KM software were not much used by Pharmaceutical SMEs.

It was found in the study that, both the gender equally use Internet, Intranet, groupware, Data warehousing/mining, E-Document Management System and Dedicated KM software for knowledge capturing, sharing, transferring, storing and reuse but there was difference in the use of KM portals and DBMS/KBS techniques by Pharmaceutical SMEs. Further, it was depicted that there was difference in the use of Intranet, Internet, KM portals, DBMS/KBS and E-Document Management System in Knowledge Management Practices by the people of different age groups. However, there was no difference in the perception of different age group with regard to use of groupware, Data warehousing/ mining techniques and Dedicated KM software.

There was no difference in perception of people with different qualification in the use of intranet, KM portals, DBMS/KBS, Groupware, E-Document Management System, Data warehousing/ mining techniques and Dedicated KM software in Knowledge Management Practices. However, there was difference in usage of internet in the Knowledge Management Practices by respondents of all the education levels.

REFERENCES

[1] Sanjay Agrawal et al (2010), IT based Knowledge Management framework for improving research and development process in technical education, *Journal of Engineering, Science and Management Education*, 2, 17-22.

[2] Crilly T, Jashapara A, Ewan Ferlie (2010), Research Utilisation& Knowledge Mobilisation: A Scoping Review of the Literature.Report for the National Institute for Health Research Service Delivery and Organization programme July 2010.

[3] Vaccaro A., R. Parente, and F. M. Veloso (2010), Knowledge management Tools, Inter-organizational Relationships, Innovation and Firm Performance. Technological Forecasting and Social Change, 77(7), 1076-1089.

[4] Mathew, V. (2009), Virtual Knowledge sharing and collaborative learning in organization, First Virtual Conference on Business Management 2009(VCOBAM 2009), ISSN 1793-9992, 1(1).

[5] Matlay, H. & Martin, L.M. (2009), Collaborative and competitive strategies in virtual teams of e-entrepreneurs: a pan-European perspective, *Australasian Journal of Information Systems*. 16(1), 99-115.

[6] Schneckenberg, D. (2009), Web 2.0 and the empowerment of the knowledge worker, *Journal of Knowledge Management*, 13 (6).

[7] Song, D. (2009), The tacit knowledge-sharing strategy analysis in the project work, *International Business Research*, 2(1), 83-85.

[8] Andersson, R. and Hermansson, F. (2009), Assimilation of repatriate knowledge: a study of Knowledge Management in 39 Large Cap companies, Master Thesis, Uppsala University.

[9] Sáenz, N. Aramburu, and O. Rivera (2009), Knowledge sharing and innovation performance A comparison between high-tech and lowtech companies, *Journal of Intellectual Capital*, 10(1), 22-36.

[10] Ahmad, Arshad and Khan, Hashim (2009), The Importance of Knowledge Management Practices in Overcoming the Global Software Engineering Challenges in Requirements Understanding, Master Thesis in Software Engineering, School of Engineering, Blekinge Institute of Technology, Sweden.

[11] Patricia Guerra (2009), How to improve the knowledge sharing within a MNC: The case of PROACT GROUP,Master Thesis in International Management, Department of Business Studies Uppsala University.

[12] Murat Sezgin (2009), Big Challenge: Understanding Knowledge management, *European and Mediterranean Conference on Information Systems 2009*July 13-14 2009,

[13] Nie K., Ma T and Nakamori Y. (2007), Building a Taxonomy to Understanding Knowledge Management, *The Electronic Journal of Knowledge Management*, 5(4).

[14] Ruikar K., Anumba and Egbu C. (2007), Integrated use of technologies and techniques for construction Knowledge Management, *Knowledge Management Research & Practice*, 5(1).

[15] Gooderham, P.N. (2007), Enhancing knowledge transfer in multinational corporations: a dynamic capabilities driven model, *Knowledge Management Research & Practice*, 5, 34-43

[16] Andre Saito, Katsuhiro Umemoto, Mitsuru Ikeda, (2007), A strategy-based ontology of knowledge management technologies, *Journal of Knowledge Management*, 11 (1), 97 – 114.

[17] Hsia T., Lin L., Wu J and Tsai H. (2006), A Framework for Designing Nursing Knowledge Management Systems, *Interdisciplinary Journal*

of Information, Knowledge, and Management, 1, 13-23.

[18] Daghfous A and Kah M. M. O. (2006), Knowledge Management Implementation in SMEs: A Framework and a Case Illustration, *Journal of Information & Knowledge Management*, 5(2), 107–115.

[19] Priti Jain (2009),Knowledge Management System in Government, *Journal of Knowledge Management Practice*, 10(4).

[20] Agbeja O. and Fajemisin D. O (2008), Knowledge Management: Strategy for Corporate Survival and Sustainable Global Development, *Journal of Knowledge Management Practice*, 9(2).

[21] Janson, M., Brown, A. &Cecez-Kecmanovic, D. (2008), *Strategies for Interweaving Groupware and Organizational Structure*, http://csrc.lse.ac.uk

[22] Cheah Yu-N, (2007), Enhancing Groupware for Knowledge Management, Fifth International Conference on Information Technology in Asia (CITA 2007)

[23] Bernard, J.G. (2006), A Typology of Knowledge Management System Use by Teams,Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS'06) Track 7, p. 155a.

[24] Omona, W et al (2010), Using ICT to enhance Knowledge Management in higher education: Aconceptual framework and research agenda, *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2010, 6(4),83-101

Author's Biography

Dr Ritika is working as Assistant professor in DAV College Chandigarh. She has done her PhD from Panjab University Chandigarh. She had total 8 years of experience in teaching. She has published 20 research papers in various journals, national and international conferences. She is guiding the research scholars form various universities and handling various research projects. Her areas of interest are knowledge management, IT and marketing.