Sharing of Tacit Knowledge in Organizations: A Review

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Abstract

Knowledge is regarded as a strategic factor in knowledge management implementation. It is mainly divided into two types: tacit and explicit. Tacit knowledge is created in the human mind as individual know-how and can be expressed as innovation. It is unwritten, unspoken and hidden vast storehouse of knowledge of a person. It is obtained as a result of the direct interaction between individuals and their peers in the organization. For the sustainable development of the modern global economy tacit knowledge can play an important role. Acquire and extract of tacit knowledge is not a very easy task, since it is very complex in its nature. The success and well-being of humankind is an essential issue in the twenty first century and use of tacit knowledge makes the job easier. Management of tacit knowledge effectively and efficiently is a key success factor for the organizations. The paper tries to discuss sharing of tacit knowledge for the sustaining of the long-term capabilities and performance in organizations. It analyzes the importance and difficulties of sharing tacit knowledge. This paper also makes an effort to explore the properties and characteristic of tacit knowledge thinking for the new readers.

Keywords: Explicit and Tacit Knowledge, Knowledge Sharing and Transfer, Polanyi, Nonaka

1. Introductions

Often we think that knowledge is a very simple theme. It is as something that we can record it in words, visualized and easily teach to other, but it is not always the case. In the 21st century knowledge becomes the most important resource and vital part for organizations to sustain their competitive advantages. For this, it is required to leverage knowledge resources to develop strategic plans for economics and business [112]. It is a changing method which interacts among experiences, skills, facts, relations, values, and thinking [71].

Ikujiro Nonaka and Hirotaka Takeuchi demanded that knowledge is initiated from interaction among employees in organizations [84]. Knowledge helps to create innovation which in turn inspires economic growth and development. It also contributes to establish sustainable long-term capabilities and performance of organizations by enhancing the success and well-being of individuals and communities [42].

In organizations, knowledge is divided into two types: explicit and tacit knowledge [79]. Although knowledge could be classified into personal, internal and external, practical and theoretical, shared and public, hard and soft, foreground and background; the classification of tacit and explicit knowledge remains the most common [90].

Data and information encoded, stored and disseminated are known as content component of the explicit knowledge [64]. Explicit knowledge is *know-what*, which is easily coded, transferred and shared within an organization [80]. It can be expressed in words, sentences, and it includes theoretical approaches, and easily articulated, communicated information or reduced to writing. It is often impersonal and formal in nature and frequently takes the form of documents, memoranda, speeches, books, reports, white papers, catalogues, presentations, patents, manuals, numbers and formulas, process diagrams, mathematical expressions, pictures and non-book media such as videos and software among others, etc. It is easily captured, transferred and shared with others without difficulties and can be stored in a database or computer and disseminated with technology [79,80,81].

In brief, tacit knowledge is a knowledge that is not explicated [15]. Tacit knowledge is highly personal, context-specific, and is difficult to formalize and communicate or transfer from one person to another by the process of writing or verbal expression and is not captured by language or mathematics and also difficult to reduce to writing and is made up of mental models, values, beliefs, perceptions, insights and assumptions [18,79,83,94]. It is rooted in an individual's

experience and values. It is difficult to codify, communicate, describe, replicate or imitate, because it is the result of human experience and human senses. The skills of a master cannot be learned from a textbook or even in a class, but only through years of experience and apprenticeship [1,79,81]. It frequently takes the form of analogies, metaphors, stories, or personal strategies that reveal insight into the *how and why* underlying an employee's approach to tasks or problems. It is unwritten, unspoken and hidden vast storehouse of knowledge of a person and is based on one's observations, experience, emotions, intuition and internal information. It is transferred and shared by observing behavior, communicating or coordinating among employees [1,79,81,83,84,105,106].

The experience, situation, conditions as perceived by owner of the knowledge is the context component of tacit knowledge [64]. It is a cornerstone in organizational knowledge creation theory and covers knowledge that is unarticulated and tied to the senses, movement skills, physical experiences, intuition, or implicit rules of thumb. Knowledge of wine tasting and crafting a violin are two examples of tacit knowledge [85]. Other examples of tacit knowledge are, speaking our own language; manage to ride a bicycle, cook dishes without seeing a recipe [94]. Knowing the right feel of bread dough before it goes into the oven is another example of tacit knowledge [84].

Tacit knowledge is not just about experiences learned on the job; it also comprises beliefs, values, attitudes, ideals, and elements that are related to the culture of the individual. It is much easier to understand and to remember than explicit knowledge. People use metaphors, analogies, demonstrations and stories to convey their tacit knowledge [43]. There are many scopes of researches on explicit knowledge, but there are very few scopes of researches on tacit knowledge. But, tacit knowledge is the necessary component of all knowledge [114].

Tacit knowledge may play an important role in the strategic planning performance of managers and professional staffs [7,13]. It is also important for the study of knowledge management and provides competitive advantage [78].

The present economy is knowledge-based. Knowledge is widely considered as the most important organizational resource for the long-term sustainable competitive advantage and success of any organization [84]. At present the scholars have realized the importance of tacit knowledge to the organizations and they

observed that greater efforts must be taken to influence on its huge prospective [6].

2. Literature Review

Tacit knowledge is first defined by philosopher, physician and chemist Michael Polanyi as knowledge that cannot be articulated or verbalized: '*We know more than we can tell*' [94]. Tacit knowledge, in this sense, is a form of *knowing* that is inseparable from action and cannot be communicated, understood or used without the knowing subject. The *individual knower* is the principal agent of knowledge creation and application [87]. Tacit knowledge is made visible through its application and can then be utilized in the innovation process [57].

Ikujiro Nonaka, Ryoko Totama and Akiya Nagata expressed that tacit knowledge is derived from personal experience; it is subjective and difficult to formalize [82]. On the other hand, Nonaka and Hirotaka Takeuchi confirmed that tacit knowledge is often learned via shared and collaborative experiences. They brought the concept closer to business management by writing about knowledge creating company in 1995 [84]. They argued that knowledge is initiated from interaction among employees in organizations. *The Knowledge Creating Company* of Nonaka and Takeuchi in management is that when communication is conducted from a person to a group, inside an organization and among organizations, tacit knowledge and explicit knowledge interact with each other. But this seems to be a little different from Polanyi's tacit knowledge [67]. Nonaka and Takeuchi [84] have developed the knowledge spiral model in 1995 to show interaction between tacit and explicit knowledge in an organization for socialization, externalization, combination and internalization (SECI), which helps synthesize subjective knowledge and values into objective and socially shared organizational knowledge.

I. L. Wu [123] showed that tacit knowledge of employees' is consisted of their ideas, experience, and competencies. K. Kreiner [54] demonstrates that tacit knowledge is the antithesis of explicit knowledge, in that it is not easily codified and transferred by more conventional mechanisms such as documents, blueprints and procedures.

Osaki Masaru [67] reveals that tacit knowledge itself is difficult to research, but it is essential to know as much as possible about it. He also tries to make clear the structure of tacit knowledge. Individual's tacit knowledge is unique to each person, and impossible to

transmit and share with others.

J. C. Spender [107] classified knowledge to an individual and a collective ways. He also classified knowledge in different types used in organizations as: conscious knowledge (explicit knowledge held by the individual), objectified knowledge (explicit knowledge held by the organization), automatic knowledge (preconscious individual knowledge), collective knowledge (context dependent knowledge visible in the practices of the organization).

Sirous Panahi, Jason Watson and Helen Partridge provided that there are five major requirements to present tacit knowledge sharing: i) observation, ii) experience sharing, iii) social interaction, iv) informal relationship/networking, and v) mutual trust [89].

G. Hedlund and Nonaka [36] defined knowledge as being constructed from '*Cognitive perceptions as well as skills and expertise embodied in products or services.*' They made the distinction between the tacit, intuitive, non-verbalized knowledge and the articulated as, '*Specified either verbally or in writing, computer programs and the like.*'

B. Kogut and U. Zander [51] divided knowledge into two categories: information and know-how. Information includes facts, axiomatic propositions and symbols. Know-how is accumulated practical skill or expertise that allows one to do something smoothly and efficiently.

3. Objectives of the Study

The objective of the study is to discuss aspects of tacit knowledge for the development of an organization. The purpose of the research approach is to discuss:

- meaning and aspects of tacit knowledge,
- importance and problems of sharing of tacit knowledge, and
- properties and characteristics of tacit knowledge.

The aim of the present study is to improve the practices of knowledge sharing activities in the organizations of Bangladesh. A country will progress in quick development when its citizens are cooperative in sharing knowledge. We hope this article will be benefited the people of Bangladesh as well as other nations of the world.

4. Methodology of the Study

Methodology of the study is the systematic procedure that maps out the processes, approaches, techniques, research procedures and instruments [53]. This is a review article. It is prepared on the basis of secondary data. Helpful information from different magazines, and articles published in different journals were used in this research work. We have also used websites, books, and various research reports to prepare the paper. We have taken the help of different case studies to make the study interesting to the readers. The study focuses on how tacit knowledge can be captured, shared and transferred in organizations.

5. Etymology and Historical Perspectives on Tacit Knowing

The word *tacit* comes from the Latin word *tacitus* which means silent. In common usage, most of the words which are synonyms of tacit relate to ineffability are unsaid, unspoken, unuttered, wordless, silent, undeclared, unexpressed and unvoiced. They are also related to indirectness, such as, implicit, implied, inferred, and understood. Tacit knowledge is a qualifier of knowledge which means for something to be silent in a linguistic sense, and what it means '*to know silently*' [99]. Hence, tacit knowledge implies that there is knowledge within us that we act on but cannot explicitly describe it and which is highly personal and context specific and deeply rooted in individual experiences, values and emotions.

Although Polanyi worked dominantly on tacit knowledge in the 1950s, the concept of tacit knowledge has been actively discussed since at least the time of the ancient Greeks. The psychoanalytical concept of tacit knowledge originates in the ideas of the philosophers Plato and Aristotle. Aristotle is perhaps the first philosopher in the western tradition to develop a theory about tacit knowledge [47].

In *Nicomachean Ethics* Aristotle manifested the relationship of human ability and experience. He defined practical wisdom as a virtue concerned with using experience to determine how to best act in particular situations. Distinguishing between practical and philosophic wisdom, he argues that '*Each is a virtue of a different part of the soul*' [3].

6. Tacit Knowledge

Tacit knowledge is difficult to write down, visualize or transfer from one person to another [63]. It collects all those things that we *know-how* to do but perhaps do not *know-how* to explain. It is messy, job specific, difficult to study, regarded as being of negligible epistemic

worth. It is rooted in context, experience, practice and values, and hard to communicate, as it resides in the mind of the practitioner. It is the best source of long-term competitive advantage and innovation, and passes through socialization and is not handled by well information technology (IT).

The concept of tacit knowledge in organizations has given by many scholars [15]. Tacit knowledge plays an important role in the knowledge-oriented research in management [92]. It is connected with terms such as skills, know-how, know-why, working knowledge, high level of expertise [16]. It embodies an individual's education, natural talent, experience and judgment [49].

The term *tacit knowledge* was first introduced into philosophy by the Hungarian philosopher; physician and chemist Michael Polanyi (1891– 1976) in 1958 in his magnum opus *Personal Knowledge*. He was born in Budapest into an upper class Jewish family [93]. He conducted research in Germany, England, the USA and Canada. He famously summarizes the idea of tacit knowledge in his book *The Tacit Dimension* with the assertion that '*We can know more than we can tell.*' He strongly believes that creative acts are shot-through with strong personal feelings and commitments [94]. He was interested in the layers of knowledge which he called the tacit dimension of knowledge. His concept of tacit knowledge is an important contribution to the field of epistemology and cognitive psychology [26]. He also expressed that it is the '*Knowledge of untold portions which supports what is told.*'

Tacit knowledge is unexternalizable and intransmittable body knowledge, experience knowledge, subjective knowledge or personal knowledge that a living person, not a machine or a computer, has acquired inside the body [67]. It consists of a range of conceptual and sensory information and images that can be brought to bear in an attempt to make sense of something [38]. For example, how to drive a car well is usually unconscious and quite hard to explain in detail. Physicians can identify diseases by tacit knowledge.

Tacit knowledge is also technical or cognitive and is made up of mental models, values, beliefs, perceptions, insights and assumptions. Moreover it is demonstrated when someone masters a specific body of knowledge or uses skills like those gradually developed by master craftsmen [117]. Workplace knowledge that we do not get from being taught, or from books, paper, magazine, etc. but get from personal experience [105]. Tacit knowledge is subdivided

into two categories [79]: i) expressible tacit knowledge, and ii) inexpressible tacit knowledge.

Expressible tacit knowledge can be documented, but certain factors commonly prevent documentation from happening. Protecting individuals and organizations is often a key factor in preventing documentation of expressible tacit knowledge. Examples of expressible tacit knowledge include personal information about staffs, colleagues and customers, competitors, recipes and formulas, trade secrets, rules of thumb, and tricks of the trade [79].

Inexpressible tacit knowledge is complex, intuitive, and impossible to articulate fully in any form. Examples include a masterful piano performance, Olympic cycling, expert animal training and green-thumb gardening [79].

Tacit knowledge makes speakers fluent, lets scientists understand each other, is the crucial part of what teachers teach, makes bureaucratic life seem ordered, comprises the skill in most sports and other physical activities, etc. It currently lives a varied life in a range of academic disciplines, including philosophy, psychology, sociology, management, and economics; and by right, it ought to play a large part in the world of artificial intelligence [15].

The definitions of tacit knowledge are given by the various scholars as follows:

Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or share with others. It is deeply rooted in an individual's actions and experience as well as in the ideals, values or emotions he or she embraces [81]. It represents knowledge based on the experience of individuals, expressed in human actions in the form of evaluation, attitudes, points of view, commitment and motivation [82]. It consists of mental models, beliefs and persuasions of each individual employee that are so ingrained as to be taken for granted. It resides within the individual and is difficult to express in words [70].

Tacit knowing describes the form in which we hold our least communicable knowledge assets in the E-space [12]. It has a personal quality that makes it hard to formalize and communicate [120]. It is not easy to see or express, it is highly personal and hard to formalize. It may well be rooted in the individual's experience, attitude, values and behavior patterns [33].

Tacit knowledge includes the intuition, perspectives, beliefs and values that peoples form as a result of their experiences [100]. It entails information that is difficult to express,

formalize or share and it is unconsciously acquired from the experiences one has while immersed in an environment [60].

6.1. Michael Polanyi's Tacit Knowledge

Polanyi gave concept of tacit knowledge in facial recognition as, '*We know a person's face, and can recognize it among a thousand, indeed a million. Yet we usually cannot tell how we recognize a face we know, so most of this cannot be put into words*' [94]. He invented the term tacit knowledge to describe knowledge that has been embodied, embedded, and is difficult to express [80,109]. Hence, all knowledge is acquired by the knower by means of physical and mental processes [26]. Polanyi says that the physical body is the basis of our knowledge, intellectual as well as practical. Polanyi [94] views tacit knowledge as the backdrop against which actions are understood. He determined, '*All knowing is personal knowing*' [94]. Polanyi also states that every piece of knowledge contains explicit and tacit dimensions and that they are inseparable [94].

Polanyi [93] finds that tacit knowledge is a personal form of knowledge, which individuals can only obtain from direct experience in a given domain. Tacit knowing is an elusive and subjective awareness of the individual cannot be expressed in words. It is from Polanyi's argument that tacitness was evidently different from implicitness [90].

Polanyi [93] emphasizes the concepts of knowing what and knowing how, and he indicates every bit of knowing contains both of these aspects. In this respect, knowing what describes something that is knowable, and knowing how describes something that is only realizable in action. They are two different things; one can be transferred discursively and the other only through action. Polanyi wrote of tacit knowing as a process focusing on the operationalization or how to of tacit knowledge, rather than emphasizing what is tacit knowledge. He emphasized that tacit knowing can provide a useful structure for conceptual and empirical work specifically in relation to developing understanding and sharing of tacit knowledge [31]. Tacit knowing is a tacit power, which is a fundamental power of the mind [95]. Hence, Polanyi has drawn attention to knowing, an activity, which other writers also suggest should be the focus of tacit knowledge studies [10].

Polanyi [94] believes that a large part of human knowledge is tacit in nature and accessing it can present challenges. The ineffable nature of knowledge was given by Socrates and Plato [21]. The concept of tacit knowledge did not gain widespread attention until the writings of Michael Polanyi [94]. Polanyi observed that individuals in an array of settings such as, arts, craftsmanship, manufacturing, medicine, sports, often had a difficult time describing the principles on which their actions were based. Specifically, Polanyi noted that it is common for individuals to do something and simultaneously be unable to explain how they did it [24]. For example, swimmers stay afloat by regulating their breathing, yet most swimmers are not aware of this nor can explain how they alter their breathing to stay afloat. Polanyi wants to say that individuals often '*Know more than they can tell*' [94].

Polanyi's insights regarding the notion of tacit knowledge was first introduced to the management literature by Nelson and Winter [77] and later popularized by the promoters of the knowledge-based view [84]. Polanyi also distinguished between explicit and tacit knowledge [94]. The tacit knowledge of Polanyi is called intuition by his collaborators and students [67].

The main way to acquire it is through experience. Without some form of shared experience, it is extremely difficult for persons to share each other's thinking processes [55]. For example, riding a bike is a tacit knowledge. We may know explicitly how to ride a bike but you cannot simultaneously focus on the handle and at the same time orient yourself in traffic [94].

Based on Polanyi's approach, Collins classified tacit knowledge [15] as; i) relational tacit knowledge, ii) somatic tacit knowledge and iii) collective tacit knowledge. Relational tacit knowledge is knowledge that can easily be turned into explicit knowledge by social interaction with the knower. Somatic tacit knowledge is knowledge that is emblazoned in the substance of body and brain. Collective or strong tacit knowledge is knowledge that can be attained by individuals only if they are embedded in a group or society.

6.2. Know-how Type Tacit Knowledge

Many authors equate tacit knowledge with *know-how*, which contrasts with knowing about something [21]. It could be classified into two dimensions: i) the cognitive, and ii) the technical dimension [35]. The technical dimension indicates information and expertise in relation to *know-how* [33]. The cognitive dimension is consist of mental models, beliefs, ideals, values, schemata, and mental models that

are deeply ingrained in us, and that we often take for granted which shapes the way we perceive the world. The technical dimension encompasses the kind of informal personal skills of crafts often referred to as *know-how* [86].

Lundvall and Johnson [62] defined it into four categories of tacit knowledge as; know-how, know-what, know-who, and know-why.

Know-what refers to knowledge about facts especially things that we can actually call information. It is the consistent set of design basics and indicates the meaning, classification, design specifications, design tasks, and design attributes. The experts must have a big quantity of this knowledge in order to fulfill their job. It is useful to extract the declarative knowledge. Doctors and lawyers possess to this category of knowledge [5,62].

Know-why refers to scientific knowledge of the principles and laws of nature. It is useful in justification. Here knowledge is the core ingredient that underlies technological development and product and process advances in most industries. This knowledge can be developed through the university and industry collaboration [5].

Know-how is the capability of doing something. It refers to the software designer expertise and the software design standards. Business environment relies on the individual knowledge to make the right decision. Know-how is typically a kind of knowledge developed and kept within the border of an individual firm. Know-how requires some know-what (networking) and sometimes some know-why (science), which is the understanding of basic principles and laws of nature. It is important to extract the procedural knowledge. 'How to make a curry' is an example of know-how type knowledge [5,62].

Finally, know-who refers to the specific social relations held by an individual; it is knowledge about who knows what and can do what. This kind of knowledge is internal to the organization to a higher degree than any other kind of knowledge. It is significant in economies where skills are widely dispersed because of a highly developed division of labor among organizations and experts. Know-what and know-why are similar in the sense that they can be stored, reproduced, and exchanged fairly easily. But this is not the case for know-who and know-how [5,62].

6.3. The Importance of Tacit Knowledge

From the ancient period it is believed that capital, raw material and labor are the main source for creating and applying knowledge. At present knowledge is considered as an exceptional fund of indescribable economic resources and the dominant source of long-term competitive advantage [43]. It is true that knowledge has been of decisive importance in the development of humankind [121]. Knowledge is an important asset for countries as it provides potential for economic and social development by providing low cost and effective ways for service provision and production of goods while leading to globalization and competitiveness internationally [122].

It is essential for making the right business decisions as well as for innovation and expertise plays a vital role in innovative processes [48].

Tacit knowledge is an intangible asset that is not subject to the law of diminishing returns and its value increases as more people share it [56]. The importance of tacit knowledge has been pointed out in relation to decision-making, time-management, quality and competitiveness in organizations. Tacit knowledge is the most strategically important resource of an organization. It is renewable and sustainable base for an organization's activities and competitiveness [81]. It is important because expertise rests on it and it is a source of competitive advantage as well as being critical to daily management [82]. About 90% of the knowledge in any organization is embedded and synthesized in tacit form. It plays a key role in influencing the overall effectiveness of knowledge in organizations [117]. The importance of tacit knowledge is not only as a form of competitive advantage and as strategy but also as related to learning, innovation and product development [44,54,55].

That value creating capability resides in the tacit knowledge of the engineers, managers and marketing staff and this dynamic tacit knowledge capability creates sustainable competitive advantage [20].

Processing, sharing and using tacit knowledge is an essential and unavoidable issue of every organization. It is very difficult for an organization to capture, share and store tacit knowledge than explicit knowledge [65]. Due to global economic growth many organizations gave importance of maintaining tacit knowledge sharing environment. The aim of tacit knowledge sharing is to exchange existing personal knowledge in order to create new knowledge [74]. The systematic process for acquiring, organizing, sustaining and renewing tacit knowledge of employees has enabled organizations to survive in a robust economy

[75].

Tacit knowledge is the main body of organizational knowledge with a priority and is the key to form the individual and organizational innovation capability [59]. It is the most valuable and significant part of human knowledge existed. It plays an important role to improve individual and organizational productivity and competitive advantage. In organizations it is considered as an important asset for efficient production of goods, smoothness in productivity, improving quality of work, decision making, organization learning, productivity, competitiveness, serving customers, producing goods, accuracy of task performance and major time saving for individuals and organizations [1, 35,102].

The efficiency of making decisions, production capacity, customer serving and the accuracy of task performance can be improved by the use of tacit knowledge. It increases the smoothness of work and increases the quality of the work [13].

Tacit knowledge is valuable, heterogeneous among firms, and difficult to imitate, it has the potential to provide firms with a sustained competitive advantage [24].

7. Properties and Characteristic of Tacit Knowledge

Properties of tacit knowledge can be written as follows [17,35,49,68,72,91]:
- it resides in human minds and also in relations,
- it is unstructured, difficult to see, codify, estimate, investigate, formalize, write down, capture and communicate accurately,
- it is acquired by sharing experiences, observation, imitation and face-to-face discussion,
- it is difficult to learn: learnt through personal experience, practice, apprenticeship, observation, imitation, and reflection,
- it has ability to adapt and collaborate,
- it is rooted in action, procedures, commitment, values and emotions, etc.,
- coaching and mentoring is necessary to transfer it,
- it is rarely documented, highly individual, personal and hard to formalize,
- it is less familiar, unconventional form of knowledge,
- learnt through experiences, skills, observation, intuitive feeling, mental modes, beliefs, and values,

- it can deal with new and exceptional situations
- it is experience based (knowledge-inaction),
- it is mostly unconscious and invisible knowledge (both known and unknown to the holder),
- it is non-communicable in a language,
- it is transferred through conversation, storytelling, discussions, analogies, and demonstrations, and,
- it is subjective, know-how, know-why, care-why, practical, job specific, experience-based, context-specific, here and now, and expert's knowledge.

The main characteristic of tacit knowledge is the elementary belief that knowledge is personal in its nature [108]. Tacit knowledge is sometimes called *useful knowledge* by social scientists. R. J. Sternberg and J. A. Horvath define it as *practical intelligence*. They believe that it has the following three characteristics [110]:
- you acquire it mostly by yourself,
- it is about how to do things, and
- it is practically useful.

Polanyi [94] and McInerney [69] represented the characteristic of tacit knowledge as follows: Tacit knowledge is subconscious, personal, difficult to articulate, perceived, unaware, experienced based, shared through conversation, embedded in stories, escapes observation. It is based on insights and understandings, judgments, assumptions, relationships, norms and values and organizational culture.

Davenport and Prusak [18] describe some of the characteristics of tacit knowledge that make it a challenge to transfer.
1. It is difficult to encode in a document or database.
2. It is developed and internalized over a long period of time within a specific cultural environment.
3. Often the *knower* is not aware they know it or that it is valuable to others.
4. Some knowledge cannot be represented outside the human mind.

According to W. H. A. Johnson the characteristics of tacit knowledge are as follows [45]:

Personal knowledge: Tacit knowledge is part of an individual's understanding and it is tied to other personal understandings and it can also be shared with others. This shared tacit knowledge is often conceptualized as being organizational knowledge [84].

Tacit qualities: Tacit knowledge constitutes

knowledge that is unarticulated and implicit. When talking about the tacit qualities of tacit knowledge we also have to take into consideration the subconscious nature of tacit knowledge.

Path dependency: Tacit knowledge depends on personal experience. The accumulation of tacit knowledge requires time, but its usage depends on the propensity to utilize intuition.

Context dependency: This characteristic is closely related to the path dependency, but context is more related to a place, a destination.

Embeddedness: Skills like riding a bike is only learned by practice. The tacit knowledge of an expert can be passed on through apprenticeship. The apprentice uses both observation and imitative behavior.

8. Sharing and Transferring of Tacit Knowledge

The terms *knowledge sharing* and *knowledge transfer* are often used interchangeably in the literature to refer to aspects of a larger tacit knowledge conversion process [22]. Knowledge sharing is the process by which knowledge held by an individual is converted into a form that can be understood, absorbed and used by other individuals through channels or networks between knowledge providers and seekers [40].

Tacit knowledge is more difficult to transfer rather than explicit knowledge, because explicit knowledge is theory-based and transmitted in formal, systematic language [80]. Nonaka and Konno [81] stated that converting tacit knowledge to explicit knowledge using a process of externalization before sharing can take place. On the other hand, Polanyi [94] suggest that to be able to share tacit knowledge the possessor of it must first become conscious of the knowledge he possesses and then find a way to express the knowledge. Only after this occurs can a sharing of knowledge take place.

Tacit knowledge is rarely shared and communicated because it is subjective and intuitive in nature and it is lost when the employee possessing it leaves the organization [88]. As the tacit knowledge is always stored in peoples' brains, sharing of tacit knowledge is difficult, complex, time consuming and one of the biggest challenges of KM [37,71]. For example, the ability to speak a language, knead dough, play a musical instrument or design and use complex equipment require all sorts of knowledge that is not always known explicitly, even by expert practitioners, and which is difficult or impossible to explicitly transfer to other users [119].

About two-thirds of the information received at work is transformed into tacit knowledge through the face-to-face interaction such as informal conversations, direct interaction, stories, mentoring, networking, internships and apprenticeships [43,84,113].

Tacit Knowledge is transferred through observing behavior, communicating or coordinating among employees. Hence, it is a complex procedure which requires communication among coworkers to capture knowledge [74].

To transfer tacit knowledge we require extensive personal contact, regular interaction and trust. It is sometimes captured when the knowledge holder joins a network or a community practice [32]. It can only be revealed through practice in a particular context and transmitted through social networks [101].

It is important to create and shape relationships among coworkers and various social networks that assist tacit knowledge exchange among the individuals within a project [28]. There are two processes of sharing tacit knowledge [11]: i) directly by personal contacts with other employees, and ii) indirectly through information and communication technology (ICT).

The direct interaction of tacit knowledge is performed through the collaborative of knowledge sharing among the members of the organization. It also shared through apprenticeship, face-to-face meetings, initiating meetings among employees who need to cooperate and direct observation [27,65]. Tacit Knowledge is implanted in social relations and is transferred through direct contact and observation of behavior [9].

ICT facilitates sharing of tacit knowledge. For example, it is shared through expert systems, extranets and intranets, e-mail, databases, videoconferences, teleconferences, real or virtual bulletin boards and collaboration software like groupware, but is not able to replace direct contact and mutual relations among employees [50,65]. Social networking and online discussion forums can share, critique and validate their collective empirical knowledge easily among individuals and organizations. Wikis and blogs have been used by successful organizations as effective tools to transfer tacit knowledge [2,56].

Tacit knowledge sharing can be performed by the following methods and practices [65]:
1) Employees and management meetings, where current problems and ways of solving them are discussed.
2) Different types of mentoring and coaching.

3) Reports from projects that failed and presenting them to the board meetings or other employee groups.
4) Developing and providing best practices databases to employees.
5) Sharing of knowledge accumulated on previous work stations.
6) Rotation of staff in various workstations.
7) Pursuit of training a successor.
8) Participation in task teams.
9) Visits by employees in other departments in order to learn.
10) Education system of managerial staffs by the practice in various company units.
11) Teams of individual learning managers.
12) Transfer of knowledge by employees who took part in training other staff members.
13) Analysis of the reports prepared by the sellers and the people involved in client services.
14) Organizing knowledge fairs.
15) Boxes of submitting rationalization projects and ideas of employees.

8.1. Tacit Knowledge Sharing in Education

University teachers can improve their teaching skill and researching knowledge by the sharing of tacit knowledge. The reasonability of a university teacher reflects not only the specialization and research but also the teaching and cultivating talents [103]. The tacit knowledge is naturally reflected in the process of teaching and researching, is valuable as well as competitive for the university teachers [115].

In the decision-making process of tacit knowledge sharing, university teachers would weigh the potential risks and values when they share their own knowledge with others [96].

Tacit knowledge sharing processes in education are four types as [124]: i) peer review, ii) learning community, iii) thumb-a-lift, and iv) academic conference.

Peer review: It is a standard practice of tacit knowledge sharing that would encounter teachers when they submit journal articles, case studies, books and apply for sponsorship of scientific foundation or evaluate the quality of teaching, etc. It is a necessary process for the continuing development of teacher at working on research or teaching [104]. The peer reviewers can read and share others' teaching skills which are important for improving skills and innovativeness. On the other hand, the peer-reviewed teachers can gain feed-back suggestions and advices to improve their teaching and research. But the process of peer review is highly risky. The unreasonable criticism, advices and suggestions from some

impertinent peer reviewers may mislead the research orientations of scholars [124].

Learning community: This is formed by a group of teachers who share academic ideas, skills, methods, experience and attitudes through tacit knowledge sharing [97]. The cooperation among teachers with different characters can share properly and motivate creative ideas and solve the problems. Teachers can construct emotional connections with who own different knowledge, capability and skills and can build academic reputation in the research field to fulfill self-worth and social value by contributing knowledge. The dynamic scale and scope of learning community guarantee the quality, efficiency, stability and continuity of tacit knowledge sharing among teachers. Teachers also may face low risks in learning community in terms of culture, mechanism, platform, tool and organization when the learning community is only shaped but not connected [124].

Thumb-a-lift: It exists in the tacit knowledge sharing activities of teachers. Academic forum, teaching blogs and discussion space are example of thumb-a-lift. When many teachers log on some online learning and discussion webs to gain information and knowledge, but most of them do not contribute their own knowledge. The distrust and reservation of teachers make individual tacit knowledge sharing difficult. The members who have a lot of knowledge and strong willingness to share knowledge would leave the organization and the lower level teachers would fill the organization [124].

Academic conference: It is a popular mode of tacit knowledge sharing for teachers [111]. Many teachers prefer to communicate through international or national academic conferences to know other teacher's new views and opinions. But they always cannot find proper research achievements that match with their interests. Sometimes the standard of the academic papers published in conferences is always not as good as the papers published in journals. Many researchers would introduce their achievements, but they would not expect to gain many suggestions and advices. As a result there are problems about quality, depth and scope of the tacit knowledge sharing in academic conferences. The risk with tacit knowledge sharing through academic conference is low [124].

8.2. Tacit Knowledge Sharing in Construction Industry

The construction industry is considered as

one of the knowledge-based value creating sectors of the modern economy. Sharing of tacit knowledge helps to solve the knowledge management (KM) problems in construction organizations [90].

In a construction project, Architecture, Engineering and Construction (AEC) firms rely on their experiences, professional intuition, and other forms of tacit knowledge to complete the work satisfactorily. The experienced workers share their tacit knowledge and experiences with apprentices through a form of storytelling and communities of practice [14].

The importance of tacit knowledge within the construction industry can be expressed as: i) due to intrinsic characteristics of the construction industry, and ii) the popularization of the 'knowledge worker' concept [90]. Most cases the tacit knowledge of construction employees has often been ignored or gave less importance and inadequate empirical studies conducted in the construction industry [25].

Kolb's four-stage cognitive model explains the learning is cyclical, which closely resembles tacit knowledge generation and utilization in construction employees. The model is represented as [52]:

Experience: It provides the basis for the tacit knowledge generation process such as, active involvement.

Reflection: It gains an understanding of the current experiences and processes it in a way that makes sense of the experience.

Exploration: It assimilates and distils the observations and reflections into theory.

Action: It is based upon knowledge gained, develops a way to use and start to put into action.

8.3. Difficulties of Sharing Tacit Knowledge

The difficulties of sharing tacit knowledge can be related to perception and language, time, value, and distance [81].

Perception and language: It is considered as the main difficulties in sharing tacit knowledge. Staffs may be unaware of what they have learned from a project and what aspects of their learning could be useful to others. Perception is the characteristic of unconsciousness about a problem for not being aware of the full range of the knowledge. Another difficulty with language lies in the fact that intangible tacit knowledge is held in a non-verbal form [93].

Time: Time increases challenges for sharing tacit knowledge. Staffs do not have the time to make knowledge available, to share it with others, teach and mentor others, or to use their information and innovate. The speed of present business world increases and time becomes a scarce resource. The internalization of tacit knowledge requires a long time both for individual and organization, which causes difficulties of sharing tacit knowledge [8].

Value: It creates difficulties in sharing tacit knowledge. In the globalized world knowledge has become a valuable asset for the development of an organization. But unfortunately many forms of tacit knowledge, such as intuition and rule-of-thumb, have not been considered valuable [125].

Distance: At present distance raises difficulties in workplace. The need for face-to-face interaction into more distant is often creates difficulties for sharing of tacit knowledge [57].

8.4. Problems of Sharing of Tacit Knowledge

The capture, transfer and sharing of tacit knowledge is not an easy task [56]. Employees in an organization know valuable information of that organization but sharing of this information throughout the organization is a great challenge. Sharing of tacit knowledge may cause risks to an individual. For example, for this an individual may loss of competitive advantage over peers or it may provide incomplete or having a questionable track record [109]. To reduce these risks, Nahapiet and Ghoshal [76] provided a theoretical model linking trust and knowledge exchange. They suggested that trust may be a multi-dimensional construct that includes distinct cognitive and relationship based components. Lucas [61] observed that both interpersonal trust and reputation of knowledge recipients and sources explained variance in employee knowledge transfer.

Capturing tacit knowledge is not a straight forward routine and requires an extensive time commitment, tools and methods [4]. Three key areas that challenge the application and management of tacit knowledge in organizations are identified as: i) the individual, ii) organizational, and iii) technological barriers [39, 46, 56].

Individual barrier: We have mentioned that tacit knowledge is individualist. At the individual level, individual's personality, temperament, attitude, interpersonal skills and pride of ownership by an individual as factors that hindered the management of tacit knowledge. In some cases individuals shy away from sharing their knowledge at the risk of exposing their knowledge [4]. Lack of time to identify colleagues and share knowledge, low awareness of the benefits of possessed knowledge to others, poor interpersonal skills,

fender, lack of social networking and differences in culture, race and value system as some of the individual barriers to tacit knowledge sharing [98].

Organizational barrier: Leadership in any organization is worked for the development of processes and strategies in that organization to succeed in the business environment. But leaders in some organizations are barriers to tacit knowledge sharing, because they create bureaucratic and hierarchical organizational structures that are inflexible and hence hinders the transfer of knowledge within the organizations [46].

Trust creates relationships among employees in an organization in order for tacit knowledge to be shared. But in most organizations trust is broken where individuals take credit without acknowledging the source of the knowledge [4,39].

Restructuring and downsizing also leads to loss of valuable tacit knowledge in organizations. Valuable tacit knowledge is lost when skill and expert members exit the organization without having their knowledge documented [41].

Other organizational barriers are; internal competitiveness amongst employees business in units or functional areas, high turnover, limited company resources that do not encourage knowledge sharing, top down communication, lack of transparency within the organization, lack of highly skilled and experienced staff, inflexible organizational structures a top-down communication and knowledge flow [39,98].

Technological barrier: Technology has changed the way organizations operate as it has provided means to instant access to information and data over long distances. But technology does not operate in a vacuum and organizations today are adapting the use of hybrid solutions to facilitate knowledge sharing [98].

Sometimes technology is a challenge that obstructs the application and management of tacit knowledge. Organizations have simply invested ICT systems and processes that are a mismatch with the intended users, heavy reliance on technology by employees that are unrealistic, little or no training of employees on ICT systems and processes, reluctance by the same employees to use technology due to lack of familiarity, and maintenance of the said ICT systems [4,56].

8.5. Benefits of Sharing Tacit Knowledge

The transfer of tacit knowledge is beneficial for all organizations. Basis of KM is transfer of individual or collective skill into codified form [19].

Tacit knowledge sharing provides sustainable competitive advantage to develop tangible assets as an intellectual capital [58].

Knowledge sharing can be characterized by the transfer of a total of knowledge from one person to another. For the maximum benefits the employees of the organizations should share knowledge with each other. Sharing of tacit knowledge among the employees is beneficial for the organizations. Hence tacit knowledge sharing is vital both for individuals and organizations.

Tacit knowledge is credited for substantial and measurable increase of organizational efficiency [30]. Wagner and Sternberg [116] asserted that the ability to acquire and manage tacit knowledge is hallmarks of managerial success.

9. Management of Tacit Knowledge

The concept of knowledge management (KM) is relatively new and highlights how the management of knowledge is just as important as managing resources. It is a new area of management in the era of knowledge economy. KM is the management of information and knowledge and their usage in organizational business processes within the organization. KM indicates strategies and processes designed to identify, capture, structure, value, leverage, and share an organization's intellectual assets to enhance its performance and competitiveness [73].

KM deals with the creation, use, reuse, dissemination of Knowledge. For effective KM in competition agencies, both tacit and explicit knowledge approaches should be considered. S. Gueldenberg and H. Helting expressed that both tacit and explicit knowledge are complementary and they are interrelated and play parallel role in knowledge process and creation [34].

The tacit knowledge approach to KM focuses on understanding the kinds of knowledge that individuals have within a competition agency, moving individuals to transfer knowledge within a competition agency, and managing knowledge creators and carriers [105].

Tacit KM is a fruitful step to improve human capital in organizations. But many organizations do not have a clear idea of how to improve human capital with local and global competitors [66]. KM techniques by tacit knowledge are, personalization, knowledge sharing networks, communities of practice, brainstorming, action learning, post-project reviews, etc. [23,118].

In recent years tacit knowledge has been used

by theorists as an important part in the process of KM [29].

The main causes of loss of tacit knowledge by individual level are: lay-off and termination, amnesia, retirement or death.

10. Conclusion

In this study we have discussed various sides of tacit knowledge. Tacit knowledge is a dynamic process as it depends on individuals' attributes and social relationships. The theoretical findings in the study show that tacit knowledge strategy seems more appropriate for the organizations, but explicit knowledge should not be ignored. Organizations should emphasize on tacit knowledge and use explicit knowledge in a supporting role. We have shown that sharing and transferring of tacit knowledge is essential for the local and global economical development. We also discuss the difficulties of sharing tacit knowledge. In the 21st century knowledge becomes an important asset of an organization. Hence, we should be conscious about the sharing of tacit knowledge properly in the organizations.

References

[1] Abidi, S.S.R.; Cheah, Y.N. and Curran, J. (2005), A Knowledge Creation Info-structure to Acquire and Crystallize the Tacit Knowledge of Health-Care Experts, *IEEE Transactions on Information Technology in Biomedicine*, 9: 193–204.

[2] Abidi, S.S.R.; Hussini, S.; Sriraj, W.; Thienthong, S. and Finley, G. A. (2009), Knowledge Sharing for Pediatric Pain Management via a Web 2.0 Framework, *Studies in Health Technology and Informatics*, 150: 287–291.

[3] Aristotle (1998), *The Nicomachean Ethics*, UK: Oxford University Press.

[4] Awad, E.M. and Ghaziri, H. (2007), *Knowledge Management*, Delhi: Pearson Education.

[5] Bănacu, C.S. and Buşu, C. (2013), *Tacit Knowledge Management–Strategic Role in Disclosing the Intellectual Capital*, Proceedings of the 7th International Management Conference, New Management for the New Economy, November 7–8, 2013, Bucharest, Romania.

[6] Beesley, L.G.A. and Cooper, C. (2008), Defining Knowledge Management (KM) Activities: Towards Consensus, *Journal of Knowledge Management*, 12(3): 48–62.

[7] Bennett, R.H. III (1998), The Importance of Tacit Knowledge in Strategic Deliberations and Decisions, *Management Decision*, 36(9): 589–597.

[8] Bennett, R. H. III and Gabriel, H. (1999), Organizational Factors and Knowledge Management within Large Marketing Departments: An Empirical Study, *Journal of Knowledge Management*, 3(3): 212–225.

[9] Bock, G.W.; Zmud, R.W.; Kim, Y.G. and Lee, J.N. (2005), Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate, *Journal of MIS Quarterly*, 29(1): 87–111.

[10] Blackler, F. (1995), Knowledge, Knowledge Work and Organizations: An Overview and Interpretation, *Organization Studies*, 16(6): 1021–1040.

[11] Bloodgood, J. and Salisbury, W. (2001), Understanding the Influence of Organizational Change Strategies on Information Technology and Knowledge Management Strategies, *Decision Support Systems*, 31: 55–69.

[12] Boisot, M. (1995), Is your Firm a Creative Destroyer? Competitive Learning and Knowledge Flows in the Technological Strategies of Firms, *Research Policy*, 24: 489–506.

[13] Brockmann, E.N. and Anthony, W.P. (1998), The Influence of Tacit Knowledge and Collective Mind on Strategic Planning, *Journal of Managerial Issues*, 10(2): 204–222.

[14] Brown, J.S. and Duguid, P. (1991), Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation, *Organization Science*, 2(1): 40–57.

[15] Collins, H.M. (2010), *Tacit and Explicit Knowledge*, Chicago; London: The University of Chicago Press.

[16] Crowley, B. (2001), Tacit Knowledge, Tacit Ignorance, and the Future of Academic Librarianship, *College and Research Libraries*, 62(6): 565–584.

[17] Dalkir, K. (2005), *Knowledge Management in Theory and Practice*, Boston: Elsevier.

[18] Davenport, T.H. and Prusak, L. (2000), *Working knowledge: How Organizations Manage What They Know*. Boston, Massachusetts: Harvard Business School Press.

[19] Davidavicien, V. and Raudeliunien, J. (2010), *ICT in Tacit Knowledge Preservation*, 6th International Scientific Conference May 13–14, 2010, Vilnius, Lithuania.

[20] Dewhurst, M.; Hancock, B. and Ellsworth, D. (2013), Redesigning Knowledge Work, *Harvard Business Review*, January–

February 2013.

[21] Dreyfus, H.L. and Dreyfus, S.E. (2005), Peripheral Vision: Expertise in Real World Contexts, *Organization Studies*, 26(5): 779–792.

[22] Duffey, L. (2013), *Techniques and Technologies to Support the Transfer of Tacit Knowledge among Co-Located Teams*, Master Thesis, University of Oregon Applied Information Management Program.

[23] Dyer, J.H. and Nobeoka, K. (2000), Creating and Managing a High Performance Knowledge Sharing Network: the Toyota Case, *Strategic Management Journal*, 21(3): 345–367.

[24] Eckardt, R. (2014), *Tacit Knowledge Transfer and Firm Growth: An Experience-Based Approach*, PhD Thesis, University of Massachusetts, Amherst.

[25] Egbu, C.; Kurul, E.; Quintas, P.; Hutchinson, V.; Anumba, C. and Ruikar, K. (2003), *Knowledge Production, Resources and Capabilities in the Construction Industry*, Work Package 1-Final Report, Knowledge Management for Sustainable Construction Competitiveness Project, Web: www.knowledgemanagement.uk.net

[26] Engel, P.J.H. (2008), Tacit Knowledge and Visual Expertise in Medical Diagnostic Reasoning: Implications for Medical Education, *Medical Teacher*, 30(7): e184–e188. http://dx.doi.org/10.1080/01421590802144260

[27] Falconer, L. (2006), Organizational Learning, Tacit Information, and e-Learning: A Review, *The Learning Organization*, 13: 140–151.

[28] Fan, Yi.-W. and Ku, E. (2010), Customer Focus, Service Process Fit and Customer Relationship Management Profitability: The Effect of Knowledge Sharing, *The Service Industries Journal*, 30(2): 203–223. Web: http://dx.doi.org/10.1080/02642060802120141

[29] Firestone, J.M. and McElroy, M.W. (2003), *Key Issues in the New Knowledge Management*, Butterworth-Heinemann, Boston.

[30] Gerard, J.G. (2003), *Measuring Knowledge Source Tacitness and Explicitness: A Comparison of Paired Items*, Proceedings 5th International Conference Organizational Learning and Knowledge, Lancaster University: 1–49.

[31] Gill, J.H. (2000), *The Tacit Mode: Michael Polanyi's Postmodern Philosophy*, State University of New York, New York, NY.

[32] Goffin, K. and Koners, U. (2011), Tacit Knowledge, Lessons Learnt, and New Product Development, *Journal of Product Innovation Management*, 28 (2): 300–318.

[33] Gore, C. and Gore, E. (1999), Knowledge Management: The Way Forward, *Total Quality Management*, 10(4-5): 554–560.

[34] Gueldenberg, S. and Helting, H. (2007), Bridging the Great Divide: Nonaka's Synthesis of 'Western' and 'Eastern' Knowledge Concepts Reassessed, *Organization*, 14(1): 101–122.

[35] Haldin-Herrgard, T.H. (2000), Difficulties in the Diffusion of Tacit Knowledge in Organizations, *Journal of Intellectual Capital*, 1(4): 357–365.

[36] Hedlund, G. and Nonaka, I. (1993), Models of Knowledge Management in the West and Japan. In P. Lorange, B. Chakravarthy, J. Roos, and A. Van de Ven (Eds.), *Implementing Strategic Processes: Change, Learning, and Cooperation* (pp. 117–144). Oxford: Basil Blackwell.

[37] Hislop, D. (2009), *Knowledge Management in Organizations: A Critical Introduction*, 2nd Ed., Oxford University Press, New York.

[38] Hodgkin, R. (1991), Michael Polanyi–Prophet of Life, the Universe and Everything, *Times Higher Educational Supplement*, September 27, page 15.

[39] Holste, J.S. and Fields, D. (2010), Trust and Tacit Knowledge Sharing and Use, *Journal of Knowledge Management*, 14 (1): 128–140. Web: http://dx.doi.org/10.1108/13673271011015615

[40] Hong, D.; Suh, E. and Koo, C. (2011), Developing Strategies for Overcoming Barriers to Knowledge Sharing Based on Conversational Knowledge Management: A Case Study of A Financial Company, *Expert Systems of Applications*, 38(12): 14417–14427 Web: http://dx.doi.org/10.1016/j.eswa.2011.04.072

[41] Housel, T. and Bell, A.A. (2001), *Measuring and Managing Knowledge*, Boston, McGraw-Hill.

[42] Howells, J.R.L. (2002), Tacit Knowledge, Innovation and Economic Geography, *Urban Studies,* 39(5–6): 871–884.

[43] Ivona, O. (2009), *The Importance of Tacit Knowledge Within the Organization*: 414–416. Web: http://steconomice.uoradea.ro/anale/volume/2009/v4-management-and-marketing/73.pdf.

[44] Johannessen, J.-A.; Olaisen, J. and Olsen, B. (2001), Mismanagement of Tacit

Knowledge: The Importance of Tacit Knowledge, the Danger of Information Technology, and What about it, *International Journal of Information Management*, 21(1): 24–46.

[45] Johnson, W.H.A. (2007), Mechanisms of Tacit Knowledge: Pattern Recognition and Synthesis, *Journal of Knowledge Management*, 11(4): 123–139.

[46] Joia, L.A. and Lemos, B. (2010), Relevant Factors for Tacit Knowledge Transfer Within Organizations, *Journal of Knowledge Management*, 14(3): 410–427.

[47] Kant, I. (2001), Lectures on Metaphysics, Cambridge University Press, UK.

[48] Karhu, K. (2002), Expertise Cycle-An Advanced Method for Sharing Expertise, *Journal of Intellectual Capital*, 3(4): 430–446.

[49] Kikoski, C.K. and Kikoski, J.F. (2004), The Inquiring Organization: Tacit Knowledge, Conversation, and Knowledge Creation Skills for 21st Century Organizations, Praeger, Westport, CT and London.

[50] King W.R. and Marks Jr. P.V. (2008), Motivating Knowledge Sharing through a Knowledge Management System, *The International Journal of Management Science*, 36(1): 131–146. Web: http://dx.doi.org/10.1016/j.omega.2005.10.006.

[51] Kogut, B. and Zander, U. (1992), Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology, *Organization Science*, 3(3): 383–397.

[52] Kolb, D.A. (1984), *Experimental Learning: Experience as the Source of Learning and Development*, Prentice, Englewood Cliffs, NJ.

[53] Kothari, C.R. (2004), *Research Methodology: Methods and Techniques*, New Delhi: New Age International (P) Ltd.

[54] Kreiner, K. (2002), Tacit Knowledge Management: The Role of Artifacts, *Journal of Knowledge Management*, 6(2): 112–123.

[55] Lam, A. (2000), Tacit Knowledge, Organizational Learning and Societal Institutions: An Integrated Framework, *Organization Studies*, 21(3): 487–513.

[56] Laudon, K.C. and Laudon, J.P. (2012), *Management Information Systems: Managing the Digital Firm*, Harlow, England: Pearson Education Limited.

[57] Leonard, D. and Sensiper, S. (1998), The Role of Tacit Knowledge in Group Innovation, *California Management Review*, 40(3): 112–132.

[58] Leonardi, P.M. and Treem J.W. (2012),

Knowledge Management Technology as a Stage for Strategic Self-Presentation: Implications for Knowledge Sharing in Organizations, *Information and Organization*, 22(1): 37–59. Web: http://dx.doi.org/10.1016/j.infoandorg.2011.10.003

[59] Liu, Z.-G. and Cui, J. (2012), Improve Technological Innovation Capability of Enterprises Through Tacit Knowledge Sharing, *Procedia Engineering*, 29: 2072–2076. Web: http://dx.doi.org/10.1016/j.proeng.2012.01.264

[60] Lubit R. (2001), Tacit Knowledge and Knowledge Management-The Key to Sustainable Competitive Advantage, *Organizational Dynamics*, 29(4): 164–178.

[61] Lucas, L. (2005), The Impact of Trust and Reputation on the Transfer of Best Practices, *Journal of Knowledge Management*, 9(4): 87–101.

[62] Lundvall, B-Ä and Johnson, B. (1994), The Learning Economy, *Journal of Industry Studies*, 1(2): 23–42.

[63] Magnier-Watanabe, R.; Benton, C. and Senoo, D. (2011), A Study of Knowledge Management Enablers across Countries, *Knowledge Management Research & Practice*, 9: 17–28.

[64] Mahmood, A.; Qureshi, M.A. and Shahbaz, Q. (2011), An Examination of the Quality of Tacit Knowledge Sharing Through the Theory of Reasoned Action, *Journal of Quality and Technology Management*, VII(I): 39–55.

[65] Majewska, M and Szulczyńska, U. (2014), Methods and Practices of Tacit Knowledge SharingWithin an Enterprise: An Empirical Investigation, *Oeconomia Copernicana*, 5(2): 35–48, Web: http://dx.doi.org/10.12775/OeC.2014.012

[66] 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.

[67] Masaru, O. (2004), *Reflection of Tacit Knowledge*, The 34th Annual Convention of CAJ, June 19, 2004, Japan.

[68] McAdam, R.; Mason, B. and McCrory, J. (2007), Exploring the Dichotomies Within the Tacit Knowledge Literature: Towards a Process of Tacit Knowing in Organizations, *Journal of Knowledge Management*, 11(2): 43–59.

[69] McInerney, C. (2002), Knowledge Management and the Dynamic Nature of Knowledge, *Journal of the American Society for Information Science and*

Technology, 53(12): 1009–1018.

[70] Meso, P. and Smith, R. (2000), A Resource-Based View of Organizational Knowledge Management Systems, *Journal of Knowledge Management*, 4(3): 224–234.

[71] Mládková, L. (2012), Sharing Tacit Knowledge within Organizations: Evidence from the Czech Republic, *Global Journal of Business Research*, 6(2): 105–115. Web: http://dx.doi.org/10.4135/9781446217375

[72] Mohajan, H.K. (2016a), Tacit Knowledge for the Development of Organizations, *Unpublished Manuscript*.

[73] Mohajan, H.K. (2016b), The Roles of Knowledge Management for the Development of Organizations, *Unpublished Manuscript*.

[74] Mongkolajala, H.; Panichpathom, S. and Ngarmyarn, A. (2012), The Development of Tacit Knowledge Sharing behavior among Employees in Organizations, *International Journal of Business and Social Research*, 2(5): 158–163.

[75] Mungai, G.C.N. (2014), *Tacit Knowledge Management in Public Institutions in Kenya: A Case of the Kenya Institute for Public Policy Research and Analysis* (Kippra) Nairobi, Master Thesis, University of South Africa.

[76] Nahapiet, J. and Ghoshal, S. (1998), Social Capital, Intellectual Capital, and the Organizational Advantage, *The Academy of Management Review*, 23(2): 242–466.

[77] Nelson, R.R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Belknap Press of Harvard University Press.

[78] Nissen, M.E. (2005), Dynamic Knowledge Patterns to Inform Design: A Field Study of Knowledge Stocks and Flows in an Extreme Organization, *Journal of Management Information Systems*, 22(3): 225–263.

[79] Nonaka, I. (1991), The Knowledge-Creating Company, *Harvard Business Review*, 69: 96–104.

[80] Nonaka, I. (1994), A Dynamic Theory of Organizational Knowledge Creation, *Organization Science*, 5(1): 14–37.

[81] Nonaka, I. and Konno, N. (1998), The Concept of 'Ba': Building a Foundation for Knowledge Creation, *California Management Review*, 40(3): 40–54.

[82] Nonaka, I.; Konno, N. and Toyama, R. (2000), Emergence of Ba. In I. Nonaka and T. Nishiguchi (Eds.), *Knowledge Emergence: Social, Technical and Evolutionary Dimensions of Knowledge Creation*, Oxford University Press, Oxford.

[83] Nonaka, I. and Nishiguchi, T. (2001), *Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge Creation*, Oxford University Press, New York, NY.

[84] Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY.

[85] Nonaka, I. and von Krogh, G. (2009), Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory, *Organization Science*, 20(3):635–652.

[86] Novak, M.J. and Hammer, M. (2009), *Tacit Knowledge Transfer in a State Transportation Agency*, Ohio Transportation Engineering Conference October 27 & 28, 2009.

[87] Orlikowski, W.J. (2002), Knowing in Practice: Enacting a Collective Capability in Distributed Organization, *Organization Science*, 13(3): 249–273.

[88] Othman, A.K. and Abdullah, H.S. (2010), The Influence of Emotional Intelligence on Tacit Knowledge Sharing in Service Organizations. In Minwir Al-Shammari (Ed.), *Knowledge Management in Emerging Economies: Social, Organizational and Cultural Implementation*: 171–185.

[89] Panahi, S.; Watson, J. and Partridge, H. (2012), Social Media and Tacit Knowledge Sharing: Developing a Conceptual Model, *World Academy of Science, Engineering and Technology*, 64: 1096–1102.

[90] Pathirage, C.; Amaratunga, D. and Haigh, R. (2008), *The Role of Tacit Knowledge in the Construction Industry: Towards a Definition*: 204–217. In CIB W89 International Conference on Building Education and research (BEAR), 11–15th February 2008, Sri Lanka (Unpublished).

[91] Pavlicek, A. (2009), The Challenges of Tacit Knowledge Sharing in a Wiki System, *Proceedings from the IDIMT Conference* 2009: 391–397.

[92] Phelps, C.; Heidl, R. and Wadhwa, A. (2012), Knowledge, Networks, and Knowledge Networks: A Review and Research Agenda, *Journal of Management*, 38(4): 1115–1166.

[93] Polanyi, M. (1958), *Personal knowledge, Towards a Post-critical Philosophy* (Reprinted in 2002), Routledge, London, Taylor and Francis Group.

[94] Polanyi, M. (1966), *The Tacit Dimension*, Peter Smith, Gloucester, MA, University of Chicago Press: Chicago.

[95] Polanyi, M. (1969), Knowing and Being, In M. Grene (Ed.), *Knowing and Being: Essays*, University of Chicago Press, Chicago, IL: 123–207.

[96] Ranasinghe, S.B. and Dharmadasa, P. (2013), Intention to Knowledge Sharing: From Planned Behavior and Psychological Needs Perspectives, *International Journal of Knowledge Management*, 9(4): 33–50. Web: http://dx.doi.org/10.4018/ijkm.2013100103

[97] Richlin, L. and Cox, M.D. (2004), *Building Faculty Learning Communities*, Jossey-Bass, San Francisco.

[98] Riege, A. (2005), Three-Dozen Knowledge-Sharing Barriers Managers Must Consider, *Journal of Knowledge Management*, 9(3):18–35.

[99] Roget's New Millennium Thesaurus (2006), First Edition (v 1.0.5), Edited by Barbara Ann Kipfer.

[100] Saint-Onge, H. (1996), Tacit Knowledge: The Key to the Strategic Alignment of Intellectual Capital, *Strategy and Leadership*, 24(2): 10–14.

[101] Schmidt, F.L. and Hunter, J.E. (1993), Tacit Knowledge, Practical Intelligence, General Mental Ability, and Job Knowledge, *Current Directions in Psychological Science*, 2: 8–9.

[102] Selamat, M.H. and Choudrie, J. (2004), The Diffusion of Tacit Knowledge and its Implications on Information Systems: The Role of Meta-Abilities, *Journal of Knowledge Management*, 8: 128–139.

[103] Semradova, I. and Hubackova, S. (2014), Responsibilities and Competences of a University Teacher, *Procedia–Social and Behavioral Sciences*, 159: 437–441. Web: http://dx.doi.org/10.1016/j.sbspro.2014.12.403

[104] Singleton, B. (2015), Peer Review, *Contemporary Theatre Review*, 25(1): 26–29. Web: http://dx.doi.org/10.5935/0004-2749.20150001

[105] Smith, E.A. (2001), The Role of Tacit and Explicit Knowledge in the Workplace, *Journal of Knowledge Management*, 5(4): 311–321.

[106] Smith, M.K. (2003), Michael Polanyi and Tacit Knowledge, *The Encyclopedia of Informal Education*, http://infed.org/mobi/michael-polanyi-and-tacit-knowledge/

[107] Spender, J.C. (1996), Organizational Knowledge, Learning and Memory: Three Concepts in Search of a Theory, *Journal of Organizational Management*, 9: 63–78.

[108] Stanton, N.A. and Stammers, R.B. (1990), Learning Styles in a Non-Linear Training Environment, In R. McAleese and C. Green (Eds.), *Hypertext: State of the Art*, Intellect, Oxford.

[109] Stenmark, D. (2002), Sharing Tacit Knowledge: A Case Study at Volvo, In S. Barnes (Ed.), *Knowledge Management Systems: Theory and Practice*, Thomson Learning, London.

[110] Sternberg, R.J. and Horvath, J.A. (Eds.) (1999), *Tacit Knowledge in Professional Practice. Researcher and Practitioner Perspectives*, Mahway, NJ: Lawrence Erlbaum.

[111] Sumi, Y. and Mase, K. (2002), Conference Assistant System for Supporting Knowledge Sharing in Academic Communities, *Interacting with Computers*, 14(6): 713–737. Web: http://dx.doi.org/10.1016/S0953-5438(02)00018-8

[112] Suppiah, V. and Sandhu, M.S. (2010), Organizational Culture's Influence on Tacit Knowledge-Sharing Behavior, *Journal of Knowledge Management*, 15(3): 462–477.

[113] Teece, D.J. (2000), *Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions*, Oxford University Press, New York, NY.

[114] Tsoukas, H. (1996), The Firm as a Distributed Knowledge System: A Constructionist Approach, *Strategic Management Journal*, 17(S2): 11–25.

[115] Venkitachalam, K. and Busch, P. (2012), Tacit Knowledge: Review and Possible Research Directions, *Journal of Knowledge Management,* 16(2): 365–371. Web: http://dx.doi.org/10.1108/13673271211218915

[116] Wagner, R. and Sternberg, R. (1987), Tacit Knowledge in Managerial Success, *Journal of Business and Psychology*, 1(4): 301–312.

[117] Wah, L. (1999), Making Knowledge Stick, *Management Review*, 88(5): 24–33.

[118] Wenger, E., McDermott, R. and Synder, W. (2000), *Cultivating Communities of Practice*, Harvard Business School Publishing, Boston, MA.

[119] Wikipedia, the Free Encyclopedia.

[120] Wong, W. L.P. and Radcliff, D.F. (2000), The Tacit Nature of Design Knowledge, *Technology Analysis & Strategic Management*, 12(4): 493–512.

[121] World Bank (2007), *Building Knowledge Economies: Advanced Strategies for Development*, Washington DC: World Bank.

[122] World Bank (2012), *Knowledge for*

Development Program (K4D). Web: http://go.worldbank.org/8DG6O1F0I0

[123] Wu, I.L. (2003), Understanding Senior Management's Behavior in Promoting the Strategic Role of it in Process Reengineering: Use of the Theory of Reasoned Action, *Journal of Information and Management*, 41: 1–11.

[124] Yu, D. and Zhou, D. (2015), Tacit Knowledge Sharing Modes of University Teachers from the Perspectives of Psychological Risk and Value, *International Journal of Higher Education*, 4(2): 214– 224. Web: http://dx.doi.org/10.5430/ijhe.v4n2p214

[125] Zack, M.H. (1999), Managing Codified Knowledge, *Sloan Management Review*, 40(4): 45–58.