CLASSIFICATIONS, ASSESSMENTS AND CHARACTERISTICS AS FACTORS TOWARDS ANALYZING ORGANIZATIONAL KNOWLEDGE

[1] ZAID A. SABEEH, [2] SMFD SYED MUSTAPHA, [3] ROSHAYU MOHAMAD

[1] School of Information & Communication Technology, Asia e University, Malaysia,

[2] Computer Science Department, Taif University, Kingdom of Saudi Arabia

[3] School of Information & Communication Technology, Asia e University, Malaysia,

Email: [1] zaid.aljarah@gmail.com, [2] smfdsm@gmail.com, [3] roshayu.mohamad@aeu.edu.my

ABSTRACT

Knowledge is an intellectual property that is generated and circulated among members in the knowledge-based organization for the ultimate purpose of achieving sustainability and growth of businesses. Both academia and businesses have paid remarkable attention to the multifaceted field of organizational knowledge, such efforts have been, and are still being translated into enormous volume of research work and business reports. Despite the originality of some of these research efforts, there is still a lack for concise roadmaps, models and frameworks that address organizational knowledge based on adequate guidelines. This study aims to explore and synthesize previous literature that discuss the topic of organizational knowledge with the primary objective of guiding this exploration using three factors. These factors are classifications, assessments and characteristics of organizational knowledge which are considered focal points of interest for academia and industries alike. This paper followed the approach of critical analysis for research work that were published and well received by research and industrial communities. The analysis of literature considered 70 scholarly research papers that were published within the period September 2011 until September 2016 to uncover recent patterns and trends in the field of organizational knowledge. The analysis of literature guided by three main factors (classification, assessment and characteristics of organizational knowledge) indicates gaps in these previous studies. These analyses can be used for future studies that are focused more on research in the field of organizational knowledge from the perspective of these three guiding factors.

Keywords: *Organizational Knowledge, Classification Of Knowledge, Knowledge Assessment, Characteristics Of Knowledge, Organizational Knowledge Literature, Organizational Knowledge Sharing*

1. INTRODUCTION

Knowledge is an intellectual property that is generated, developed and circulated amongst members in a knowledge-based organization for achieving sustainability of business and to accomplish a competitive edge over business rivals. The effectiveness of knowledge circulated in the organization greatly depends on the skills and the know-how of its workers. The productivity of such organizations could drop if experienced employees left and were replaced by inexperienced ones who require additional training. Section two provides a comprehensive overview of the research methodology used in this study for analyzing the literature. Section three discusses the first factor (classification of organizational knowledge) that has been used to analyze past research on the categories of knowledge in organizations. This is followed by section four which explores the literature guided by the second factor which is the assessment of organizational knowledge. Section five (characteristics of organizational knowledge) deals with the third factor used for analyzing literature on organizational knowledge. Section six discusses the main findings of the literature analysis for all the three factors used. Section seven presents recommendation for future

studies and the last section (section eight) presents the limitations of this study.

2. RESEARCH METHODOLOGY

This study adopted the approach of surveying research papers with the aim of analyzing articles discussing issues in the field of organizational knowledge. The reviewing of the literature on organizational knowledge was guided by three factors which reflected researchers' and practitioners' efforts in dealing with knowledge in organizations. These three factors are classification, assessments and characteristics of organizational knowledge. These factors were utilized as focal points of interest when analyzing the recent literature on organizational knowledge. The first factor (classification of organizational knowledge) discusses the attempts made for categorizing knowledge in organizations which have been detected in the relevant literature. While the second factor (assessments of organizational knowledge) was used to guide the analysis of previous approaches for measuring the organizational knowledge in several industries. The third factor (characteristics of organizational knowledge) was used to synthesize literature which discussed the attributes of knowledge in organizations.

The use of these three factors as guidelines to analyze the literature aims to uncover previous patterns and to conclude the trends for future research within the area of organizational knowledge. In this regard, the study analyzed 70 scholarly research works that were closely related to the topic of Organizational Knowledge specifically on the three factors selected for guiding the analysis of the previous literature. The articles were published in reputable research societies and schools. They were 62 journal papers, 5 conference papers and 3 PhD research theses. To provide updated research findings and results, the study considered recent research efforts that were published within the period of past five years (September 2011- September 2016). These papers were selected based on several criteria such as the most recent publication year; works of authors who were active in the field, works that had high rate of citations and the impact factor by Thomson Reuters.

3. CLASSIFICATIONS OF ORGANIZATIONAL KNOWLEDGE

The enormous volume of research and industrial publications in the field of organizational knowledge alongside the lack of concise guidance in many of these publications has made the task of understanding the phenomena of organizational knowledge to be a challenging one. In order to facilitate the comprehension of this phenomenon, there is a need to categorize organizational knowledge and clarify the aspects chosen for different classifications in different industries. In this regard, it is essential to address the approaches previously indicated by researchers and practitioners in the field of organizational knowledge, as discussed in the following subsections.

3.1 Formal Organizational Knowledge

Formal knowledge is the sort of knowledge that is usually found in books and documents, which can be easily shared in training courses as stated by [1]. In other words, it is a knowledge that is made explicit and associated with a semantic meaning. Whereas [2] classified this type of knowledge possibly to be documented and codified. This knowledge can easily be transferred to other people. It can be expressed and recorded in the forms of text and numerical symbols with explicit representations. The main attribute of the formal knowledge is its ease of communication, storage and distribution. Alternatively, this type of organizational knowledge is often referred to as *explicit knowledge* which deals with the type of knowledge that can be made clear and documented, socially built, and stored in a systematic manner using data structures. The proper acquiring, storing, classifying and reusing of organizational knowledge can lead to efficiencies throughout the organization [3]

3.2 Informal Organizational Knowledge

This type of knowledge is best described in the work of [4]. They define informal knowledge as *"the experience developed in every stage of life, often before the children are entering the school age"*. In his renowned book, *The Tacit Dimension*, Hungarian philosopher-chemist Michael Polanyi introduced the idea of informal knowledge which is knowledge that could not be formally taught; he called it *tacit knowledge* [5].

Modern writings and research regarding the informal knowledge refer to this sort of knowledge as being the bigger portion of a person's information base [6]. This personal informal knowledge is usually accumulated from years of experience, insights, and intuitions. This type of knowledge can be seen recorded in unstructured forms such as SMS, emails, social media posts, blogs, forum discussions and multimedia files. The trend in recent research is to refer to this type of knowledge as *implicit knowledge* which represents the knowledge that is not generally verbalized and cannot be documented easily or in a direct form. This is because people can express much less than the amount of knowledge they hold [7] on individual level as well as across enterprise. The tacit knowledge imparting procedures concentrate on the personalization approach in which knowledge is imparted through immediate person to person contacts and through socialization activities [8]. The need for expressing this type of knowledge is vital however there had been only few studies suggesting the presence of any clear codification methodology [9]. In addition to the studies, research efforts have been dedicated in recent publications to categorize the various types of organizational knowledge as shown in Table 1.

Table 1: Categorization of Organizational Knowledge in the Recent Literature.

Author	Year	Highlights
Giudice, Peruta and Carayannis [10]	2011	Studied organizational knowledge from the perspective of organizations run as a family business. Addressed the three categories of knowledge in these organizations: tacit, rule-based and background knowledge.
Tongo [11]	2012	This study looked at knowledge from the perspective of assets in organizations. Tongo considered three types of organizational knowledge: structural knowledge, human knowledge and relational knowledge.
De Angelis and Despres [12]	2013	Categorized knowledge in the public administration sector into two broad types: complementary and interdependent.
Popsa and Nicula [13]	2014	Classified knowledge in organizations based on two main capacities which are the knowledge capacity to absorb and capacity to stick in one's mind.
Lin, Ho and Lu [14]	2014	Based on a survey of manufacturing organizations in Taiwan, they classified organizational knowledge into systematic, implicit, explicit, tacit, and interpersonal knowledge.
Sokhanvar, Matthews, and Yarlagadda [15]	2014	Investigated knowledge implications in research organization, They categorized two main knowledge types: 'knowledge about client' and 'project management knowledge'.

Two most dominant perspectives in categorizing knowledge in organizations are possession-based and practice-based perspectives [16]. Formal and informal knowledge are intertwined as "knowledge is embedded in practice" [17]. McKinsey, a known worldwide management consulting firm, has recently reported that complex information interactions within an organization occur when there are no specific guidelines to follow, thus employees must apply their know-how to overcome issues, referred to as tacit knowledge [18]. Another paradigm [19] suggested the classification of knowledge according to its usage in terms of four knowledge categories. The first category *(Meta Knowledge)* involves cultural and philosophical assumptions. Within a community of similar interest, this type of knowledge refers to knowledge about other members' knowledge specifically the notion of *who knows what* [20] or the *'knowledge about knowledge'* [21]. A good example of this type of knowledge is when a person searches online for a specific topic. The initial knowledge of knowing 'who' has the knowledge of that specific topic, 'when' it was learnt and 'how' the knowledge of that topic was acquired or transferred is collectively referred to as *'meta knowledge'*. In the context of an organization, 'meta knowledge' represents the knowledge about what other workers within an

organization know, specifically the knowledge that helps those workers in performing their assigned tasks. The second category *(Milieu Knowledge)* refers to the *'local environment, relation to peer groups, management and staff'* [22]. In sociology *Milieu* refers to the immediate physical and social setting in which people live or in which something happens or develops. It includes the culture that the individual was educated or lives in, and the people and institutions with whom they interact [23]. The third category *(Contingent Knowledge)* is the sort of knowledge that is disseminated within a specific theme or environment; a good example is *the On the Job Training (OJT)* that depends on learning by observing other people in performing specific task(s). This method is used to transfer knowledge to workers when time is the main factor [24]. This type of knowledge has been mentioned in the work of [25]. They referred it as the type of knowledge that is acquired when interacting with the process or the personnel in that organization by a person who works in that organization for a specific time. The fourth category (*Instrumentalities*) refers to the type of knowledge that is contained in tools and instruments [19]. This type of knowledge is dependent on other knowledge types for it to be explicit and useful. Instrumentalities can be seen in workshops and training sessions that is focused on the learning of a new technological tool or system. In terms of organizational environment, this type of knowledge is concerned with the specific set of information and skills that help the employee to perform a specific act [26].

The analysis of these previous studies had indicated the efforts made by researchers and practitioners to formulate and categorize knowledge in various organizations. Such type of knowledge is considered to be useful and instrumental for a specific task when it is easily translated into action(s) that have optimum relevance and utility. Decision makers in these organizations consider the efforts in categorizing the knowledge as being of great value since it helps them to exploring the size and impact of their intellectual capital and where it resides. Additionally, understanding the categories of organizational knowledge is useful in planning the learning initiatives for the employees in these organizations.

4. ORGANIZATIONAL KNOWLEDGE ASSESSMENTS

Several models and frameworks have been suggested to codify, and assess knowledge. In the education organizations, [27] attempt to developed an approach for assessing the students to assesses their own knowledge by following a computerized system called SACAT (Self-Assessment Computer Analyzed Testing). Other models focused on the knowledge as an intellectual capital. Technology Broker is a model suggested by Annie Brooking. It represents "a practical contribution to IC (Intellectual Capital) measurement by offering three measurement models to help calculate the dollar value of IC" [28]. Intangible Asset Monitor was introduced by Karl-Erik Sveiby [29], he suggested a model based on three categories of "intangible assets: external structure, internal structure, and individual competence" as shown in Table 2.

Table 2: Intangible Asset Monitor, adapted from [29]

Visible Equity	Intangible Assets		
	(Stock Price Premium)		
	External Structure	Internal Structure	Individual Competence
(book value) Tangible assets	(brands, customer and supplier relations)	(management, legal structure, manual systems, R and D, Software)	(education, experience)

Whereas other researchers preferred to come up with more progressive methods associating organizational knowledge with the number of patents an organization could produce. The Citation Weighted Patents by Bontis [30] is focused on using patents as guidelines for measurement of practical intellectual capital. Other researchers have used different approaches as seen in the highlights of research in Table 3.

Table 3: Approaches for Assessing Organizational Knowledge.

Author	Year	Highlights
Lerro, Iacobone and Schiuma [31]	2012	Explained a literature review-based framework for the assessment strategies of the organization's knowledge assets.
Kamasak [32]	2012	Empirically examined the reliability of measurement tool for assessing the extent of organizational knowledge in Turkish firms, the tool was initially developed by The University of Southern Queensland (USQ).
Akhavan et al. [33]	2013	Developed framework to measure the organizational knowledge in an organization that deals with the production of medicinal materials. The study has not fully explained the process of integrating this framework into a firm's processes.
Gasik [34]	2013	Analyzed and suggested theoretical approach for assessing organizational knowledge assets; this effort aims to provide a roadmap for the decision makers when managing projects.
Duncan and Tabriz [35]	2015	Preliminary study on assessing knowledge in healthcare organizations by computerizing the method of processing imaging data in radiology departments.
Vlasov and Panikarova [36]	2015	Developed a method of assessing organizational knowledge and its creation in state-owned Russian organizations, the method is based on measurement of the co-efficiencies of intellectual sharing of the profits.

These models have focused on the processes and their output in financial terms and measurement such as the Key Performance Indicator (KPI), and have left out the personal individual experiences that come from years of accumulated skills and problem solving abilities.

5. CHARACTERISTICS OF ORGANIZATIONAL KNOWLEDGE

In order to understand organizational knowledge, it is important to recognize the knowledge attributes that exist within an organization. One of those is the "tacitness" attribute that involves the most essential qualities of knowledge. Codified and verifiable knowledge are easier to deal with in comparison to tacit knowledge which has more impact, yet hard to be detected [37]. Such organizational knowledge depends greatly on three main properties which are (specialization, implicit and importance) as shown in Figure 2.
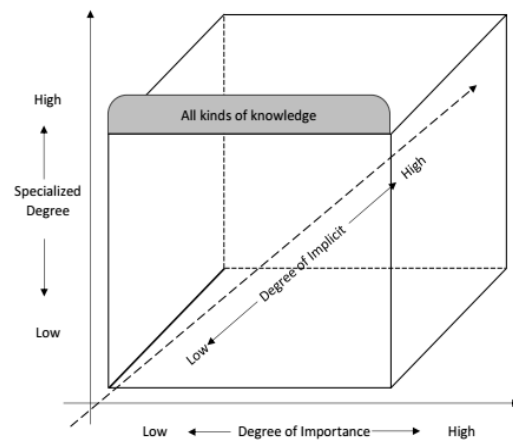

Figure 2: Three-dimensional Graph of Knowledge based on Three Properties, adapted from [37]

The literature studied up to the date of this study present five broad characteristics of organizational knowledge, they are described in the following subsections:

5.1 Granularity

Learning organization views systems thinking and knowledge in organizations as "granules of knowledge which are seen as the building blocks" of knowledge in initiative design and innovation [38]. It is usually considered an evolving system, and it can be decomposed into elements that can be subdivided into smaller details of knowledge. For instance, in an organizational project, granules of knowledge indicate the details of that specific project (phases, tasks, milestones,

deliverables) which can correspond to various levels in a project such as the level of project, procedure, design task and sub-activities [39].

5.2 Stickiness

To be able to clarify what constitutes "stickiness" of knowledge, it is important to understand that the term had its introduction into the business world in 1969. It was referred to as "sticky data" referring to "data that is excessive to procure, exchange and utilize" [40]. Stickiness is one of the reported attributes of knowledge that incorporates causal vagueness and uncertainty of the knowledge and how it is being exchanged. Stickiness can likewise emerge in light of the connection of knowledge exchange [41]. Organizations participate in a knowledge exchange inside the organization to create parts of the organization that have better capacity if new procedures or practices are actualized [42]. Knowledge exchange does not just happen, as exchange of knowledge starts with one unit then onto the next unit inside the segments of an organization. The ownership of knowledge that is significant for one piece of the organization may not be useful for another part of it. In addition, exchange of knowledge inside an organization is normally "sticky" and demanding task instead of being a smooth task. Several authors in recent years have made essential commitment understanding the issues experienced in knowledge exchange. They have proposed various variables as reasons for stickiness of knowledge [43, 44, 45].

5.3 Tacitness

The term "tacit" was introduced by the work of Polanyi in the late 60s. It considered tacit knowledge as a part of human knowledge related to cognitive methods [46]. Polanyi outlined this idea in relation to the way that the individual is aware of certain items, without its consideration being fundamentally expressed [47]. This did not make them less important, on the ground that they constituted the connection which is to be conceivable [48]. Since Polanyi's era, the two ideas of explicit and implicit were frequently used interchangeably in the research arena. One could then attempt to characterize inferred knowledge, while building oneself with respect to the meaning of explicit learning. With express knowledge being characterized like a classified learning, some researchers characterized tacit

knowledge as non-classified or non-codified knowledge [49, 50].

5.4 Transferability

It involves transfer of knowledge through several correspondence methods between two people or more, for example, verbal correspondence through face to face contact or virtual connection such as online chatting [51]. This sort of exchange allows codification of non-systematized and non-structured knowledge. It empowers the learner to consult knowledge the same number of times as he or she wants with the knowledge source [52]. It appears that what decides the kind of exchange to utilize is not the explicit or implicit character of knowledge. In fact, what confirms that knowledge must be exchanged in a direct or indirect way is its codifiable or non-codifiable character [53]. How knowledge is transferred depends on the characteristics of the knowledge. It is less difficult to transmit codifiable knowledge such as scientific findings that are presented in numerical format [54]. In addition, it would be intriguing to systematize this knowledge and to interpret it, and it can be stored effortlessly [55]. Whereas, a non-systematized and non-codifiable knowledge cannot be transmitted by method that can be easily deployed for the learners. In the case of the knowledge which empowers to ride bike, cannot be deciphered or transmitted by such methods. It is an inferred knowledge, which is not articulable and which can be communicated just in the activity of the person who holds it.

Therefore, to transmit such knowledge, "the transmitter" must show to the "beneficiary" what to do [56, 57]. For this sort of knowledge, the main sort of conceivable exchange is the procedure of immediate exchange. Some researcher referred to this circulation and transfer of knowledge as streams that aids in exchange of business practices and in a specific unit of time [58]. In other words, knowledge imparting can be characterized as a methodology of knowledge exchange. Former knowledge ought to be nearly identified and continued with the new knowledge; some divisions of that knowledge must be slightly different than the previous [59]. This can be represented in its total nature once an organization stops putting resources into an innovatively rapid moving field as it might never have the capacity to resume later [60].

5.5 Codifiability

The procedure of codification is fundamental on the ground that knowledge creation is an aggregate undertaking that obliges communications. The transmitter and the beneficiary need to know the code to have the capacity to impart knowledge [61]. Classified knowledge is the type of knowledge that is typically found in printed form, for example, experimental papers and patent applications [62]. Codification manages the formalization of knowledge that is distinguished as critical, when it can be made explicit and at that point explained into words, content, drawings or other typical structures. Codification stage is regularly basic in organizations, since usually people do not utilize existing knowledge systems' functionalities to perform it in light of the fact that they invest an excess of time in it [63]. Furthermore, it can be troublesome for a few workers to know how to express their thoughts. It is therefore helpful to recognize knowledge framework functionalities that may encourage codification of knowledge whenever conceivable. Knowledge codification permits putting away and overhauling explicit knowledge in knowledge archives. Certain considerations must be paid to focus on the instruments relying upon the kind of explicit knowledge bearing in mind that there is knowledge that does not change over time, yet there is knowledge that is always showing signs of change [64].

The significant portion of the key knowledge, resides in implicit forms in the personalities of experienced individual analysts, designers, and researchers [65]. These persons embody knowledge in large amounts and yet it is hard to exchange. It is regularly just imparted by associates in the event that they have taken in the codification through basic practices. Therefore, it is more productive if organizational knowledge is made accessible and utilized at the most minimal conceivable expenses [66]. Besides, once codifiable data is recorded it stays available to many other workers, unlike implicit knowledge that is fixed to the single person. In request to be transmitted, individuals need to be in the vicinity to other individuals, i.e. the rationale behind creating community of practices (CoPs). This directly relates to the explicit knowledge where learning of new knowledge can be transmitted without the loss of its

importance. This can be guaranteed through a procedure of codification, since explicit knowledge is a codifiable or systematized knowledge [67]. Knowledge is placed in a knowledge store, sometimes referred to as knowledge repository, which is not connected to a particular individual thus it can be taken care and maintained. Such knowledge is frequently interpreted in a codebook [68]. The methodology of classifying knowledge requires major changes in the organization's investment in the creation and dispersion of knowledge. The foremost change lies in the expenses of access to learning [69] relating to the different phases of the procedure of codification. Notwithstanding, once this procedure is carried out, the transmission of this classified knowledge is possible at lower costs.

6. FINDINGS AND CONCLUSIONS

The literature review carried out indicates that, there is an increasing interest expressed by organizations as well as research communities to realize methods for handling their knowledge assets. There are ongoing attempts to formulate concepts, theories, practices and systems to realize new methods for dealing with the organizational knowledge. Research works have been focused in the past two decades on mapping out methods to categorize and utilize knowledge in organizations. Some of these attempts have provided clear guidelines, frameworks and systems that could be utilized to improve the process involved in managing knowledge in organizations. Other research attempts have provided weak and incomplete clarifications for the problem related to organizational knowledge and have not provided clear theoretical nor practical approaches to overcome it. This research interest was rationalized by the need to explain the nature of knowledge as a base for managing it. The study is underlined by the suggestion that better explanation for the phenomena of organizational knowledge can be provided if the three factors (classification, assessments, and characteristics of knowledge) re employed as guiding factors when analyzing knowledge in organizations. There is very limited research and business initiatives trying to directly address the problem of organizational knowledge with measurable and testable means.

Furthermore, the studied literature has not indicated methods that are guided by specific

factors when analyzing knowledge in organizations. Most of the research produced, within the duration considered for this study, has viewed the problem of knowledge flow limited to administrative and cultural aspects, or in pure financial terms only. In order to realistically approach the problem of organizational knowledge within an organization, there is a need to focus directly on what are the factors and aspects that constitutes the circulation of organizational knowledge. Once these factors and aspects has been realized, the creation of an adequate knowledge management initiatives will be greatly facilitated. The advancements in technology can plays great role in enabling these knowledge management initiatives.

7. FUTURE WORKS

It is recommended that future research effort be streamlined to focus on factors affecting the formation of organizational knowledge. These factors could be a set of entities, factors that directly affect knowledge creation amongst staff in an organization. One of the approaches that is worthwhile exploring is analyzing implied (tacit) knowledge within an organization. An important aspect of the implied knowledge can be found within formal and informal communications within the personnel's communities where these communications are not controlled by rigged and predefined organizational settings. These types of communications are commonly represented in unstructured contents, therefore is worthwhile to investigate the knowledge existence within these contents which can come in textual, audio or video forms. Additionally, researchers interested in the same field of study can consider overcoming this study's limitations which are addressed in the following section.

8. LIMITATIONS OF THE STUDY

Although this study attempts to include as much literature as possible within the specified duration of this analysis, this study has few limitations and they need to be taken into consideration when reviewing this study. Firstly, the study was conducted in a constrained time and budget hence mostly open access papers which are available for academics were considered. Secondly, the research considered keywords such as 'organizational knowledge', 'classifications', 'assessments' and 'characteristics' of organizational knowledge; this fact poses the possibility that an article(s)

might have been disregarded for not including its keywords in the set of keywords used for this study.

REFERENCES:

[1] Hamunen, K., Virkkula, O., Hujala, T., Hiedanpaa, J. and Kurttila, M., Enhancing Informal Interaction and Knowledge Co-Construction Among Forest Owners. *The Finnish Society of Forest Science Natural Resources Institute Finland, Silva Fennica*, Vol. 49, No. 1, 2014, p.1214, Retrieved from http://dx.doi.org /10.14214/sf.1214.

[2] Caroline, B., An Investigation into the Tacit Knowledge Transfer Process in an Open Plan Office Environment. Journal Special Issue for Knowledge Management Symposium Conversation Cafe, Dublin Castle, 2015, pp.1-39.

[3] Kristensen, S. and Vianello, G., A Model for Reusing Service Knowledge Based on an Empirical Case. *Journal of Research in Engineering Design*, Vol. 26, No. 1, 2015, pp.57-76.

[4] Nikiforidou Z, Pange J, Chadjipadelis T. Intuitive and Informal Knowledge in Preschoolers' Development of Probabilistic Thinking. *International Journal of Early Childhood*, Vol. 45, No. 3, 2013, pp.347-357.

[5] Crhova, Z, Kolman, K., Pavelkova, D., Support of Knowledge Sharing in Manufacturing Companies: A Case Study. `World Academy of Science, Engineering and Technology International Journal of Social, Education, Economics and Management Engineering, Vol. 9, No. 5, 2015, pp.1092-1096.

[6] Kosir, S., The Role of Knowledge Management and Internal Communication for Better Quality Assurance in Higher Education Institution. *Journal of Literacy Information and Computer Education*, Vol. 5, No. 3, 2014, pp.1550-1557.

[7] Fruehauf, J., Kohun, F. and Skovira, R., A discussion focusing on Polanyi's Tacit Knowing. *Online Journal of Applied Knowledge Management: A Publication of the International Institute for Applied Knowledge Management*, Vol. 3, No. 2, 2014, pp.100-113.

[8] Compomizzi, J. and D'Aurora, A., BA and Knowledge: A Process for Leadership and Communications for Non-Profitlear Organizations. *Journal of Issues in*

Information Systems, Vol. 15, No. I, 2014, pp.200-208.

[9] Taylor, H., Tapping Tacit Knowledge. *The Information School, University of Washington, Seattle, USA, IGI Global*, 2015, pp.26-41, Retrieved from http://biblio.uabcs.mx/html/libros/pdf/15/3.pdf.

[10] Giudice, M., Peruta, M. and Carayannis, E., Knowledge and The Family Business: The Governance and Management of Family Firms in The New Knowledge Economy. Springer Science and Business Media, New York, USA, 2011.

[11] Tongo, C., A Stakeholder Model for Managing Knowledge assets in Organizations. INTECH Open Access Publisher, 2012, pp.77-98. Prof. Huei Tse Hou (Ed.), ISBN: 978-953-51-0190-1.

[12] De Angelis, C. and Despres, C., A Knowledge Management and Organizational Intelligence Model for Public Administration. International Journal of Public Administration, Vol. 36, No. 11, 2013, pp. 807-819.

[13] Popsa, E. and Nicula, V., Development of Knowledge in Organization: A Necessary Approach. Scientific Bulletin-Nicolae Balcescu Land Forces Academy, Vol. 19, No. 1, 2014, p. 74.

[14] Lin, P., Ho, H. and Lu, M., Effects of Knowledge Management and Corporate Culture on Organizational Innovation Climate. Revista Internacional De Sociología, Vol. 72, No. 2, 2014, pp.43-55.

[15] Sokhanvar, S., Matthews, J., and Yarlagadda, P., Importance of Knowledge Management Processes in a Project-based organization: A Case Study of Research Enterprise. Procedia Engineering, Vol. 97, 2014, pp. 1825-1830.

[16] Souto, P., Beyond Knowledge, Towards Knowing: The Practice-Based Approach to Support Knowledge Creation, Communication, And Use for Innovation and Strategies. *Scientific Information System Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal*, Vol. 10, No. 1, 2013, pp.51-78.

[17] Kaladzavi, G., Diallo, P, Kolyang, Lo, M., OntoSOC: Sociocultural Knowledge Ontology. *International Journal of Web and Semantic Technology (IJWesT)*, Vol. 6, No. 2, 2015, pp.1-8, doi:10.5121/ijwest .2015.6201 01.

[18] Benkert, C. and Van Damd, N., Experiential Learning: What's Missing in Most Change Programs. *McKinsey and Company, Insights and Publications,* 2015. Retrieved from http://www.k12accountability.org/resources/AccountabilityCommittees/Experiential_learning.pdf

[19] TECFA, Types of Knowledge. *School of Psychology and Education of the University of Geneva*, 2014, Retrieved from, http://tecfa.unige.ch/tecfa/publicat/perayapapers/ocde/ocde11.htm# fn12.

[20] Lewis, K., and Herndon, B., Transactive Memory Systems: Current Issues and Future Research Directions. *Organization Science*, Vol. 22, No. 5, 2011, pp.1254-1265, doi: 10.1287/orsc.1110.0647.

[21] Pickett, M. 2013. Towards A Unified Framework for Learning and Processing Perceptual, Relational, and Meta Knowledge, 2011, Annual Conference on Advances in Cognitive Systems: Workshop on Metacognition in Situated Agents.

[22] Trabucco, X., *A Critical Discourse Analysis of the Notion of Human Being and Citizenship as Presented in the Subject of History Geography and Social Science in the Elementary Level Curriculum*. (PhD thesis, 2013, Ontario Institute for Studies in Education of the University of Toronto, Ontario, Canada).

[23] Short, R., Introductory Psychology: A Customized Version of General Psychology Developed Specifically for Robert Short at Arizona State University, Kendal-l/Hunt Publishing Company, Dubuque, Iowa, 2014.

[24] Gartner, K., From Consciousness to Knowledge: The Explanatory Power of Revelation. *Faculty of Social Sciences and Humanities of the Universidade Nova de Lisboa*, 2014, Retrieved from http://run.unl.pt/bitstream/10362/14017/1/Klaus_ G%C3%A4rtner_PhD.pdf.

[25] Francois, F. and Subandono, D., *Cultural Diversity and Entrepreneurship: Some Multi-Level Evidences from Indonesia*. 4th international workshop on Entrepreneurship, Culture, Finance and Economic Development, (2014, July), Klagenfurt, pp.1-17.

[26] Sjolund, E., A Discursive Approach to Dialogic Organizational Communication in Yammer Messages: A Case Study. (PhD thesis, 2016, School of Business, Aalto University, Helsinki, Finland).

[27] Liu, C.-J., Huang, C.-F., Liu, M.-C., Chien, Y.-C., Lai, C.-H., and Huang, Y.-M., Does Gender Influence Emotions Resulting from Positive Applause Feedback in Self-Assessment Testing? Evidence from Neuroscience. *Journal of Educational Technology and Society,* Vol. 18, No. 1, 2015, pp.337-350.

[28] Alhusban, M., and Ragsdell, G., Bridging the Gap between Intellectual Capital Models: An Ancestry/Chronology Approach. *In Proceedings of the 11th International Conference on Intellectual Capital, Knowledge Management and Organizational Learning*, (2014, November), p. 465.

[29] Stanivuk, M., Intellectual Capital in Digital Economy. *Journal of Economics*, Vol. 3, No. 1, 2015, pp.135-147.

[30] Costa, R., Assessing Intellectual Capital Efficiency and Productivity: An Application to the Italian Yacht Manufacturing Sector. Journal of Expert Systems with Applications, Vol. 39, No. 8, 2012, pp.7255-7261.

[31] Lerro, A., Iacobone, F. and Schiuma, G., Knowledge Assets Assessment Strategies: Organizational Value, Processes, Approaches and Evaluation Architectures. Journal of Knowledge Management, Vol. 16, No. 4, 2012, pp. 563-575.

[32] Kamasak, R., Knowledge Management Practice Assessment and The Relationship Between Knowledge Management Practices and Organizational Strategy Development: Empirical Evidence from Turkey. New Research on Knowledge Management Applications and Lesson Learned. Dr. Huei Tse Hou (Ed.), ISBN: 978-953-51-0073-7.

[33] Akhavan, P., Shirazi, H., Sabzaligol A. and Pezeshkan, A. 2013. A Framework for Organizational Knowledge Assessment by Combining BSC and EFQM: A Case of Beasat Industry Complex, Iran. IUP Journal of Knowledge Management, Vol. 11, No. 2, 2012, pp. 7-18.

[34] Gasik, S., , A Guide to the Project Management Body of Knowledge (PMBOK® Guide) 5th Ed, Chapter 13, Project Knowledge Management, Project Management Institute, Inc., Pennsylvania, USA, 2013, retrieved from: https://www.academia.edu/8436756/A_propo sal_for_Project_Knowledde_Management_A rea_for_PMBOK_R_Guide

[35] Duncan, J. and Tabriz, D. 2015. Improving Performance During Image-Guided Procedures. Journal of patient safety, Vol. 11, No. 4, 2013, pp. 230-236.

[36] Vlasov, M., and Panikarova, S., Knowledge creation in state-owned enterprises. Mediterranean Journal of Social Sciences, Vol. 6, No. 4, 2015, pp. 475-480.

[37] Wang, L. and Zhong, H., Study on the Trust Model for Knowledge Transfer. *International Journal of u-and e-Service, Science and Technology*, Vol. 7, No. 1, 2014, pp.285-294.

[38] Liu, D., Lin, C. and Chen, H., Discovering Role-Based Virtual Knowledge Flows for Organizational Knowledge Support. *Journal of Decision Support Systems*, Vol. 55, No. 1, 2013, pp.12-30.

[39] Khansharifan, A., Omran, M. and Askarzadeh, H., Investigating the Relationship between Knowledge Management and Employee Empowerment (Case study: Education Organization of Bojnourd City), *Journal of Management Research Report*, Vol. 3, No. 2, 2015, pp.502-512.

[40] Othman, R., Barriers to Adoption of the Lean Production System. *Journal of Advanced Management Science*, Vol. 4, 2016.

[41] Ying, W., Research on the Influencing Factors of Knowledge Transfer in Cooperative Network: A View from the Effect of Network Structure. *The Open Cybernetics and Systemic Journal*, Vol. 9, No. 1, 2015, pp.371-374.

[42] Hung, S., Huang, Y. and Chou, Y., *Understanding the Factors influencing Physicians' Knowledge Transfer Success.* The Pacific Asia Conference on Information Systems (PACIS), 2015, Retrieved from http:/pacis2015.comp.nus.edu.sg_proceeding sPACIS_2015_submission _560.pdf.

[43] Ali, S., Saleem, U. and Sikandar, S., Knowledge Sharing Prominence and Role in the 21 Century Organizations. *Researcher (2014)*, 6, No. 12, 2014, pp.73-79, ISSN: 1553-9865.

[44] Borowska, C., Knowledge Sharing Practices in CEMS-Global Alliance of Management Education. *Online Journal of Applied Knowledge Management*, Vol. 3, No. 2, 2015, pp.134-149.

[45] Reiche, S., Harzing, A. and Pudelko, M., Why and How Does Shared Language Affect Subsidiary Knowledge Inflows? A Social Identity Perspective. *Journal of International Business Studies*, 2015 pp.1-60.

[46] Polanyi, M., The Logic of Tacit Inference. *The Royal Institute of Philosophy*, Vol. 41, No. 155, 1966, pp.1-18, doi:10.1017/S0031819100066110.

[47] Amini, H., Imanzadeh, R., Rahmanian, M., Afravi, N., Bay, M., and Sedaghat, M., The Role of Tacit Knowledge Transfer in Empowering the Employees of Physical Education Departments. *International Journal of Biological Forum*, Vol. 6, No. 2, 2014, pp.208-212.

[48] Popiela, J., *Role of International Assignments in Knowledge Flow in Small and Medium Companies with Foreign Ownership.* In Proceedings of the 5th International Conference on Management: Management, Leadership and Strategy for SMEs' Competitiveness, (2015, June), pp. 45-49, doi: 10.17626/dBEM.ICoM.P00.2015.p009.

[49] Thoroddsen, A., Guojonsdottir, H. and Guojonsdottir, E. *From Capturing Nursing Knowledge to Retrieval of Data from a Data Warehouse.* in Nursing Informatics 2014: East Meets West ESMART, -Proceedings of the 12th International Congress on Nursing Informatics, Taipei, Taiwan, 201, (2014, June), pp.79-86.

[50] Tow, W., Venable, J. and Dell, P. *Developing a Theory of Knowledge Identification Effectiveness in Knowledge Management*. Association for Information Systems AIS Electronic Library (AISeL), Proceedings Pacific Asia Conference on Information Systems, Singapore (PACIS), PID 236018, (2015, July), retrieved from http://espace.library.curtin.edu.au/R?func=dbin-jump-fullandlocal_base=gen01era02andobje ct_id=236018

[51] Zheleva, D. and Viklund, A. 2014. Intra-Firm Knowledge Transfer: A Qualitative Case Study of Knowledge Transfer and Its Implications in A Soft Service Firm. (PhD thesis, Department of Business Studies, Uppsala University, Uppsala, Sweden), retrieved from: http://www.diva-portal.org/smash/get/diva2:746163/fulltext1.pd

[52] Nnabuife, E. and Ojukwu, H., Knowledge Management and Organizational Performance in Selected Commercial Banks in Awka, Anambra State, Nigeria. *Journal of Business and Management (IOSR-JBM)*, Vol. 17, No. 8, 2015, pp.25-32.

[53] Kranendonk, D., *The Contribution of Dedicated Acquisition Departments on Developing Acquisition Specific Capabilities through Prior Experience*. (PhD thesis, at the Rotterdam School of Management, Erasmus University, 2014, Rotterdam, Netherlands).

[54] Taal, S., Langbroek, P. and Velde, M., Reducing Unwarranted Disparities: The Challenge of Managing Knowledge Sharing between Judges. *International Journal for Court Administration*, Vol. 6, No. 2, 2014, pp.73-83.

[55] Maki, A. and Puhakka, V., *The Barriers of Knowledge Sharing in Multicultural Organization*. (PhD thesis, 2015, University of Oulu, Oulu Business School, Oulu, Finland).

[56] Khan, M., and Altaf, M., Use of Practical Wisdom through Human Capital in Enhancing Organizational Innovativeness. *Journal of Business and Management Research*, Vol. 9, 2015, pp.261-269.

[57] Kovacs, N. and Wensley A., Social Media in Organizations: Leveraging Knowledge Sharing. *Pannon Management Review*, Vol. 4, No. 1, 2015, pp.35-65.

[58] Golubchik, L., Khuller, S., Mukherjee, K., and Yao, Y., *To Send or Not To Send: Reducing The Cost of Data Transmission.* In Proceedings IEEE INFOCOM, 2013, pp. 2472-2478, Retrieved from http://www.cs.umd.edu/~koyelm/min_percentile.pdf.

[59] Johannessen, A. and Skaalsvik, H., Innovations in the Global Knowledge Economy: Consequences for Organizations. *Journal of Problems and Perspectives in Management*, Vol. 12, No. 4, 2014, pp.161-171.

[60] Mojibi, T. and Khojasteh, Y., The Correlation between Knowledge Management Strategies and Customer Relationship Management: A Case Study. International Conference on Economics and Business Management (EBM-2015), (2015, July), pp.96-102.

[61] Raudberget, D. and Bjursell, C., A3 Reports for Knowledge Codification, Transfer and Creation in Research and Development Organizations. *International Journal of Product Development*, Vol. 19, No. 5-6, 2014, pp.413-431.

[62] Salovaara, A. and Tuunainen, V. *Mediated Sharing as Software Developers' Strategy to Manage Ephemeral Knowledge*. Twenty-hird European Conference on Information Systems (ECIS), Munster, Germany, 2015.

[63] Zaied, B., Louati, H., and Affes, H., The Relationship between Organizational Innovations, Internal Sources of Knowledge and Organizational Performance. *International Journal of Managing Value and Supply Chains*, Vol. 6, No. 1, 2015, pp.53-67.

[64] Brahmana, S. and Christina, V., The Impact of Learning Organization on Organizational Readiness for Change of Widyatama University. *Journal for Educational Thinkers*, 4, 2012, pp.87-107, ISSN 1985-3637.

[65] Harvey, J., Managing Organizational Memory with Intergenerational Knowledge Transfer. *Journal of Knowledge Management*, Vol. 16, No. 3, 2012, pp.400-417.

[66] Li, Y., Ni, Y., Liu, W. and Yan, W., Two Patterns of Knowledge Trading. *Advanced Science and Technology Letters*, Vol. 76, No. (CA 2014), pp.104-108.

[67] Isaksson, O., Simeth, M. and Seifert, R., Knowledge Spillovers in the Supply Chain: Evidence from the High-Tech Sectors. 2015.

[68] Balland, P., Suire, R. and Vicente, J., Structural and Geographical Patterns of Knowledge Networks in Emerging Technological Standards: Evidence from The European GNSS Organization. *Journal of Economics of Innovation and New Technology*, Vol. 22, No. 1, 2013, pp.47-72.

[69] Breunig, K. and Roberts, H., Putting Your Money Where Your Mouth Is: Monetizing Knowledge Using Communication Roles. *European Conference on Knowledge Management,* Vol. 1, No. 156, 2014, pp.1-8.