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Literature Review Process: Measuring the Effective Usage of Knowledge Management Systems in Customer Support Organizations

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A B S T R A C T

Customer support organizations cannot be successful without a knowledge management system. The customer support world will come to a standstill without these wonderful knowledge management systems. Hence knowledge management systems are backbone to any customer support organizations.In order for the customer support to function smoothly, the relationship with knowledge management systems should be mutual.Therefore, measuring the effective usage of knowledge system is necessary to understand their demand in customer support organizations. This study aims to conduct a literature review processas a starting point to understand the variables associated with knowledge management system. This process is necessary to conduct the actual research. Initial idea of the research problem and conceptual framework is discussed in introduction section. Detailed literature review for sixteen research papers is explained in review of literature. This section starts with each independent variable and its corresponding research paper. Each research's literature review process is explained as research problem (what, so what, because why, goal), data collection and analysis, results, conclusions, supporting studies, limitations, implications, and impact. Finally, it is explained how the problem was revisited. Future research is to implement this research idea with the proposed methodology.

Keywords:Knowledge management system, Customer support, Literature review

1. Introduction

Research Problem

The purpose of this study is to understand why employees are not using the knowledge management systems effectively. Only a few research studies have been conducted to find the critical factors related to the success or failure of the sustained use of knowledge management systems after implementation (Oyefolahan & Dominic, 2013). Previous research studies conducted by the researchers have no relevant information regarding knowledge management system utilization in customer support organizations. This study will help to analyze the usage of knowledge management systems based on the stress levels of the employees (Massingham, 2018), a search engine built within the knowledge management system (Karlinsky-Shichor & Zviran, 2016), user experience of using the knowledge management system (Elmorshidy, 2017) and so on. A knowledge management system is an excellent source of a knowledge base repository, which is elegantly built to help all employees (from managers, business analysts, developers, and quality assurance personnel) to integrate and share knowledge (James, Gandhi, & Deshmukh, 2017). A knowledge management system not utilized properly would decrease staff performance, user satisfaction, quality of service, innovation, and many more (Elmorshidy, 2017). A lot of money and time is spent on building the knowledge management application, but not utilizing the application to its full benefit is going to cause the organization a major hardship (Oyefolahan & Dominic, 2013; Pandey, Dutta, & Nayak, 2018). If employees continue this practice, it will annihilate the usage and acceptance of the knowledge management system gradually (Ghasemi & Valmohammadi, 2018).

As knowledge management systems form a critical part of the organization, it is very important for knowledge management officials to create, update, or modify the knowledge content based on the employee's feedback, suggestions, and inputs which will help to maintain the quality of the

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knowledge base (Oyefolahan & Dominic, 2013). While there are measurement tools developed to measure the knowledge management system implementation in the oil industry (Ghasemi & Valmohammadi, 2018), a tool to measure knowledge management system utilization has not been found. The research methodology, sampling, and survey questions from a study conducted by Elmorshidy (2017) will be replicated. Although the survey questions for this study are derived from Elmorshidy (2017), few changes are necessary as the questions are specific to the knowledge management system in customer support organizations. According to Pandey, Dutta, and Nayak, (2018), "knowledge is increasingly considered as a strategic asset, and success of a company is highly dependent upon its ability to make use of that knowledge". Taghizadeh, Rahman, and Hossain, (2018) discuss an interesting term called customer knowledge management (CKM). They emphasize the use of knowledge for the customers in their research study. The proposed research has a major contribution to knowledge management in customer support organizations because knowledge is a powerful asset for support organizations as well. This knowledge if well utilized will help in user productivity and performance (Oyefolahan & Dominic, 2013). Additionally, this research study directly or indirectly contributes to information systems as there is a nexus between knowledge management and information system in any organization.

Research Questions

Research questions are below:

RQ1. How does design (Elmorshidy, 2017) knowledge management system impact its usability?

RQ2. Does employee stress level (Massingham, 2018) have an effect on knowledge management system use?

RQ3. How does knowledge management system search engine (Karlinsky-Shichor & Zviran, 2016; Pandey, Dutta, & Nayak, 2018) affect its use?

RQ4. Does the quality of the content (Oyefolahan & Dominic, 2013) in the knowledge base article matter in using the knowledge management system?

Hypothesis (es) are:

H0: The stress level of the employees has no impact on usage of the knowledge management system.

H1: The stress level of the employees has a major impact on usage of the knowledge management system.

H2: There is no relationship between the design and usage of the knowledge management system.

H3: There is no relationship between the quality of a search engine and the usage of the knowledge management system.

H4: There is no relationship between the training level of an employee and the usage of the knowledge management system.

H5: There is no relationship between the quality of the knowledge base articles and usage of the knowledge management system.

The initial conceptual framework is as shown in figure below.

Independent Variable   Dependent Variable
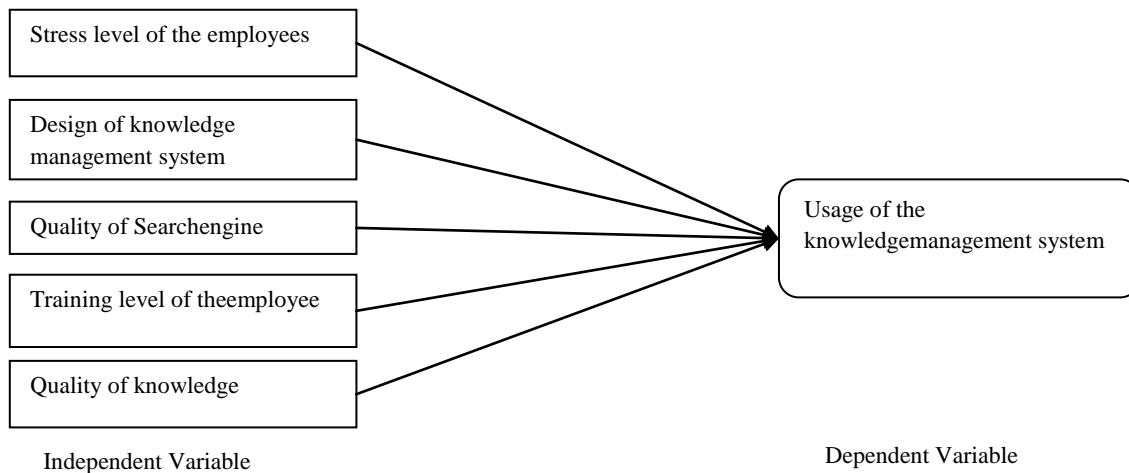
Initial Concept for Solving the Problem

A quantitative approach research tradition will be used to study this research problem. The relevant population for this study will be six customer support companies using a knowledge management system. The sample for this research study will be 600 employees from six companies who are using this knowledge management system. A simple random sampling method will be used because each team member or employee of the organization has an equal and independent chance of being selected to be included in the sample, and the results of the study would be most generalized(Sprague-Jones et al., 2020). This sampling method is used since the importance of using the knowledge management system must be conveyed to the company's employees. The main expectation of this research study is to gather detailed information from employees on how they get to use knowledge management applications in day-to-day activities. In addition to this, the way they use their knowledge management applications is considered as well(Jonnalagadda et al., 2022). The goal of this research is to identify if knowledge management is used efficiently, is the training given effectively to handle knowledge management procedures, are there any other factors such as stress affecting the usage of the knowledge management system, and are there any new ways to be considered to implement the knowledge management application so that it is used efficiently? The survey results of this study will give an opportunity for the higher authority or manager's team to access their own expectations in increasing the usage of the knowledge management system(Sarmiento et al., 2020).

This study will be conducted as a non-contrived field study with no interference using the same natural environment (the employee's workplace) in which the subjects normally function(Brown et al., 2019). A survey is used as the instrument for this research study. The survey will be sent via an online web

application because it is more effective, and user response is received quickly(Singh et al., 2022). A set of questions relevant to this study such as knowledge management and topics related to usage of the knowledge management system is compiled. The survey questions are a combination of open-ended, closed-ended, rating scale, Likert scale, multiple choice, and demographic questions. This survey's web link will be sent to the official email addresses of the employees. According to a study by Ghasemi and Valmohammadi (2018) reminder letters were sent to the managers to complete the survey in fifteen days, similarly in this study reminder emails will follow until the employees complete the survey. For content validity, a survey window is set from the start and end dates are specified, questions answered during this period are accepted, rejected, or blocked from answering(Reddy et al., 2022). If required, the external validation is performed(Reddy et al., 2022b). This might include statistical tools such as SPSS for exploratory factor analysis to study the dependent and independent variables (Elmorshidy, 2017). The data is eventually cleaned, loaded, and corrected so that statistical analysis can be performed. Initially, the basic measurements such as mean, median, mode, standard deviation, and variance are collected. Using the basic measurements standard error will be determined. Regression analysis is performed, and plots are generated. Using these plots and regression analysis various statistical models which are fit for this study are calculated (Rodriguez et al., 2012). Data collected will be technical, day to day, personal, temperamental, interpersonal, and cognitive that are web-based questionnaires using user-friendly interface ranging from 5 to 25 number of questions(Kwon et al., 2021). Questions may include various levels of stress the employees go through while working on tasks related to the knowledge management applications which tests individuals' ways of using the knowledge management application and to what extent knowledge management plays an important role in handling these issues. For example, did the quality of the knowledge base help the employee solve the tasks or is the search engine used in the knowledge management application helpful in solving the customer related problems?

2. Review of Literature

Introduction of Annotated Bibliography

The four topics identified to establish the viability for measuring the effective use of knowledge management systems (KMS) are quality of knowledge, psychological factors, search and sharing . Exploring into the literature in connection with the research problem stated led in detecting of diverse research studies which helped to hypothesize four constructs that are quality of knowledge (Ghasemi & Valmohammadi, 2018), psychological factors (Karlinsky-Shichor & Zviran, 2016), search (Stocker, Richter, Kaiser, & Softic, 2015) and sharing . Intelligent organizations focus on information and quality (Ghasemi & Valmohammadi, 2018). Quality of knowledge refers to information quality, system quality and service quality (Elmorshidy, 2017). Search behavior is an important aspect considered in this research study as search acts as a mediator between knowledge content and user. Hence search functionality in knowledge management systems helps facilitate user requests and satisfaction. Psychological factors such as users' motivation, users' perceptions, attitudes and commitment affect system productivity, effectiveness and innovation capabilities (Karlinsky-Shichor & Zviran, 2016). Satisfying psychological needs and technological factors of a user helps in effective utilization of KMS. Loss of knowledge assets when knowledgeable employees exit the organization will affect the employees in not using the system effectively due to lack of knowledge sharing from experienced users (Chen, Baptista Nunes, Ragsdell, & An 2018). Although the quality of knowledge, psychological factors, search and sharing directly or indirectly affect an organizations performance, effectiveness, productivity or innovation capability, they have a significant impact on the design, implementation, and utilization of knowledge management system. A company's success is mainly dependent on utilizing the knowledge available, knowledge process capabilities, culture, structure, technology, infrastructure, quick search and retrieval (Pandey, Dutta, & Nayak, 2018).

Annotated Bibliography

Quality of Knowledge

Taghizadeh, S. K., Rahman, S. A., & Hossain, M. M. (2018). Knowledge from customer, for   customer or about customer: Which triggers innovation capability the most? Journal of   Knowledge Management, 22(1), 162–182.

Research Problem

What: The main problem identified in this research study is utilizing customer knowledge as part of the business process for the benefit of the firm's innovation activities. Finding different ways to involve customers for the innovation process is a major concern. Although previous studies have explained the relationship between customer knowledge management (CKM), business process and innovation, the dimensions of customer knowledge management (CKM) and innovation have not been explored distinctly.

So What: Impact of the problem in on companies or service industries new market performance.

Because Why: There is no specific theory mentioned in this study. However, researchers have asserted the importance of customer knowledge management (CKM), customer-centric approach and the use of customer's knowledge for the innovation process.

Goal: To explore:

- The relationship between the new service market performance and innovation capability
- How innovation speed and innovation capability influence new service market performance
- The three dimensions of customer knowledge management (CKM) knowledge from the customer, knowledge for customer and knowledge about customer
- The relationship between the knowledge base and innovation based on speed and quality
- Research Methodology: A quantitative research methodology was used in this research study.

Data Collection and Analysis: Purposive sampling (judgment sampling) was used. The participants were 253 bank managers from 26 Bangladesh banks. The authors received 48.56 response rate. Structured survey questions were used for collecting the data. The measurement and structural model were analyzed with the help of structural equation modeling (SEM) software called SmartPLS. The results for convergent validity, discriminant validity, and structural model demonstrated that the instrument used was reliable and a good fit for this study.

Hypothesis (es) in this research study are:

H1. Knowledge from customer has a direct and positive effect on new service market performance.

H2. Knowledge for customer has a direct and positive effect on new service market performance.

H3. Knowledge about customer has a direct and positive effect on new service market performance.

H4. Knowledge from customer has a direct and positive effect on innovation quality.

H5. Knowledge from customer has a direct and positive effect on innovation speed.

H6. Knowledge for customer has a direct and positive effect on innovation quality.

H7. Knowledge for customer has a direct and positive effect on innovation speed.

H8. Knowledge about customer has a direct and positive effect on innovation quality.

H9. Knowledge about customer has a direct and positive effect on innovation speed.

Results: The convergent validity results showed standardized root mean square residual (SRMR) value of 0.069 which is a good fit for the model. The discriminant validity analysis indicated that the variables (innovation quality, innovation speed, knowledge about the customer, knowledge for the customer, knowledge from the customer, new service market performance) measured were discriminant. Hypothesis (es) H1, H2, and H3 were accepted as knowledge about the customer, knowledge for customer and knowledge from the customer has a significant co-relation with new service market performance. Similarly, there was a positive correlation between knowledge about the customer, knowledge for the customer, knowledge from customer and innovation quality. Hence, the hypothesis (es) H3, H4, H5, H6, H7, H8, and H9 were accepted. Finally, detailed analysis of statistical results portrays that knowledge for customer and knowledge from the customer is the strong predictor for the relationship between customer knowledge management and new service market. Whereas knowledge about customer falls short in comparison to knowledge for customer and knowledge from the customer.

Conclusions: Although the knowledge about the customer in comparison to knowledge for customer and knowledge from the customer was not a good predictor for new service market performance, there was a direct impact of these three dimensions of customer knowledge management on new service market performance. This study revealed an indirect impact and relationship of customer knowledge on innovation quality and speed. Finally, it was learned that the good mediator for customer knowledge management and new service market was innovation quality.

Supporting Studies:

- Taherparvar, N., Esmaeilpour, R. & Dostar, M. (2014), "Customer knowledge management, innovation capability and business performance: A case study of the banking industry", Journal of Knowledge Management, 18(3), 591-610.
- Cui, A.S. & Wu, F. (2016), "Utilizing customer knowledge in innovation: Antecedents and impact of customer involvement on new product performance", Journal of the Academy of Marketing Science, 44(4), 516-538.

Limitations: The research study was confined to one geographical area that is Bangladesh. The banking industry was selected for sampling. A cross-sectional study was conducted instead the authors recommend a longitudinal approach in future research for drawing causal conclusions. Future research suggested was to explore Asia versus non-Asia geographical regions, different service sectors such as hospitality, financial institutions, aviation, shipping, telecommunications, educational and health. As this research is confined to quantitative research, qualitative or mixed-method analysis can be used for future research. There was no detailed information regarding the questions asked.

Implications: This study indirectly emphasizes the importance of the quality of knowledge to be acquired from or for or about the customers for innovation quality, which helps in new service market performance. As the research paper explored the importance of customer knowledge to develop high-quality, innovative products and services, this information will help in future research to explore the relationship between the quality of the knowledge base and its usage in customer support organizations.

Impact: Brings understanding regarding the co-relation between customer knowledge, customer knowledge management, innovation quality, innovation speed, and new service market performance.

Ghasemi, B., & Valmohammadi, C. (2018). Developing a measurement instrument of knowledge management implementation in the Iranian oil industry. Kybernetes, 47(10), 1874-1905.

Research Problem

What: Previous research studies conducted have not identified or well defined the critical success factors (CSF) of knowledge management implementation.

SoWhat: Chances of knowledge annihilation if the organizations do not concentrate on the process of the globalization to develop and grow knowledge.

Because Why: No specific theory mentioned. Previous studies have claimed that recognizing the critical success factors (CSF) of knowledge management can play an important role in measuring knowledge management implementation in organizations and improving their competitive advantage.

Goal: To develop an instrument to measure knowledge management implementation in the Iranian oil industry. To detect a comprehensive set of factors prompting the implementation of KM.

Research Methodology:

- Applied research
- Descriptive-exploratory research methodology
- Survey research

Data Collection and Analysis:

- Top managers of the subsidiaries of Iranian oil industry used for statistical analysis.
- Using Cochran sample size formula 1386 sample size was chosen. Stratified random sampling was conducted for the research population.
- To collect data and information library and field methods were used to collect theoretical and structural questions.
- 1,800 questionnaires were dispersed via email and postal mail among.

- Questions related to demographic characteristics, with questions such as gender, age, education, and work experience. 190 questions related to critical success factors (CSF) of knowledge management implementation.

Research questions:
- What are the CSFs of KM implementation in the Iranian oil industry?
- How is the effectiveness of each of the CSFs in the Iranian oil industry?
- How is the assessment of KM implementation in each of the subsidiaries of the Iranian oil industry?

Results: According to the obtained results, the 13 identified and confirmed critical success factors (CSF) of KM implementation, namely, human resource management (HRM), knowledge management process (KMP), information technology (IT), business strategy (BS), intellectual capital (IC), knowledge management system (KMS), EPKM, management information system (MIS), culture, PCBP, KM roadmap (KMRM), Leadership commitment and support (LCS) and organizational environment (OE).The results indicate that HRM is considered one of the most effective CSFs because HRM has the highest explained variance than other CSFs.

Conclusions: An instrument to measure the KM implementation can contribute to policymakers and top managers of the Iranian oil industry in this regard.

Supporting Studies:
- Holsapple, C.W. & Jones, K.G. (2007), "Knowledge chain activity classes: Impacts on competitiveness and the importance of technology support", International Journal of Knowledge Management, 3(3), 26-45.
- Valmohammadi, C. & Ahmadi, M. (2015), "The impact of KM practices on organizational performance: A balanced scorecard approach", Journal of Enterprise Information Management, 28(1), 131-159.

Limitations:
- Geographical location confined to Iran
- Critical success factors (CSF) prioritization was not mentioned

Implications: Future research mentioned by the authors are
- Multiple attribute decision- making (MADM) techniques to be used to measure the critical success factors (CSF)
- Study the relationship between the critical success factors (CSF)
- Conduct the study in organizations other than the oil industry

The key aspect derived from this study for future research is the quality of KMS should be measured based on accuracy, appropriateness, upgrade, reliability and ease of access. Here ease of access discussed will be used for future research to measure the effective usage of KMS. Another useful key variable is knowledge transfer based on speed, reliability, and accuracy.

Impact: Thirteen critical success factors for KM implementation were discovered which is useful for KMS designers in KM domain.

Elmorshidy, A. (2017). The impact of knowledge management systems on innovation: Anempirical investigation in Kuwait. VINE Journal of Information and KnowledgeManagement Systems, 48(3), 388-403.

Research Problem

What: There are various researches conducted separately for knowledge management and innovation, previous researches conducted lacked in finding the correlation between knowledge management and innovation in organizations.

SoWhat: For organizations to sustain a competitive advantage both knowledge management and innovation form the critical sources.

Because Why: Dual factor theory and planned behavior.

Goal: Inspect and corroborate the effect of Knowledge Management Systems (KMS) on innovation.

Research Methodology:
- Quantitative research methodology
- Structural equation modeling

Data Collection and Analysis: Geographical location in Kuwait. Data was collected from 392 employees from both public and private organizations. 67.9 percent males and 32.1 percent females. Participants were 19 years and above. 500 survey questions. 68% response rate. Data were collected by self-administered questionnaire. Data analyzed using structural equation modeling.

Hypothesis (es) are:

H1: Information quality of KMS has a positive effect on the perceived usefulness of KMS

H2: Information quality of KMS has a positive effect on perceived ease of KMS

H3: System quality of KMS has a positive effect on the perceived usefulness of KMS

H4: System quality of KMS has a positive effect on perceived ease of KMS

H5: Service quality of KMS has a positive effect on the perceived usefulness of KMS

H6: Service quality of KMS has a positive effect on perceived ease of KMS

H7: Perceived ease of use of KMS has a positive effect of perceived usefulness of KMS

H8: Perceived ease of use of KMS has a positive effect on attitude towards using KMS

H9: Perceived usefulness of KMS has a positive effect on attitude towards using KMS

H10: Perceived usefulness of KMS has a positive effect on behavioral intention to use KMS

H11: Attitude towards using KMS has a positive effect on behavioral intention to use KMS

H12: Behavioral intention to use KMS has a positive effect on the actual use of KMS

H13: The actual use of KMS has a positive effect on the net benefits introduced to the user of KMS

Results: Hypothesis (es) H1 to H13 were accepted.

- Perceived ease of use of KMS has a positive effect on perceived usefulness by the users
- Perceived ease of use of KMS has a positive effect on attitude towards using KMS
- Perceived usefulness of KMS has a positive impact on attitude towards using the system
- Perceived usefulness of KMS has a significant positive effect on behavior intention to use this system
- Attitude towards using KMS has a significant positive impact on behavioral intention to use this system
- Behavioral intention to use KMS has a positive effect on the actual use of KMS
- The actual use of KMS has a positive effect on the net benefits introduced to the user of the system

Conclusions:

Information quality and service quality of KMS have a positive effect on the perceived usefulness and perceived ease of use of the system

Perceived utilization of the system has a positive effect on the actual use of KMS

Use of KMS helps in increased innovation for employees who use the KMS

The study conducted also revealed that the use of KMS:

- Helped improve the employees work
- Come up with new ways to perform the work
- Discover new solutions for the problems
- Less time to complete complex tasks
- Improved communication within employees

Supporting Studies:

- Wu, W., Yu, B, & Spender, J. (2015), "Domains and opportunities in knowledge and aerospace management in China: An integrative perspective", Chinese Management Studies, Bradford, 9(4), 473-481.
- Girniene, I (2013), "Knowledge Management Influence on Innovation: Theoretical Analysis of Organizational Factors", European Conference on Knowledge Management; Kidmore, 877-885.

Limitations:

- Limited sample size and geographical location
- Cross-data instead of longitudinal data
- Quantitative research instead of both qualitative and quantitative

Implications:

- Utilization of the system was also based on information quality, system quality, and service quality, this data will be helpful for future research (to measure effective usage of KMS)
- Helpful for KMS designers to focus on the success factors discussed in this study to implement the better design of KMS
- KMS developers can gain useful information to build responsive knowledge management systems as the study showed positive co-relation between usefulness, ease of use and attitude towards using KMS

Impact: For KM domain this study helps in providing the best way KMS can enable extraction, use, and share of knowledge by the end users and the impact on innovation and success.

Karlinsky-Shichor, Y., & Zviran, M. (2016). Factors influencing perceived benefits and user satisfaction in knowledge management systems. Information Systems Management, 33(1), 55–73.

Research Problem

What: IT companies unnecessarily invest in cutting-edge technologies to increase business performance. Even after these huge investments on these technologies the IT companies underperform compared to other companies.

So What: Achieving strategic goals, improving decision making processes and competing for customers is possible with good technology such as KM tools. Inaccurate or irrelevant information of endless data is processed by information technology which is unmanageable. Because Why: Previous research studies examined that the socio-psychological factors such as users' motivation, users' perceptions, attitudes, and commitment play an important role in determining IT performance and system effectiveness. System quality, information quality, and service quality of an information system are the three quality dimensions affecting use behavior and user satisfaction. KM tools help in solving the unmanageable data with sophisticated technical methods such as text analysis, search and querying for sharing knowledge and collaborating.

Goal: Examine knowledge management systems (KMS), special types of information systems that support and enhance knowledge processes and examines user satisfaction and perceived benefits from using these systems. Propose a model for predicting users' perceived benefits and user satisfaction in organizational knowledge management systems

Research Methodology: Authors did not specify methodology type in the study. In the methodology section, it clearly indicates it is a quantitative research methodology.

Data Collection and Analysis:

Two types of online questionnaires

- For KMS users
- For KM manager or IT managers
- Previous studies survey measure was incorporated with a new measure for system quality variable.
- Selected ten Israeli hi-tech companies or Israeli branches of international companies

- Total of 100 sample size. 66 males and 34 females
- Knowledge-intensive software industry

Hypothesis (es) are:

H1: Systems linkages will be positively related to the perceived benefits of using KMS.

H2: Systems linkages will be positively related to users' satisfaction from KMS.

H3: Knowledge quality will be positively related to the perceived benefits of using KMS.

H4: Knowledge quality will be positively related to users' satisfaction from KMS.

H5: User IS Competence will be positively related to the perceived benefits of using KMS.

H6: Organizational attitude to KM will be positively related to users' perceived benefits from KMS.

H7: Organizational attitude to KM will be positively related to users' satisfaction from KMS.

H8: Technical resources will be positively related to the perceived benefits of using KMS.

H9: Technical resources will be positively related to users' satisfaction from KMS.

H10: KM level will be positively related to the perceived benefits of using KMS.

H11: KM level will be positively related to users' satisfaction from KMS.

H12: The perceived benefits of using KMS will be positively related to user satisfaction from KMS.

Results:

Exceptionally high correlation between knowledge quality and user satisfaction

- H1, H8, and H10 were not supported. No co-relation between system quality and perceived benefits of the system
- H2, H8, and H11 partially supported as there was significant relation for KM level (search and retrieval, manipulation, and abstraction) but no effect for technical resources and system linkages
- H3 and H4 were accepted as the results showed the higher the knowledge quality the more satisfied the user is
- H5, H6, and H7 were not supported. There was no effect of organizational attitude on perceived benefits and user satisfaction
- H12 was rejected as there was no relationship between perceived benefits and user satisfaction

Conclusions:

- IS model requires tweaking when applying it to KMS
- Unique characteristics of knowledge for its quality, mainly relating to linkages and context
- Knowledge is of value only if it is produced in the right context, time and fits the query made
- Acquisition, retention, maintenance and search and retrieval are functions facilitating effective KM
- Linkages should be related to at the systems level and not only at the knowledge level
- For the high quality of the knowledge, the systems should be interrelated and communicate among themselves
- The new measure introduced showed a significantly high effect on user satisfaction

Supporting Studies:

- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9 – 30.
- Malhotra, Y. (2005). Integrating knowledge management technologies in organizational business processes: Getting real-time enterprises to deliver real business performance. Journal of Knowledge Management, 9(1), 7 – 28.

Limitations: The research was conducted with a sample size of respondents from a limited pool of Israeli High-Tech companies.

Implications: From this research study knowledge level, system linkages, knowledge quality, search, minimizing search query organizational attitude, self-efficacy (user attitude to learning and use the system) will be used for future research to measure effective usage of KMS. Both user questionnaire and knowledge management survey questionnaire will be replicated.

Impact: Constructs explored in this research study are KM level (search and retrieval, manipulation, and abstraction), system quality (technical resources, KM level and system linkages), user satisfaction factors of KMS, intention to use the KMS, knowledge quality, user competence, organizational attitude to knowledge management, which help in designing and implementing effective KMS for better utilization. This is an added benefit to KM domain.

Psychological Factors

Oyefolahan, I. O., & Dominic, P. D. D. (2013). Knowledge management systems use and competency development among knowledge workers: The role of socio-technical antecedents in developing the autonomous motivation to use. VINE Journal of Information and Knowledge Management Systems, 43(4), 482–500.

Research Problem

What: The main problem that motivated for this research is only a few research studies have been conducted to find the critical factors related to the failure of post-KMS implementation. The gap mainly lies in cultural values and individual behavior among the organization members and KMS usage.

SoWhat: These few studies came up with technical factors such as system and knowledge qualities for the failure of KMS implementations. Instead, the important aspect KMS utilization is never considered as driving force for successful and sustained KMS.

Because Why: Theory discussed in this research study is self-determination theory (SDT) and organismic integration theory (OIT). Costly investments are dedicated to implementing the KMS and not properly utilizing the system leads to major failure in KMS sustenance.

Goal: The goal of the research study is to examine the relationship between socio-technical factors which are integral to the organizational practices and knowledge management systems (KMS) which will lead to development in autonomous motivation for KMS usage. This KMS usage will help in actual utilization and competency development as an impact of KMS utilization among knowledge workers.

Research Methodology: A quantitative research methodology was used in this research study.

Data Collection and Analysis: Total of 600 questions were distributed to 600 respondents with KMS experience. The participants were executive MBA students of the best four business schools in Malaysia. Only 306 responses were received. Respondents details are as follows 63.9 percent female, 54.6 percent 5 years work experience, 25.5 percent 6 to 10 years work experience,13.4 percent 11 to 15 years of work experience, 9.5 percent senior managers, 27.5 percent middle managers, 32.4 percent supervisors, 12.1 percent clerical executives, 18.6 percent technical executives, 17 percent of work in service industries, 15.7 percent software or IT industry, 15.4 percent manufacturing , 14.7 percent banking and finance, 14.7 percent education sectors, 39.2 percent work in organizations with more than 500 employees, 37.9 percent who work in organizations with 100 employees, 22.9 percent work in organizations with employee number ranging between 100 and 500. Seven points Likert scale ranging from 1=strongly disagree and 7=strongly agree, was used to measure all constructs. A four-item scale for measuring system's ease of use, user friendliness, stability and fastness in response to queries. Three-item scale to measure knowledge richness quality. Three-item scale to measure linkage quality of KMS. A three-item scale to measure innovativeness. Five-item scale used for measuring autonomous motivation. Four-item scale to measure KMS use for explicit and tacit knowledge sharing.

The data collected were analyzed using structural equation modeling approach with AMOS software.

Hypotheses in this research study are:

- H1. The degree of system quality in KMS will be positively related with the development of autonomous motivation to use the systems.
- H2. The degree of knowledge content quality in KMS will significantly influence the development of autonomous motivation towards the use of the systems.
- H3. The degree of linkage quality of KMS will be significantly related to the development of autonomous motivation to use the systems.
- H4. The existence of an innovative cultural value in an organization will be positively related to the development of autonomous motivation to use KMS by knowledge workers.
- H5. The degree of autonomous motivation to use KMS among knowledge workers will be significantly related to the actual use of KMS.
- H6. The degree of autonomous motivation to use KMS among knowledge workers will be significantly related to their development of competency.
- H7. The utilization of KMS will positively influence the development of competencies among users of the systems.

Results: Confirmatory factor analysis (CFA) which assesses the measurement model: fit indices of the measurement model ($\chi2/df=2.839$, RMR=0.061, CFI=0.916, TLI=0.902, RMSEA=0.078) indicated an adequate fit of the model to the data based on the acceptable cut off values. Variance extracted for convergence validity satisfies the cut off value of 0.5 and composite cut off value at 0.7. The shared variance of discriminant validity was less compared to variance extracted. Results of collinearity test between autonomous motivation to use and KMS utilization reveals that both the variables tolerance and variable inflation factor (VIF) satisfy the discriminant condition which helps in performing further analysis. Structural model assessment has an acceptable model fit data with values as $\chi2/df=2.894$, RMR=0.083, CFI=0.912, TLI=0.899, RMSEA=0.079. Modified model has an adequate model fit data $\chi2/df=2.812$, RMR=0.063, CFI=0.916, TLI=0.904, RMSEA=0.077. All hypotheses except H2 ($\beta=-0.02$, t-value=−0.16) were supported because the relationship between knowledge content quality and autonomous motivation to use ($\beta=-0.02$, t-value=−0.16) was not significant. H1, H3, and H4 were supported because system quality ($\beta=0.18$, t-value=1.69), linkage quality ($\beta=0.43$, t-value=3.75) and the existence of innovative norm ($\beta=0.16$, t-value=2.45) all demonstrated the significant influence on autonomous motivation to use KMS. $R2$-value for autonomous motivation to use was 0.43. H5 and H6 results were autonomous motivation to use ($\beta=0.75$, t-value=10.20) and KMS utilization as well as the relationship between autonomous motivation to use ($\beta=0.20$, t-value=1.89) showing a significant correlation between these variables and competency development. Similarly, H7 showed values for KMS utilization ($\beta=0.36$, t-value=3.50) and competency development. KMS usage was substantially high based on the $R2$ value was 72 percent for KMS utilization. Independent variables such as autonomous motivation to use, system quality, linkage quality of KMS and innovative norm and practices in the organization had significant positive influences, only knowledge content quality was not significant. The results indicate that employees will be committed to the sustained use of the KM systems by developing autonomous motivation towards the systems, therefore KM managers should concentrate more in developing the user's autonomous motivation along with competency development.

Conclusions: The authors claim their research study to be the first to establish the link among socio-technical antecedents, autonomous motivation to use, KMS use and development of competency among knowledge workers. Although successful implementation of KMS is required they are no specific rules or factors on how these systems should be utilized. Satisfying psychological needs and technological factors of a user helps in effective utilization of KMS. To distribute tacit knowledge across the organization for better motivation, competency, and autonomy this study proposed different approaches for designing KMS. The major contribution for knowledge base comes from individual motivation, special incentive, periodic knowledge exercise, and experts are required to motivate individuals. Innovative norm or practice as the socio-psychological driver of good knowledge exchange practices across the organization. Organizations can consider the measures of "competency development" used in this research study to learn the impacts of their KMS implemented.

Supporting Studies:

- Malhotra, Y. , Galletta, D.F. and Kirsch, L.J. (2008), "How endogenous motivations influence user intentions: Beyond the dichotomy of extrinsic and intrinsic user motivations", Journal of Management Information Systems, 25(1), 267-299.
- Lai, J.‑.Y. , Wang, C.‑.T. and Chou, C.‑.Y. (2009), "How knowledge map fit and personalization affect success of KMS in high-tech firms", Technovation, 29(4), 313-324.

Limitations: The research was conducted only in Malaysia and was confined to the top four MBA institutions in this country and all being executive MBA students. This study was limited to individual responses and only 306 replies were received out of 600 no details were provided about the individuals who did not reply. There could be a chance that the individuals who did not reply could have provided more useful information. Another limitation of this research paper was the main cause proposed for autonomous motivation to use KMS were technical factors and one organizational factor. Only competency development was given attention to the individual impact of KM usage.

Implications: Future research can be conducted in different countries other than Malaysia, covering different cultural backgrounds. Respondents were mainly from executive MBA students, other groups such as global call centers, health care sectors, technical support engineers can be included in future research. Other factors such as individual differences such as gender, age, experience level, organizational factors such as firm size, industry type, collaboration and structure in addition to KMS factors were proposed for future research. In addition to these exploring impacts such as knowledge process improvement and organizational innovative capability as other non-financial impacts were suggested. Finally, the authors proposed for longitudinal research approach to explore the causal effects among the constructs of the model.

Impact: Significant impact for the knowledge management domain is seen as this research study helps in giving more importance to KMS utilization rather than just implementing it. In the current market scenario, there are hundreds of companies which spend a huge amount of money and time to develop a KMS (here time spent can go to an extent of six years or even more). After the KMS is ready to use it does not even sustain in the market for even two years, this clearly indicates that utilization of KMS plays a pivotal role in successful knowledge management systems. As autonomous motivation for KMS usage was the main factor discussed in this research study, will this behavioral aspect still hold good for the future generation? Because future generation is more into an automated robotic lifestyle with tasks to be performed in one click. How will their mindset help in the autonomous motivation of KMS? Should or Will there be a change in the design and implementation of KMS to meet future generation needs?

Massingham, P. R. (2018). Measuring the impact of knowledge loss: A longitudinal study. Journal of Knowledge Management, 22(4), 721–758.

Research Problem

What: Problem is organizational knowledge loss. Previous studies dearth measurement constructs and substantial empirical evidence to find the root cause of knowledge loss.

So What: Emergence of organization knowledge loss poses a major risk in the corporate culture. Risk includes a reduced capacity to innovate, threatened the ability to pursue growth, decreased capacity for low-cost strategies caused by reduced efficiency, giving competitors an advantage, increased vulnerability. The impact is a decrease in specialized knowledge, unique experience and competitive position and increase in mistakes and risk of catastrophic events.

Because Why: Intellectual capital theory and strategic management theory examine the knowledge as object loss or lost capability. Knowledge loss causes decreased psychological contract, lost organizational memory, inefficiency and ineffectiveness and declining capability.

Goal: To explore the means to measure the impact of knowledge loss when employees exit the company.

Research Methodology: Single case study methodology. Five-year longitudinal study.

Data Collection and Analysis: Used critical realism for research paradigm to collect data and analyze. Three annual surveys covering the five concepts of the study. Sperate interactive discussion with CSO senior management for six months. One day a week at the site over a five-year period to build rapport with participants. 118 respondents, mainly engineering and technical workers from Australian Government Department participated. 150 respondents were invited to participate in the study. 79 percent participation rate.

Research questions are:

- How can knowledge management deliver practical outcomes for the CSO?
- Does employee turnover cause knowledge loss?
- How does knowledge loss change the organization's knowledge resources?
- How does knowledge loss change psychological contract?
- Whether employees were happy with their job and with management?
- How does knowledge loss change learning organization capability?
- How does knowledge loss change the organization's perception of risk and capacity to fill the gap necessary to manage risk?
- How are organizational problems affected by knowledge loss?

Results: All the research questions proposed proved successful. Withdrawals, decay, deposits, and growth are the employee turnover factors for knowledge loss. Regarding knowledge resources knowledge deficit continues even after the addition of new employees. With respect to psychological contract knowledge loss had a negative effect on employees' anxiety, stress, heavier employee workloads, work attitudes, and behaviors which leads to disrupted social networks. Knowledge loss had a negative effect on strategy (lack of awareness of knowledge management and its solutions), capability (decreased productivity and increased mistakes), and on change (less innovation and inefficiencies). Knowledge loss caused significant risk management problems. CSO senior management was unsuccessful in avoiding knowledge loss due to organizational problems

Conclusions: Compared to previous research studies this study explored in detail about decreased productivity, morale and performance. Five measurement concepts (knowledge resources, psychological contract, learning organization capacity, risk management, and organizational problems) was used to measure knowledge loss. Learning organization capacity did not have a negative impact on knowledge loss. Proper knowledge management practices such as respond to change (purpose), learn from experience (enablers) and grow resources can overcome knowledge loss. Three main impacts of knowledge loss understood in this research are organizational problems (morale, capability gaps, stakeholders unhappy with performance, inexperienced employees, customers mistrust, learning the cost and increased search cycle time), risk management and decreased knowledge resources.

Supporting Studies:

- Massingham, P. (2010), "Knowledge risk management: A framework", Journal of Knowledge Management, 14(3), 464-485.
- Holan, P.M. & Phillips, N. (2004), "Remembrance of things past? The dynamics of organizational forgetting", Management Science, 50(11), 1603-1613.

Limitations: Research confined to a single case study and public sector organization. Geographical location is only Australia. Complex model with theoretical concepts and scales.

Implications: Explore this study in other sectors of the industries with different geographical location. To test the validity of the scales to understand the interaction of the proposed variables. This study interestingly explores the psychological contract such as anxiety, stress heavier employee workloads, work attitudes, and behaviors which will be used to examine the effect of KMS utilization in future research.

Impact: With respect to KM domain, knowledge loss is a very important aspect to be considered.

Khan, M. K., Danish, R. Q., Munir, Y., Hafeez, S., Alam, N., & Fatima, A. (2013). Association   of stress, knowledge management, and change with organizational effectiveness in   education sector of Pakistan. South Asian Studies, 28(2), 295-306.

Research Problem

What: Rigid structure of organizations in Pakistan cannot easily adapt to the organizational change and hence fail to implement knowledge management practices for organizational effectiveness.

So What: If workplace stress is not recognized by the managers then the potential employees' capability will not be utilized appropriately which leads to lowering the utilization of knowledge management, the overall organizational performance and lowering organizational effectiveness.

Because Why: No theory specified in this study.

Goal: To analyze the impact of organizational stress on knowledge management, organizational change, and organizational effectiveness.

Research Methodology: A quantitative research methodology.

Data Collection and Analysis: Demographic and subjective questionnaires were distributed. Stratified nonprobability random sampling technique was used. Reliability of the variables was tested using Cronbach's alpha measurement. Administrative staff and faculty members of different educational institutes of Pakistan. 100 questionnaires were distributed in public and private educational institutes. Total of 75 questionnaires was sent. The response rate was 75%. To study the relationship between organizational stress, knowledge management, organizational change and organizational effectiveness Pearson's moment correlation and linear regression was used.

Hypothesis (es) are:

- H1: Knowledge Management is significantly and positively associated with Organizational Effectiveness.
- H2: Organizational Stress is significantly and positively associated with Organizational Effectiveness.
- H3: Organizational Change is significantly and positively associated with Organizational Effectiveness.

Results: The mean value out of 4 for organizational stress is 3.56, knowledge management is 3.35, organizational change is 3.35 and organizational effectiveness is 3.61, which shows the positive response of respondents. There was a strong correlation between the variables organizational stress, knowledge management, organizational change, and organizational effectiveness. To test the normality of data and the nature of correlation Durbin-Watson is analyzed. Linear regression analysis for studying the relationship between the variables. 69.6% variation seen in organizational stress, knowledge management, organizational change, and organizational effectiveness. ANOVA results accept the impact of organizational stress, knowledge management, and organizational change on organizational effectiveness based on the "P" value less than 0.5. Linear equation showed that one percent organizational stress will bring 6.4% change in organizational effectiveness.

Conclusions: Helps managers and employees working for an organization to pay more attention to the factors affecting organizational effectiveness so that they can bring change to the organization. Organizations should concentrate more on stress management and the necessity of knowledge management.

Supporting Studies:

- Papadimitriou, D. (2007). Conceptualizing effectiveness in a non-profit organizational environment. International Journal of Public Sector, 571-587.
- Treven, S., & Potocan, V. (2005). Training programs for stress management in small businesses. Education þ Training, 640-652.

Limitations: Limited geographical selection as the study conducted was only in Pakistan. Only educational sectors were considered.

Implications: Future research suggestions were to include comprehensive research, large population size, longitudinal data, and statistical tools. Workplace stress factors such as excessive workload, isolation, extensive work hours, tensed work environments, lack of autonomy, difficult associations between co-worker and management, management bullying, harassment and lack of opportunities or motivation to improvement in one's skill level will be considered from this study for measuring the effective usage of knowledge management systems.

Impact: Offers awareness of the effect of workplace stress on organizations using knowledge management systems.

Kord, H., Damani, F., &Parvaresh, A. (2015). The study of occupational stress and its relationship with knowledge management based on HSE model. Creative Education, 6(12), 1416-1427.

ResearchProblem

What: Mental occupational stress is one of the most common and inflated workplace problems. Previous studies explored occupational stress and knowledge management separately, hence the correlation between these two variables was not explored.

SoWhat: Mental occupational stress impacts decision making, planning, communicating using effective practices, individual performance and productivity. Employee's stress affects other co-workers which undermines their abilities.

BecauseWhy: The authors mention the problem was supported by a strong theory but no specific name of the theory was stated. Previous studies examined stress was more visible in knowledge workers, stress management increased knowledge and perceived self-efficacy of participants.

Goal: To inspect the relationship between knowledge management and stress.

ResearchMethodology: A quantitative research methodology. Descriptive survey method.

DataCollectionandAnalysis: Geographical location selected was Zahedan University of Medical Sciences. Population sample was 190 individuals out of 376 faculty members. Morgan's table used to select the sample size. This study was conducted using a descriptive survey method. To collect data, two questionnaires one for knowledge management survey and another for occupational stress questionnaire developed were used. Reliability coefficients

were 0.89 and 0.78 for these questionnaires. SPSS software version 18 was used to analyze the data. Kolmogorov-Smirnov test was used to determine the distribution of the sample. Pearson's correlation to investigate the relationship between knowledge management and stress.

Hypothesis (es) are:

- H0: There is a significant and positive relationship between knowledge management and stress (mental occupational pressure) in faculty members of Zahedan University of Medical Sciences.
- H1: There is a significant positive relationship between knowledge management and demands in faculty members of Zahedan University of Medical Sciences.
- H2: There is a significant positive relationship between knowledge management and control in faculty members of Zahedan University of Medical Sciences.
- H3: There is a significant positive relationship between knowledge management and managerial support in faculty members of Zahedan University of Medical Sciences.
- H4: There is a significant positive relationship between knowledge management and relationship in faculty members of Zahedan University of Medical Sciences.
- H5: There is a significant positive relationship between knowledge management and changes in faculty members of Zahedan University of Medical Sciences.

Results: Enhancing knowledge management increased stress, hence there was a significant positive correlation between knowledge management and stress. Hypothesis (es) H0 to H5 was accepted. When knowledge management increases, demands increases as well.

Conclusions: The study determined the kind of correlation between knowledge management and stress (mental occupational stress). Examined the relationship between every single stressor (mental occupational stress) and knowledge management. Proposed appropriate strategies to properly manage two variables of knowledge and stress.

SupportingStudies:

- Bushy, A., Stanton, M., & Freeman, H. (2004). The effects of a stress management program on knowledge and perceived self-efficacy among participants from a faith community: A pilot study. Online Journal of Rural Nursing and Health Care, 4, 52-60.
- Najafi, A. (2011). Knowledge workers productivity and stress management in the Irancell company. Australian Journal of Basic and Applied Sciences, 5, 1412-1417.

Limitations: Limited sample population. Confined to only one geographical location Iran, only one medical university was considered.

Implications: This study discusses the mental occupational stress and its impact on KMS. Similarly, this stress factor variable will be considered for future research to identify the factors influencing the effective usage of KMS.

Impact: Offers awareness of occupational stress, knowledge centered organizations, mental pressure, stress management, knowledge management and their impact on KMS.

Search Behavior

Wang, Y., Guo, B., & Yin, Y. (2017). Open innovation search in manufacturing firms: The role   of organizational slack and absorptive capacity. Journal of Knowledge Management,21(3), 656-674.

Research Problem

What: Variations of open innovation search not only exists in high-tech and large enterprises, it prevails in low-tech or small- and medium-sized enterprises as well. Previous studies that have examined only the performance effect of open search among high-tech and large enterprises. Similarly, previous research studies show conflicting findings in the relationship between organizational slack and a firm's open innovation search behavior.

So What: Impacts in identifying and obtaining external knowledge in a better way, fast-track the firm's motivation to dedicate slack resources to external knowledge search or open innovation search.

Because Why: Behavioral theory explains the problem is present relating to knowledge search behavior.

Goal: To explore organizational factors that act as antecedents of open innovation search. Examine whether the level at which the organizational slack is absorbed determines its impact on firms' openness in innovation search.

Research Methodology: Empirical methodology was used.

Data Collection and Analysis: Research sample selected was manufacturing firms publicly traded in the USA. archival data was gathered from sources such as NBER, Compustat, and US census. US patent records from NBER, financial data of Compustat provided by Standard & Poor's and industrial data from US Census of Manufacturers. The three-digit North America Industry Classification System (NAICS) code helped to identify manufacturing firms in Compustat. Dataset of 298 manufacturers was used to construct a ten-year balanced panel. To explore the determinants of open innovation search among manufacturing firms generalized least square method was used.

Hypothesis (es) are:

- H1. A firm's absorbed slack negatively influences its openness in knowledge search.
- H2. A firm's unabsorbed slack positively influences its openness in knowledge search.
- H3. Along with the increase in firms' absorptive capacity, the relationship between absorbed slack and openness in knowledge search will be less negative.
- H4. Along with the increase in firms' absorptive capacity, the relationship between unabsorbed slack and openness in knowledge search will be more positive.

Results: Modest and acceptable discriminant validity between the variables was observed based on correlation coefficients. The results of this study reveal that the absorption level of organizational slack determines the openness in innovation search. A firm's openness in innovation search is negatively

affected by absorbed slack. Open innovation search is promoted by unabsorbed slack. The increase of absorptive capacity showed a less negative impact on absorbed slack and open innovation search.

Conclusions: The authors explored complex linkages between organizational slack, absorptive capacity, and open innovation search. The absorption degree of organizational slack significantly affects a firm's openness in knowledge search based on longitudinal archival data extracted from manufacturers who publicly traded in the USA. Higher levels of openness in knowledge search was due to unabsorbed slack. On the other hand, structural constraints for open innovation search was observed due to absorbed slack. Stronger the absorptive capacity the lesser the impact on firm's open innovation search by absorbed slack. Firms need to incorporate a good rapport between different forms of organizational slack for superior open innovation search

Supporting Studies:

- Guo, B. and Wang, Y. (2014). "Environmental turbulence, absorptive capacity and external knowledge search among Chinese SMEs", Chinese Management Studies, 8(2), 258-272.
- Guo, B., Wang, Y., Xie, X.-Y. and Shou, Y. (2015). "Search more deeply or search more broadly? An empirical study of external knowledge search strategy in manufacturing SMEs", Asian Journal of Technology Innovation, 23(1), 87-106.

Limitations: Research confined to the USA. Use of only patent data from firms. Every patent citation information gathered necessarily might not represent knowledge flow.

Implications: Authors suggest exploring knowledge flows outside the patent system. The study explored absorbed and unabsorbed organizational slack's impact on a firm's open search strategy, which helped to find the relationship of the knowledge search behavior in more detail. Another interesting information gathered from this study is knowledge flow based on the patent citation. Knowledge search behavior information from this study will be used for the future study to measure effective usage of KMS.

Impact: Offers awareness on absorptive capacity, open innovation, organizational slack, open search strategy, knowledge search behavior and advantage of knowledge flows to accelerate innovation.

Stocker, A., Richter, A., Kaiser, C., & Softic, S. (2015). Exploring barriers of enterprise search implementation: A qualitative user study. Aslib Journal of Information Management, 67(5), 470-491.

Research Problem

What: There is an increasing demand for enterprise search and the sparse information is available about its implementation from an academic perspective. Previous practice-oriented research studies show that enterprise search user satisfaction is relatively low.

So What: Enterprise information system establishing intra-organizational search engines are impacted. Impact on user satisfaction as well.

Because Why: Information retrieval theory explains the existence of the problem.

Goal: To explore user-centric barriers of enterprise search implementation in order to increase user satisfaction.

Research Methodology: A qualitative research methodology.

Data Collection and Analysis: Knowledge workers from R&D of vehicle industry from Austrian organization were selected. The sample size is 200, 90 are engineers. Microsoft SharePoint 2013 Foundation was the search tool the workers used for this study. Findings are gained from think-aloud observations introduced by semi-structured interviews. Five guided observations of the knowledge workers from the information and process management division and five from the materials and mechanics division were conducted.

A research question is:

- Which barriers hinder enterprise search implementation from a user perspective?

Barriers presented are:

- Barrier1. Keywords selection and search query formulation
- Barrier2. Availability and adequacy of metadata
- Barrier3. Current search strategies
- Barrier4. The overall perception of enterprise search usefulness

Results: Results portray the barriers the users must overcome when using enterprise search to find project related documents or information. Finding the best keywords was challenging. Search results on the first page were mainly based on the hit list of keywords used or based on user access rights, the users never navigated other than the first page to find the information they wanted. Incorrect or non-updated meta-information has often been the result of employees reusing office files they had already created. Participants fulfilled their information retrieval without using enterprise search. Even though the search interface was simple, users were unfamiliar to use the search engine. Users using age-old practices found enterprise search to provide the least benefit as they were not willing to change or learn.

Conclusions: This study forms a baseline for future empirical studies. The main aim of the authors to explore how and why employees may consider enterprise search helpful in the workplace. This research helps project managers to concentrate on early phases of enterprise search implementation. Examined the constant competition between less successful individual information-seeking practices and the well establish search capabilities.

Supporting Studies:

- Richter, A., Stocker, A., Müller, S. & Avram, G. (2013). "Knowledge management goals revisited – A cross sectional analysis of social software adoption in corporate environments", VINE, The Journal of Information and Knowledge Management Systems,43(2), 132-148
- Tsoukas, H. & Vladimirou, E. (2002). "What is organizational knowledge?", Journal of Management Studies, 38(7), 973-993.

Limitations: Implemented enterprise search is an out-of-the-box functionality, the study was confined to the vehicle industry with a limited sample size, an only qualitative approach used and narrow and concrete search scope.

Implications: Valuable information gathered from this research study regarding search capabilities and its impact on user satisfaction. Think-aloud observations introduced by semi-structured interviews. It contributes to a better understanding of enterprise search engine user needs and assists in concretizing user requirements. Incorrect and non-updated information from the search results of the KMS prompted users to use their own resources they had previously used. The list of barriers in this study will be used for testing the independent variable search to measure the effective usage of KMS.

Impact: Offers awareness on selection for keywords for search, search query formulation, availability and adequacy of metadata, relevance judging of search results, current search strategies, and overall perception of enterprise search usefulness.

Guo, B. and Wang, Y. (2014). Environmental turbulence, absorptive capacity and external knowledge search among Chinese SMEs, Chinese Management Studies, 8(2), 258-272.

Research Problem

What: Large- and medium-sized firms in developed or newly industrialized countries mainly focus on innovation search with importance on performance on external searches.

So What: Impacts innovation search behavior capabilities in small- and medium-sized enterprises (SMEs).

Because Why: Information processing, resource-based view, transaction cost economics (TCE) and managerial attention theories.

Goal: To the understand the relationship between environmental turbulence and knowledge search breadth as well as the understanding of the influence of ACAP on external knowledge search in the context of SMEs from emerging economies.

Research Methodology: A quantitative research methodology.

Data Collection and Analysis: This study adopted firm-level data collected via questionnaires from SMEs within the manufacturing sector in Zhejiang Province, China. The partial least squares method was used to explore the determinants of the external knowledge search breadth of Chinese SMEs. An exploratory factor analysis was used to validate the scales. 656 questionnaires were returned; 165 questionnaires 491 usable questionnaires. 14 external knowledge sources are used to measure external search breadth. Confirmatory factor analysis (CFA) from partial least squares (PLS) used.

Hypothesis (es) are:

- H1. External search breadth tends to increase along with the increase in a firm's perceived environmental turbulence.
- H2. External search breadth tends to decrease along with the increase in a firm's perceived environmental turbulence.
- H3. The interaction between ACAP and environmental turbulence will be positively related to external knowledge search breadth.
- H4. The interaction between ACAP and environmental turbulence will be negatively related to external knowledge search breadth.

Results: Positive co-relation between environmental turbulence and external knowledge search breadth. Negative co-relation between environmental turbulence and ACAP. Information processing and resource-based view (RBV) theories are more influential in explaining the external knowledge search behavior compared to transaction cost economics (TCE) and managerial attention theories.

Conclusions: Chinese SMEs rely more on informal sources than on formal sources in any external knowledge search because of resource constraints. As such, the transaction costs of acquiring commercially useful knowledge from informal knowledge sources can be greatly improved by interpersonal trust and long-term relationships among people at SMEs.

Supporting Studies:

- Chesbrough, H. (2003), "The era of open innovation", Sloan Management Review, 44(3), 35-41.
- Nag, R. & Gioia, D.A. (2012), "From common to uncommon knowledge: foundations of firm-specific use of knowledge as a resource", Academy of Management Journal, 55(2), 421-457.

Limitations: Limitations are a geographical location in Zhejiang Province in China, unbalanced development of manufacturing sectors in China and only SMEs from low- and medium-tech manufacturing sectors considered.

Implications: Authors suggested future research are re-testing the model with data from SMEs in different regions in China or even other emerging economies is a necessary direction for future study. Considering high-tech industries. Studying different components such as acquisition, assimilation, transformation, exploitation and environmental turbulence influence on innovation search.

Impact: Offers awareness on knowledge search behavior, external knowledge search and its impact on KMS.

Guo, B., Wang, Y., Xie, X.-Y. and Shou, Y. (2015). Search more deeply or search more broadly? An empirical study of external knowledge search strategy in manufacturing SMEs. Asian Journal of Technology Innovation, 23(1), 87-106.

Research Problem

What: Will small- and medium-sized enterprises (SMEs) in emerging economies search more deeply or search more broadly for product innovation at high levels of environmental turbulence? The gap lies in previous research studies measuring search breadth and searches depth independently.

SoWhat: Impacts resource constrained small to medium enterprises using external knowledge search.

BecauseWhy: Knowledge-based theory and behavioral theory.

Goal: To explore the environmental characteristics and an internal driver of external search would directly and interactively affect a firm's external knowledge search strategy for product innovation in a context of SMEs in China.

ResearchMethodology: A quantitative research methodology.

DataCollectionandAnalysis: Geographical location was chosen, Zhejiang Province. one sample t-test to check the sample to the SMEs in Zhejiang. A two-stage survey was conducted. One survey was for senior managers and academic researchers. Then a formal survey for the rest of the participants. From a total of 666 questionnaires, 491 accepted and 165 not accepted. The sample size was 264 employees.

Hypothesis (es) are:

- H1. External search towards depth-dominance in SMEs of emerging economies tends to be stronger along with an increase in the firm's perceived technological turbulence of the industry environment.
- H2. External search towards depth-dominance in SMEs of emerging economies tends to be stronger with the increase in the firm's perceived market turbulence of the industry environment.
- H3.The differentiation propensity of competitive strategy for SMEs in emerging economies is negatively related to their external search towards depth-dominance for product innovation.
- H4. The positive relationship between the perceived technological turbulence of industry environment and the external search towards depth-dominance for SMEs in emerging economies is stronger when the firm's differentiation propensity of competitive strategy is low than when it is high.
- H5. The positive relationship between the perceived market turbulence of industry environment and the external search towards depth-dominance for SMEs in emerging economies is stronger when the firm's differentiation propensity of competitive strategy is low than when it is high.

Results: Composite reliability (CR) value was 0.8 and average variance extracted (AVE) was 0.59 which satisfies the statistical requirements. Harman's one-factor analysis for the dependent variable and all explanatory variables. Hierarchical least squares multiple regression was employed to this research model.

Conclusions: Search strategy definition in this study were like previous research studies but the measurement approach was different. The positive relationship between perceived technological turbulence and external search towards depth-dominance is stronger when the differentiation propensity of a firm's competitive strategy is lower.

SupportingStudies:

- Kessler, E.H., Bierly, P.E., & Gopalakrishnan, S. (2000), "Internal vs. external learning in new product development: Effects on speed, costs, and competitive advantage", R&D Management, 30(3), 213–224.
- Machikita, T., and Ueki, Y. (2012), "Impacts of incoming knowledge on product innovation: Technology transfer in auto-related industries in developing economies", Asian Journal of Technology Innovation, 20, 9–27.

Limitations: Geographical location limited to only one province in China. High-tech industries were not included in the sample.

Implications: Although this study discussed the external knowledge search functionalities, information specific to search strategy will be used for future research regarding measuring the effective usage of KMS. Additional surveys and quantitative studies for future research. Future studies are needed to validate the measurements with diverse research samples.

Impact: Offers awareness of external knowledge search towards depth dominance, product innovation and its impact on KMS.

Sharing

Mirzaee, S., & Ghaffari, A. (2018). Investigating the impact of information systems on knowledge sharing. Journal of Knowledge Management, 22(3), 501-520.

ResearchProblem

What: Major issues in an organization are knowledge sharing and measuring the organizational learning or KM performance. Previous research has a gap in finding the link between employee ambidexterity and the perceived culture of empowerment and a knowledge-sharing culture

SoWhat: Impacts acquiring assets, intangible organizational capabilities, growth, development, a creation of value and the advantage of competitiveness in an organization.

BecauseWhy: Social exchange theory.

Goal: To examine the impact of information systems on knowledge sharing.

Research Methodology: A quantitative research methodology.

Data Collection and Analysis: Questionnaire used to collect the data. The five-choice Likert scale used to design the questionnaire. 85 participants who were employees of the registry office in East Azerbaijan Province, Iran were selected. SMART partial least square was used for testing the data collected. This study used three statistical tests, that is t-test, R2, and goodness of fit (GOF).

Hypothesis (es) are:

- H1. The success of information systems has a significant effect on knowledge sharing.
- H2. Service quality has a notable effect on the success of information systems.
- H3. System quality has a significant effect on the success of information systems.
- H4. Technology has a significant impact on the success of information systems.

Results: Proposed tool was accepted as the Cronbach's alpha measured show values as follows, dependent variables: sharing knowledge (0.84) and ISs (0.85); independent variables: service quality (0.90), system quality (0.86) and technology (0.89). Hypotheses H1 to H4 were accepted as the coefficient of determination value for the information system is 0.69 and knowledge sharing is 0.58. Path coefficient values show that independent variables have a significant effect on dependent variables. Technological factors have a significant influence on information systems.

Conclusions: Effective knowledge sharing depends on the motivation of the employees, knowledge sharing with their co-workers. Organizational efficiency, competence, and productivity on shared work-related knowledge. Authors suggest exploring various methods for sharing knowledge.

SupportingStudies:

- Foss, N. J., Husted, K., & Michailova, S. (2010). Governing knowledge sharing in organizations: Levels of analysis, governance mechanisms, and research directions. Journal of Management Studies, 47(3), 455-482.

- Small, C. T., & Sage, A. P. (2005). Knowledge management and knowledge sharing: A review. Information Knowledge Systems Management, 5(3), 153-169.

Limitations: Time limitations (cross-sectional data collection and results vary over time), instrumental limitations (survey questionnaire), spatial limitations (location), and implementation limitations (time constraints to answer questions).

Implications: Future research suggestions are interview for collecting data. Conduct study in other sectors, countries, and organization. This study model explains how knowledge sharing is affected by system quality, service quality, and technological factors through the information system. The information gained from this study will help to explore if proper knowledge sharing does not take place then KMS is not utilized effectively.

Impact: Offers awareness of knowledge sharing in connection with the proper implementation
of information systems based on system quality, ease of use, speed, and information recovery.

Chen, H., Baptista Nunes, M., Ragsdell, G., & An, X. (2018). Extrinsic and intrinsic motivation for experience grounded tacit knowledge sharing in Chinese software organizations. Journal of Knowledge Management, 22(2), 478-498.

ResearchProblem

What: Gap lies in previous research studies lack of implementation strategies and models that explain the role of awareness and motivation in facilitating knowledge sharing KS in the world of practice.

So What: Knowledge management (KM) and knowledge sharing (KS) are crucial in retaining valuable knowledge assets because of the loss of knowledge assets when knowledgeable employees leave the organization.

BecauseWhy: Previous studies show the importance of knowledge management for knowledge sharing.

Goal: Identify and explain the role of individuals' awareness and motivation in facilitating knowledge sharing (KS) in both academics and practitioners involved in knowledge-intensive organizations.

ResearchMethodology: Grounded theory (GT) inductive qualitative approach.

DataCollectionandAnalysis: Grounded Theory(GT) as an inductive methodology to collect, analyze and interpret data from multiple case-studies. 44 participants from Chinese software organizations. Participants background was in software design and development. The interview was based on a semi-structured interview script. Straussian approach for data analysis to coding, that included open coding, axial coding, and selective coding. The analysis was to gather the information on the impact of individuals awareness and motivation to share knowledge

A research question is:

- What are the factors influencing motivation for experience-based externalized tacit knowledge sharing in the world of practice the software industry in China?

Results: The motivation for knowledge sharing is a time consuming and demanding activity. Knowledge sharing practice is a well-known activity among managers and developers. As part of their professional practice participants were aware of the benefits of knowledge sharing. The reasons were given by participants for knowledge sharing (experiences and tacit knowledge) because it was required by the company. Another reason was they understood the need to share knowledge both inside and outside their organizations.

Conclusions: As the key success of knowledge sharing depends on the independence of the quality of KS mechanisms, top management support, and well-designed policies. More important to be given on training and policy champions needs to be on awareness raising. Managers in the case studies devised ways to encourage peers to share knowledge with their peers internally.

SupportingStudies:

- Baptista Nunes, M., Annansingh, F., Eaglestone, B., & Wakefield, R. (2006). Knowledge management issues in knowledge-intensive SMEs. Journal of Documentation, 62(1), 101-119.
- Bhatt, G. D. (2002). Management strategies for individual knowledge and organizational knowledge. Journal of Knowledge Management, 6(1), 31-39.

Limitations: Study confined to social science inductive study. The only software industry was considered.

Implications: Future research should be conducted on a variety of organizations and geographical locations. Regarding future research to measure effective usage of KMS the information about knowledge sharing will be considered. Participants of this study were aware that not sharing the knowledge would affect other users using the KMS.

Impact: Offers awareness of tacit knowledge, knowledge sharing, well-designed knowledge sharing policies, awareness, the motivation for knowledge sharing, loss of knowledge assets when knowledgeable employees leave and its impact on KMS.

Wang, J. F. J., & Tarn, D. D. (2018). Are two heads better than one? Intellectual capital, learning, and knowledge sharing in a dyadic interdisciplinary relationship. Journal of Knowledge Management, 22(6), 1379-1407.

ResearchProblem

What: The gap lies in the learning issues between academic efforts and learning practices in the workplace.

SoWhat: Individuals awareness and motivation to share knowledge. Organizations and technological factors impacting knowledge sharing.

BecauseWhy: Transactive memory theory.

Goal: To elucidate what factors make interdisciplinary dyads lead to better learning effects.

ResearchMethodology: A quantitative research methodology.

DataCollectionandAnalysis: In-depth interviews and an exploratory survey . The sample size was 248. Formal empirical survey to examine the relationship between, dyadic learning tasks and knowledge sharing.

Research questions are:

- What knowledge factors (intellectual capitals) owned by the parties of the dyads can induce better learning effects?
- What contextual factors (learning tasks) can make better learning effects during the dyadic learning process?

Hypothesis (es) are:

- H1. Knowledge interdependency between the parties of DIR is positively associated with knowledge sharing.
- H2. Expertise similarity between the parties of DIR is positively associated with knowledge sharing.
- H3. The degree of a collaborative routine of the DIR is positively associated with knowledge sharing of the dyads.
- H4. The degree of mutual trust within the DIR is positively associated with knowledge sharing of the dyads.
- H5. Dyadic learning mediates the positive association between DIR and knowledge sharing; the mediating effect of exploratory learning is stronger than exploitative learning.

Results: Statistical results showed positive relationships between DIC and knowledge sharing. Rejected hypothesis H5 was related to exploitative learning. Dyadic learning tasks were classified as exploitative and exploratory learning.

Conclusions: Two heads had an impact on exploratory learning compared to one head. Knowledge sharing was most productive with the help of mutual trust, knowledge interdependency and reusing existing knowledge. Expertise had less impact on knowledge sharing.

SupportingStudies:

- Kweh, Q.L., Lu, W. & Wang, W. (2014), "Dynamic efficiency: Intellectual capital in the Chinese non-life insurance firms", Journal of Knowledge Management, 18(5), 937-951.
- Collins, M.H., Hair, J.F., Jr. & Rocco, T.S. (2009), "The older-worker-younger-supervisor dyad: A test of the reverse Pygmalion effect", Human Resource Development Quarterly, 20(1), 21-41.

Limitations: Exploratory a study with two surveys. Limited to human, structural and relational capitals.

Implications: To include statistical techniques like confirmatory factor analysis and test-retest reliability. To compare the impacts of the human, structural and relational capitals on knowledge sharing. Sample limited to R&D researchers. To reexamine the existing studies on a different country, region, and industry. Interesting concepts such as knowledge sharing, mutual trust, knowledge interdependency, reusing existing knowledge and technologies will be used as part of a survey questionnaire to measure the effective usage of KMS.

Impact: Offers awareness of knowledge sharing, knowledge interdependency, reusing existing knowledge and technologies and its impact on KMS.

Zhu, Y. Q., Chiu, H., & Infante Holguin-Veras, E. J. (2018). It is more blessed to give than to receive: Examining the impact of knowledge sharing on sharers and recipients. Journal of Knowledge Management, 22(1), 76-91.

ResearchProblem

What: Little research has been conducted that examines the impact of knowledge sharing on both the sharer and the recipient.

SoWhat: Impacts employee performance, for both knowledge sharers and knowledge recipients.

BecauseWhy: Learning theory argues that sharing knowledge is, by nature, a learning activity with active orientation.

Goal: To investigate whether knowledge sharing truly diminishes one's competitiveness and benefits others in an organization knowledge sharing context.

ResearchMethodology: A quantitative research methodology.

DataCollectionandAnalysis: Survey method called iSurvey to collect the data. 233 participants were selected, 49 percent were male and 51 percent were female. 32.6 percent of participants age was between 30-39 years old and 33.5 percent were between 40-49 years old. Cronbach alpha reliability value was 0.92. Knowledge-sharing behavior was measured on a seven-point Likert scale. Job performance was measured by self-reporting of the performance rating received by the respondents. Partial Least Squares analysis with SmartPLS 2.0 was used to analyze the data.

Hypothesis (es) are:

- H1. The more an employee shares knowledge, the deeper the knowledge the employee develops.
- H2. The more an employee shares knowledge, the broader the knowledge the employee develops.
- H3. The more an employee receives knowledge, the deeper the knowledge the employee develops.
- H4. The more an employee receives knowledge, the broader the knowledge the employee develops.
- H5. Sharing knowledge benefits an individual's knowledge depth more than being at the receiving end of knowledge.
- H6. Sharing knowledge benefits an individual's knowledge breadth more than being at the receiving end of knowledge.
- H7. The deeper the knowledge an employee has, the better the employee's performance.
- H8. The broader the knowledge an employee has, the better the employee's performance.

Results: The paths from knowledge sharing are positively related to the individual's depth and breadth of knowledge. Results indicated that knowledge sharing can help to achieve higher levels of both knowledge depth and breadth than receiving knowledge. Individual's knowledge receiving are both positively related to the individual's depth and breadth of knowledge. Hence hypothesis (es) H1 to H8 were supported.

Conclusions: Managers should promote knowledge sharing through learning and development item. Employees should be motivated to regularly and actively involved in knowledge sharing and learning process. Encourage active learning rather than passive learning in knowledge recipients. Depth and breadth of knowledge are significant predictors of job performance.

Supporting Studies:

- Kang, Y., Kim, S. and Chang, G. (2008), "The impact of knowledge sharing on work performance: An empirical analysis of the public employees' perceptions in South Korea", International Journal of Public Administration, 31(14), 1548-1568.
- Kankanhalli, A., Tan, B.C. and Wei, K.K. (2005), "Contributing knowledge to electronic repositories: An empirical investigation", MIS Quarterly, 29(1), 113-143.

Limitations: Single dimension was measured that is manager's job performance evaluation. Knowledge sharing was confined to teams rather than to and from other teams. Self-reported assessment leads to undervaluing their own knowledge. A linear relationship between knowledge sharing and performance.

Implications: To explore the different impact of knowledge depth and breadth on various aspects of job performance. To study knowledge sharing among teams from different departments. For more accurate measures of knowledge sharing and receiving evaluate logs of knowledge shared and articles viewed. The 11 questions related to knowledge sharing and receiving from this research paper will be used to study the effective usage of KMS in future research. This study examined how individuals in organizations benefit from knowledge sharing from both the sharer and the recipient perspective. Knowledge depth and breadth was a key driver to individual job performance, this information is valuable to use for measuring effective usage of KMS.

Impact: Offers awareness of performance of KM, effective knowledge management, knowledge sharing behavior, knowledge breadth, knowledge depth and its impact on KMS.

3. Problem Revisited

Research Problem

The purpose of this study is to understand why employees are not using knowledge management systems (KMS) effectively. Only a few research studies have been conducted to find the critical factors related to the success or failure of the sustained use of knowledge management systems after implementation (Oyefolahan & Dominic, 2013). Previous research studies have no relevant information regarding KMS utilization in customer support organizations. This study will help to analyze the usage of KMS based on the psychological factors of the employees (Massingham, 2018), KMS search behavior (Karlinsky-Shichor & Zviran, 2016), KMS user experience (Elmorshidy, 2017) and so on. A KMS can be an excellent knowledge base repository, which is elegantly built to help all employees (from managers, business analysts, developers, and quality assurance personnel) to integrate and share knowledge (James, Gandhi, & Deshmukh, 2017). However, a KMS not utilized properly could decrease staff performance, user satisfaction, quality of service, and innovation (Elmorshidy, 2017). A lot of money and time are spent on building KMS applications, but not utilizing the application to its full benefit could cause the organization a major hardship (Oyefolahan & Dominic, 2013; Pandey, Dutta, & Nayak, 2018). If employees do not adopt and use the KMS, it will not become a part of the organization's culture and thus, it will become useless (Ghasemi & Valmohammadi, 2018).

As KMSs form a critical part of the organization, it is very important for leaders to create, update, or modify the knowledge content based on the employee's feedback, suggestions, and inputs which will help to maintain the quality of the knowledge base (Oyefolahan & Dominic, 2013). While there are tools developed to measure KMS implementation in the oil industry (Ghasemi & Valmohammadi, 2018), a tool to measure KMS utilization has not been found. A quantitative research methodology and sampling from a study conducted by Elmorshidy (2017) will be replicated. To study the search behavior, qualitative research methods from Stocker, Richter, Kaiser, and Softic (2015), such as the think-aloud observations and discussion of KMS barriers will be simulated. In addition, survey questions from Karlinsky-Shichor and Zviran (2016) will be used to …. Similarly, eleven survey questions related to knowledge sharing and receiving from Zhu, Chiu, and Infante Holguin-Veras, (2018) will be incorporated into the knowledge management survey questions. According to Pandey, Dutta, and Nayak, (2018), "knowledge is increasingly considered as a strategic asset, and success of a company is highly dependent upon its ability to make use of that knowledge" (p. ?). Taghizadeh, et al. (2018) discussed an interesting term called customer knowledge management (CKM). They emphasized the use of knowledge for the customers in their research study. The proposed research has a major contribution to knowledge management in customer support organizations because knowledge is a powerful asset for support organizations as well. This knowledge, if well utilized. will help in user productivity and performance (Oyefolahan & Dominic, 2013). Additionally, this research study directly or indirectly contributes to information systems as there is a nexus between knowledge management and information system in any organization.
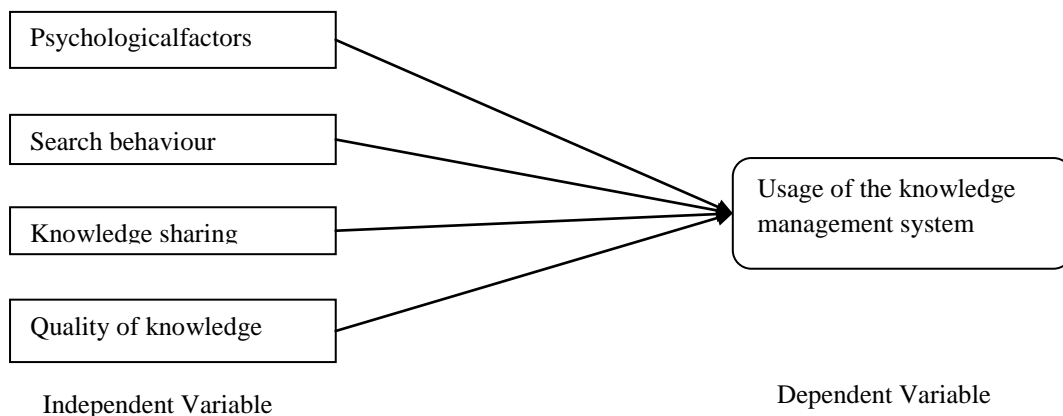
Research Questions

Research questions are:

- RQ1. How does knowledge sharing (Mirzaee, & Ghaffari, 2018) affect the usability of the knowledge management system?
- RQ2. Do employees psychological factors (Massingham, 2018) have an effect on knowledge management system use?
- RQ3. How does the knowledge management systems search behavior (Karlinsky-Shichor & Zviran, 2016; Pandey, Dutta, & Nayak, 2018) affect its use?
- RQ4. Does the quality (Oyefolahan & Dominic, 2013) of the knowledge affect the usage of the knowledge management system?

Hypothesis (es) are:

- H0: The psychological factors of the employees have no impact on the usage of the knowledge management system.
- H1: The psychological factors of the employees have a major impact on usage of the knowledge management system.
- H2: There is no relationship between the search behavior and the usage of the knowledge management system.
- H3: There is no relationship between the knowledge sharing and the usage of the knowledge management system.
- H4: There is no relationship between the quality of the knowledge and usage of the knowledge management system.

Revisited conceptual framework is as shown in below figure.

| Psychologicalfactors |
| Search behaviour |
| Knowledge sharing |
| Quality of knowledge |

Usage of the knowledge management system

Independent Variable   Dependent Variable

4. Summary

Concept for Solving the Problem

Both quantitative and qualitative methods will be used to answer the research questions and test the hypotheses. The study population will be six customer support companies who currently have a knowledge management system in place. The sample will be 600 employees from six companies who are using this knowledge management system. Geographical location will be both USA and India. A total of ten participants will be selected from 600 employees for a qualitative study. A set of five participants will be observed from two companies, one company from the USA and another from India. KMS tools used by these two companies should not be the same. A simple random sampling method will be used because each team member or employee of the organization has an equal and independent chance of being selected to be included in the sample, and the results of the study would be most generalized. This sampling method is used since the importance of using the knowledge management system must be conveyed to the company's employees. As this study will explore the new relationship between independent and dependent variables, structural equation modeling (SEM) software called SmartPLS used in a research study by Taghizadeh, Rahman, and Hossain, (2018) will be considered as the measurement tool. The main expectation of this research study is to gather detailed information from employees on how they get to use knowledge management applications in day-to-day activities. In addition to this, the way they use their knowledge management applications is considered as well. The goal of this research is to identify if the knowledge management system is used efficiently, is the knowledge shared effectively to handle knowledge management procedures, are there any other factors such as psychological factors affecting the usage of the knowledge management system, and are there any new ways to be considered to implement the knowledge management application so that it is used efficiently? The survey results of this study will give an opportunity for the higher authority or manager's team to access their own expectations in increasing the usage of the knowledge management system.

This study will be conducted as a non-contrived field study with no interference using the same natural environment (the employee's workplace) in which the subjects normally function. A survey is used as the instrument for this research study. The survey will be sent via an online web application because it is more effective, and user response is received quickly. A set of questions relevant to this study such as knowledge management and topics related to usage of the knowledge management system is compiled. The survey questions are a combination of open-ended, closed-ended, rating scale, Likert scale, multiple choice, and demographic questions. This survey's web link will be sent to the official email addresses of the employees. According to a study by Ghasemi and Valmohammadi (2018) reminder letters were sent to the managers to complete the survey in fifteen days, similarly in this study reminder emails will follow until the employees complete the survey. For content validity, a survey window is set from the start and end dates are specified, questions answered during this period are accepted, rejected, or blocked from answering. The data is eventually cleaned, loaded, and corrected so that statistical analysis can be performed. Initially, the basic measurements such as mean, median, mode, standard deviation, and variance are collected. Using the basic measurements standard error will be determined. Regression analysis is performed and plots are generated. Using these plots and regression analysis various statistical models which are fit for this study are calculated. Data collected will be technical, day to day, personal, temperamental, interpersonal, and cognitive that are web-based questionnaires using user-friendly interface with a total of 34 questions for knowledge management survey and 60 questions for user survey. Questions may include psychological factors the employees go through while working on tasks related to the knowledge management applications which tests individuals' ways of using the knowledge management application and to what extent knowledge management plays an important role in handling these issues. For example, did the quality of the knowledge base help the employee solve the tasks or is the search behavior used in the knowledge management application helpful in solving the customer related problems?

REFERENCES

Chen, H., Baptista Nunes, M., Ragsdell, G., & An, X. (2018). Extrinsic and intrinsic motivation for experience grounded tacit knowledge sharing in Chinese software organisations. Journal of Knowledge Management, 22(2), 478-498.

Elmorshidy, A. (2017). The impact of knowledge management systems on innovation: An empirical investigation in Kuwait. VINE Journal of Information and Knowledge Management Systems, 48(3), 388-403.

Ghasemi, B., & Valmohammadi, C. (2018). Developing a measurement instrument of knowledge management implementation in the Iranian oil industry. Kybernetes, 28(1), 131-159.

Guo, B. and Wang, Y. (2014). Environmental turbulence, absorptive capacity and external knowledge search among Chinese SMEs. Chinese Management Studies, 8(2), 258-272.

Guo, B., Wang, Y., Xie, X.-Y. and Shou, Y. (2015). Search more deeply or search more broadly? An empirical study of external knowledge search strategy in manufacturing SMEs. Asian Journal of Technology Innovation, 23(1), 87-106.

James, A. T., Gandhi, O. P., & Deshmukh, S. G. (2017). Knowledge management of automobile system failures through development of failure knowledge ontology from maintenance experience. Journal of Advances in Management Research, 14(4), 425–445.

Karlinsky-Shichor, Y., & Zviran, M. (2016). Factors influencing perceived benefits and user satisfaction in knowledge management systems. Information Systems Management, 33(1), 55–73.

Kord, H., Damani, F., & Parvaresh, A. (2015). The study of occupational stress and its relationship with knowledge management based on HSE model. Creative Education, 6(12), 1416-1427.

Massingham, P. R. (2018). Measuring the impact of knowledge loss: A longitudinal study. Journal of Knowledge Management, 22(4), 721–758.

Mirzaee, S., & Ghaffari, A. (2018). Investigating the impact of information systems on knowledge sharing. Journal of Knowledge Management, 22(3), 501-520.

Oyefolahan, I. O., & Dominic, P. D. D. (2013). Knowledge management systems use and competency development among knowledge workers: The role of socio-technical antecedents in developing autonomous motivation to use. VINE Journal of Information and Knowledge Management Systems, 43(4), 482–500.

Pandey, S. C., Dutta, A., & Nayak, A. K. J. R. (2018). Organizational capabilities and knowledge management success: A quartet of case studies. Kybernetes, 47(1), 222–238.

Stocker, A., Richter, A., Kaiser, C., & Softic, S. (2015). Exploring barriers of enterprise search implementation: A qualitative user study. Aslib Journal of Information Management, 67(5), 470-491.

Taghizadeh, S. K., Rahman, S. A., & Hossain, M. M. (2018). Knowledge from customer, for customer or about customer: which triggers innovation capability the most? Journal of Knowledge Management, 22(1), 162–182.

Wang, J. F. J., & Tarn, D. D. (2018). Are two heads better than one?–Intellectual capital, learning and knowledge sharing in a dyadic interdisciplinary relationship. Journal of Knowledge Management, 22(6), 1379-1407.

Wang, Y., Guo, B., & Yin, Y. (2017). Open innovation search in manufacturing firms: The role of organizational slack and absorptive capacity. Journal of Knowledge Management, 21(3), 656-674.

Zhu, Y. Q., Chiu, H., & Infante Holguin-Veras, E. J. (2018). It is more blessed to give than to receive: Examining the impact of knowledge sharing on sharers and recipients. Journal of Knowledge Management, 22(1), 76-91.

Rodriguez, K. M., Reddy, R. S., Barreiros, A. Q., & Zehtab, M. (2012, June). Optimizing Program Operations: Creating a Web-Based Application to Assign and Monitor Patient Outcomes, Educator Productivity and Service Reimbursement. In DIABETES (Vol. 61, pp. A631-A631). 1701 N BEAUREGARD ST, ALEXANDRIA, VA 22311-1717 USA: AMER DIABETES ASSOC.

Kwon, D., Reddy, R., & Reis, I. M. (2021). ABCMETAapp: R shiny application for simulation-based estimation of mean and standard deviation for meta-analysis via approximate Bayesian computation. Research synthesis methods, 12(6), 842–848. https://doi.org/10.1002/jrsm.1505

Reddy, H. B. S., Reddy, R. R. S., Jonnalagadda, R., Singh, P., & Gogineni, A. (2022). Usability Evaluation of an Unpopular Restaurant Recommender Web Application Zomato. Asian Journal of Research in Computer Science, 13(4), 12-33.

Reddy, H. B. S., Reddy, R. R. S., Jonnalagadda, R., Singh, P., & Gogineni, A. (2022b). Analysis of the Unexplored Security Issues Common to All Types of NoSQL Databases. Asian Journal of Research in Computer Science, 14(1), 1-12.

Singh, P., Williams, K., Jonnalagadda, R., Gogineni, A., &; Reddy, R. R. (2022). International students: What's missing and what matters. Open Journal of Social Sciences, 10(02),

Jonnalagadda, R., Singh, P., Gogineni, A., Reddy, R. R., & Reddy, H. B. (2022). Developing, implementing and evaluating training for online graduate teaching assistants based on Addie Model. Asian Journal of Education and Social Studies, 1-10.

Sarmiento, J. M., Gogineni, A., Bernstein, J. N., Lee, C., Lineen, E. B., Pust, G. D., & Byers, P. M. (2020). Alcohol/illicit substance use in fatal motorcycle crashes. Journal of surgical research, 256, 243-250.

Brown, M. E., Rizzuto, T., & Singh, P. (2019). Strategic compatibility, collaboration and collective impact for community change. Leadership & Organization Development Journal.

Sprague-Jones, J., Singh, P., Rousseau, M., Counts, J., & Firman, C. (2020). The Protective Factors Survey: Establishing validity and reliability of a self-report measure of protective factors against child maltreatment. Children and Youth Services Review, 111, 104868

Reddy Sadashiva Reddy, R., Reis, I. M., & Kwon, D. (2020). ABCMETAapp: R Shiny Application for Simulation-based Estimation of Mean and Standard Deviation for Meta-analysis via Approximate Bayesian Computation (ABC). *arXiv e-prints*, arXiv-2004.