An Empirical Investigation of the Role of Different Types of Tacit Knowledge on Organizational Effectiveness in Various Professions in the United States

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Abstract

Tacit knowledge is difficult to exchange in few words; it is complex to imitate, and can be used to benefit the operations of an organization. Tacit knowledge has a multidimensional structure and each dimension is composed of diverse kinds of tacit knowledge. Each of these sorts of tacit knowledge has a specific and significant role in organizational effectiveness. Therefore, an organizational culture that focuses on tacit knowledge is the key to creativity and innovation. The objective of this study is to show that different categories and dimensions of tacit knowledge play specific and significant role in different professions and organizations therefore, should not be neglected. This study is a quantitative research with a causal comparative design using a survey to collect the data. The sampling strategy used is a purposive sampling, particularly an expert sampling. The sample includes 220 experienced computer engineers, lawyers, physicians, and teachers in the United States who have at least five years of experience in their jobs. The results of Kruskal-Wallis test showed that there are differences in the perceptions about the importance or the role tacit knowledge across the above four categories of profession. The descriptive statistics showed that the 220 experienced professional selected for the study found overwhelmingly that the 15 types of tacit knowledge involved in this study were either very important or above average importance in the organizational effectiveness indicating that diverse types of tacit knowledge are important therefore should not be neglected as management tool.

Dedications

This dissertation is dedicated to the memory of my late father Kangni Koudouovoh, to my sons Folly and Kangni and to my wife Dawarada.

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Chapter I: Introduction

Tacit knowledge is defined as a deeper, wealthier and multifaceted knowledge that is difficult to articulate, highly personal and context-specific, it is manifested in the form of expertise, skill, understanding, or professional insight acquired from experience (Fetterhoff, Nila, & McNamee, 2011; Subashini, 2010). Tacit knowledge helps managers to achieve specific goals such as sustainable competitive advantage (Ngah & Jusoff, 2009). Success in every profession requires a specific type of tacit knowledge (Johannessen & Olsen, 2011). For example, a lawyer uses more the cognitive element of tacit knowledge, rather than its physical aspect (Johannessen & Olsen, 2011). The primary objective of this study is to determine whether there is any difference in the perception of the role of different types of tacit knowledge on organizational performance according to the opinion of 220 experienced computer engineers, lawyers, physicians, and teachers. Another goal of this study is to use of a survey questionnaire to determine which categories or dimensions of tacit knowledge have the most impact on the organizational performance in each of the four professional organizations according to the opinion of their representatives in the study. This will allow managers and executives of those professions to prioritize the appropriate type of tacit knowledge they should include in their knowledge management program in order to boost the effectiveness in their professions. The first chapter includes background of the study, theoretical framework, problem statement, purpose and significance of the study, research questions and hypotheses, research design, limitations and assumptions, and definitions of key terms.

Background of the Study

Today's business environment is more turbulent than ever due to increased globalization, the progress of information technologies, the arrival of knowledge workers, the knowledge-based views of the firms, the abundance and the easy access to information, and the large quantity of regulatory changes. Success in such a hypercompetitive world requires organizations to act ever more skillfully and quickly (Ty & Anurit, 2010). Knowledge has turned out to be the most vital resource of organizations. Knowledge Management can help companies not only to achieve competitive advantage, but sustainable competitive advantage (Goel, Ran, & Rastogi 2010; Mundra, Gulati, &Vashisth, 2011).

Unlike explicit knowledge, that is the documented knowledge, tacit knowledge is exceptionally personal and complicated to communicate; as a result, it is tricky to imitate (Fetterhoff et al. 2011). Since tacit knowledge is hard to copy, knowledge management activities that involve tacit knowledge can serve as a basis of sustainable competitive strategies (Chen & Mohamed, 2010; Goffin & Koners, 2011). In hypercompetitive, turbulent and complex business environments, sustainable competitive advantage depends upon secure knowledge that is difficult for competitors or rivals to imitate, and tacit knowledge offers the ability to develop and create new ideas (Glisby & Holden, 2011; Lara, Palacios-Marques, & Devece, 2012). Tacit knowledge takes and will take a significant role in today's and tomorrow's business environment, as Lara et al. (2012) expressed, in the future the only sustainable competitive advantage will be the personnel who are the collective of tacit knowledge. This is one of the reasons; the completely new theme of Knowledge Management has emerged.

In the midst of the advent of knowledge workers in the Information Age, there is a growing interest in the understanding of the role of tacit knowledge in developing professional expertise (Flint, 2011). The employ of tacit knowledge to choose and to keep brilliant workers is becoming increasingly frequent because many business academics and practitioners think that tacit knowledge foretells future performance (Chen & Mohamed, 2010; Goffin & Koners, 2011). The notion of tacit knowledge is comparatively new and there are few empirical studies and measures about tacit knowledge (Insch & Gary 2005; Insch, et al., 2008). Most of studies linking tacit knowledge to improved organizational performance focus on practical intelligence, the challenge of finding tacit knowledge, and transferring this knowledge across organizations (Chen & Mohamed, 2010; Krishnaveni & Sujatha, 2012; Ngah & Jusoff, 2009; Shu-Chen & Cheng-Kiang, 2010). What these studies have neglected is the way in which other types of tacit knowledge have been disregarded. This study examines the liaison between tacit knowledge and organizational effectiveness according to the opinions of the experienced professionals involved, by taking into account the many categories and the many dimensions of tacit knowledge.

Theoretical Framework

The theoretical framework includes the existing theories or arguments about the value of tacit knowledge in organizational effectiveness. The combination of those theories or arguments provides the theoretical foundation of this study.

The first theory or argument is that tacit knowledge can be a source for improved organizational performance, competitive advantage, and innovation. Tacit knowledge is an important ingredient for success for individuals and organizations (Ngah & Jusoff,

2009). Thus, Knowledge Management initiatives that focus on tacit knowledge help organizations to achieve their long-term objectives (Chen & Mohamed, 2010). The fact is that tacit knowledge is greatly difficult for contenders and rivals to duplicate than the codified or documented ones, the capability to discover and reassign tacit knowledge is essential to improving organizational performance and to developing sustainable competitive advantage (Lubit, 2001; Ngah & Jusoff, 2009). The sharing of the tacit knowledge among employees can help companies to be creative and innovative, which in turn enhances their effectiveness (Ngah & Jusoff, 2009; Salah Eldin, 2009).

The second theory or argument is that tacit knowledge has a multidimensional structure and each dimension is composed of different levels of knowledge. Work by Mascitelli (2000) suggested a classic model of tacit knowledge with two dimensions including cognitive and technical dimensions. In his model, the cognitive dimension includes different types of tacit knowledge such mental models, schemata, problem-solving skills, highly trained intuition, systems thinking, insight, and gut-feel (Mascitelli, 2000). In addition, the technical dimension includes the following types of tacit knowledge: skills acquired through learning-by-doing, technical specialization gained through education and experience, and deep specialization (Mascitelli, 2000). In the same way, Insch et al. (2008) suggested a tridimensional model including cognitive, technical, and social dimensions (see Figure1). In their model, the cognitive dimension includes two types of tacit knowledge, including self-motivation and self-organization. In addition, the technical dimension includes personal technical skills and "institutional technical skills" (Insch et al., 2008, p.567). Moreover, the social aspect includes two types of tacit

knowledge, including job-related social cooperation and general social intercommunication (Insch et al., 2008).

The third theory or argument is that each dimension and each type of tacit knowledge has a specific role in organizational effectiveness. Johannessen and Olsen (2011) argued that, each type of innovation required a specific type of tacit knowledge. Each type of tacit knowledge provides unique advantages to innovation, which make it possible (Mascitelli, 2000; Rebernik & Sirec, 2007). For example, heuristics or tacit knowledge acquired by learning by doing is the tacit knowledge requires for incremental innovations (Johannessen & Olsen, 2011). The type of tacit knowledge requires for radical innovations are pattern conception (Johannessen & Olsen, 2011). Revolutionary breakthroughs actions can be achieved by the combination of deep specialization(s) plus broad multidisciplinary understanding and highly trained intuition, systems thinking, and gut feeling (Mascitelli, 2000; Rebernik & Sirec, 2007).

The fourth theory or argument is that the organizational culture that deals with tacit knowledge leads to improved organizational performance. Organizations that promote tacit knowledge sharing would be more creative and more innovative, which in turn will lead to improved organizational effectiveness (Ngah & Jusoff, 2009; Salah Eldin, 2009). Organizational culture not only determines the effectiveness of the sharing of the knowledge but also the value of that knowledge (Chin-Tsang, 2009). This is also one of the reasons, Knowledge Management as a field has emerged. When organizational culture focuses on tacit knowledge that is in people mind, the tacit knowledge shared becomes communal tacit knowledge, which in turn enhances creativity

and innovation (Fetterhoff et al., 2011; Ngah & Jusoff, 2009; Nonaka & von Krogh, 2009).

The theoretical foundation upon which this study is built combines the above four theories or arguments about the role of tacit knowledge on organizational effectiveness. Tacit knowledge is extremely private, difficult to exchange in few words; it is complex to imitate, and can be used to benefit the operations of an organization (Fetterhoff et al., 2011; Nonaka & von Krogh, 2009). Tacit knowledge has a multidimensional structure and each dimension is composed of different types of tacit knowledge (Insch et al., 2008; Johannessen& Olsen, 2011; Rebernik & Sirec, 2007). Each of these types of tacit knowledge has a specific role in organizational effectiveness (Johannessen & Olsen, 2011; Mascitelli, 2000; Rebernik & Sirec, 2007). The organizational culture that focuses on tacit knowledge is the key to creativity and innovation (Chin-Tsang, 2009; Salah Eldin, 2009). These aforementioned theories provide the perimeters this study will be conducted under and investigating the perceptions of the survey respondents about the link between the diverse kinds of tacit knowledge and organizational effectiveness of four professional bodies in the United States including computer engineers, lawyers, physicians and teachers.

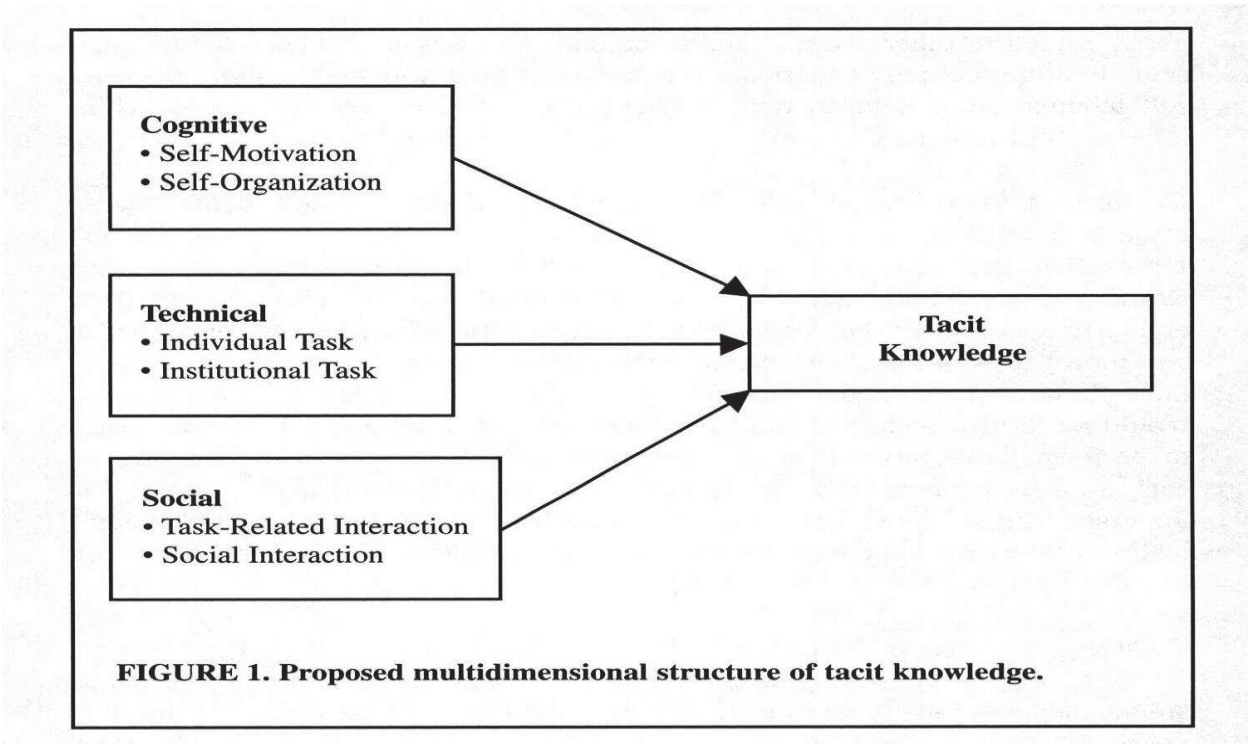

Figure1. Multidimensional Structure of Tacit Knowledge
Note : Insch et al. (2008, p.565). Tacit knowledge: A refinement and empirical test of the academic tacit knowledge scale. The Journal of Psychology, 142(6), 561-579.

Statement of the Problem

In today's knowledge-based economy, many organizations are recognizing the importance of Knowledge Management in the use of technology to accumulate, recover, and use again knowledge (Mohsen, Ali, & Jalal, 2011). The lack of tacit knowledge sharing can have negative consequences, such as ineffective business performance, lower productivity, lack of optimization in resource utilization and uncertainty (Chilton & Bloodgood, 2008). Although it is widely accepted that companies in knowledge-based settings must systematically integrate knowledge management resources in their activities in order to succeed, the problem is that many companies do not do so (Gardner, Staats, & Gino, 2012). The problem this research highlights is the neglect of the use of tacit

knowledge, which can lead to organizational ineffectiveness. Both business academics and practitioners have overlooked or ignored tacit knowledge as a management tool to achieve innovation (Johannessen & Olsen, 2011). The neglect of tacit knowledge, whether it is individual insight, intuition, hunches or cognitive mental models, has diminished organizational capability for innovation and sustainable competitiveness (Ngah & Jusoff, 2009). While the numbers of people who recognize the critical role that tacit knowledge plays have increased dramatically, it is now viewed as the most important ingredient that enables workers to perform their tasks at a high level. Unfortunately, many companies still underestimate its value (Mládková, 2012). The neglect and the underestimation of the strategic role of tacit knowledge can lead to organizational ineffectiveness and possibly failure.

Purpose of This Study

The primary objective of this study is to determine whether there is any difference in the perception of the influence of different categories and dimensions of tacit knowledge on organizational effectiveness according to the opinions of 220 experienced computer engineers, lawyers, physicians, and teachers. An additional goal of this study is to determine which categories or dimensions of tacit knowledge make a greater impact on organizational effectiveness in each of the four professions according to the opinions of their representatives in this research. This study uses a causal comparative design to determine the categories and dimensions of tacit knowledge essential for the effectiveness of each profession involved in this study. Leaders and executives of those professions can exploit the findings of this study to prioritize the types and dimensions of tacit knowledge they should incorporate in their knowledge

management programs or training programs in order to improve the effectiveness of their organizations.

Significance of the Study

The present work is noteworthy for the reason that it allows the managers and leaders of the professions involved in the study to determine the categories and dimensions of tacit knowledge that are critical for the effectiveness and success of their organizations. This will allow them to prioritize the types and dimensions of tacit knowledge they should include in their knowledge management programs or training programs in order to achieve maximum performance. Since tacit knowledge has been overlooked or ignored as a management tool to achieve innovation by many business academics and practitioners (Johannessen & Olsen, 2011), this study can encourage academics and practitioners to undertake research on the sorts of tacit knowledge that are essential for the success of different companies or professions.

Research Questions

RQ1: Are there any differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types of tacit knowledge on the organizational effectiveness of their professions?

RQ2: What categories of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants?

RQ3: What dimensions of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants?

Research Hypotheses

Null hypothesis

H0: The distributions of the four groups or professions are equal. There is no difference in the perception of the impact of the different types of tacit knowledge on organizational performance according to the opinion of the representatives of different professions.

Alternative hypothesis

H1: The distributions of the four groups or professions are different. There are differences in the perception of the impact of the different types of tacit knowledge on organizational performance according to the opinions of the representatives of different professions.

Research Design

This study is non-experimental; specifically, a causal comparative design. A causal comparative research resembles correlation research in the sense that it tries to find associations among variables (Leedy & Ormrod, 2005). One of the objectives of causal comparative studies is to find out the cause or the reason of differences that before now exist between groups of people (Leedy & Ormrod, 2005). This study is causal comparative design that uses an exploratory survey to determine whether there is any difference in the perceptions of the roles of different categories and dimensions of tacit knowledge on organizational performance according to the opinions of experienced computer engineers, lawyers, physicians, and teachers. This study is a cross-sectional survey that collected data from the target population for finite period. Data generated were used to formulate concepts, which then were applied to the mentioned professions as a whole.

This researcher self-designed the survey by taking into account the review of literature about the liaison between tacit knowledge and organizational effectiveness. The Survey questionnaire, Appendix A, hold a set of seven questions. This researcher opted for survey research to collect data because it is a convenient, quicker, less expensive way to get the required data for this study. The survey data collection was a self-administered form with the respondents filling out the answers by themselves.

Limitations and Assumptions

Limitations

Like for many surveys, one of the limitations of this study was that the respondent's knowledge, experience, motivation, and personality may affect the data of the study (Robson, 2002). Social desirability response bias in which people respond to survey questions in the way that shows them in good light (Alreck & Settle, 2004) was another possible limitation of this study. This means that all respondents did not necessarily report their true believes or perceptions of the role of tacit knowledge on organizational performance accurately. As a self-administered survey, it was difficult for the researcher to detect any difficulty or misunderstanding that the respondent may have when they were filling out the questionnaires, because they were not on-site (Alreck & Settle, 2004; Robson, 2002). As a cross-sectional study, this study did not offer a good starting point for establishing causality. Like correlation studies, causal comparative study establishes relationship not causation. This study can only show the existence of an association between tacit knowledge and organizational effectiveness based on the opinions of the experienced professionals involved in the study, but it cannot positively determine if the presence of tacit knowledge causes a higher rate of performance.

Assumptions

The computer engineers, lawyers, physicians, and teachers involved in this study must have at least five years of experience in practicing their jobs allowing them to understand the elements that influence effectiveness in their arenas. The researcher presumed that those participants who answer the survey questions did so base on their experiences. Another assumption was that those respondents who are the best qualified to answer the survey questions and did so honestly.

Definitions of Key Terms

The following terms will be used throughout the study to define and designate ideas discussed as the result of the study design and information captured by it.

Explicit knowledge- Explicit knowledge is codified knowledge that is shared in the form of data, records, specifications, statistics, guidebooks, et cetera (Fetterhoff et al. 2011).

Tacit knowledge -Tacit knowledge is deeper, wealthier, more multifaceted knowledge that is difficult to express; it is highly personal, implicit and context-specific knowledge, housed in the human mind, such as talent, skill, understanding, or professional insight created because of experience (Fetterhoff et al., 2011; Subashini, 2010).

Knowledge Management- "Knowledge Management comprises a range of strategies and practices that deal with how knowledge is acquired, transferred, and shared with all the members of an organization to achieve the organization's objectives" (Aktharsha & Anisa, 2011, p. 26).

Organizational culture - “Organizational culture is a complex entity of values, beliefs, behavior models, and symbols shared by the members of an organization” (Chin-Tsang, 2009, p.102).

Organizational effectiveness- Organizational effectiveness or performance is defined as successfully completing a task or achieving a stated goal (Mintz & Currim, 2013).

Summary

Tacit knowledge helps companies to realize specific goals, such as achieving and maintaining sustainable competitive advantage and a higher level of performance (Ngah & Jusoff, 2009). Achieving a higher level of performance in every profession requires a specific type of tacit knowledge pertaining to that profession (Johannessen & Olsen (2011). Although it is widely accepted that, tacit knowledge plays an important role in organizational success, many organizations have overlooked its strategic importance (Mládková, 2012). The objective of this study is to determine whether there is any difference in the perception of the role of each category and each component of tacit knowledge on organizational performance according to the opinions of 220 experienced computer engineers, lawyers, physicians, and teachers. Another goal of this study is to determine which categories or dimensions of tacit knowledge have the most impact on the organizational performance in each profession. This will allow leaders and executive of those professional organizations to prioritize the types and dimensions of tacit knowledge they should include in their knowledge management initiatives and training programs in order to be more effective.

Chapter II: Review of Literature

The content of this present review of research is relevant to this study project. The reason of this review is to establish the basis upon which this study is constructed. The review of literature revealed the already established academic arguments about the relationship between tacit knowledge and organizational effectiveness. Especially, it exposes the role of different categories and different dimensions of tacit knowledge on organizational effectiveness. The review of literature also examines the main concepts in this designed study and these concepts are Knowledge Management, organizational knowledge creation, organizational effectiveness or organizational performance, organizational culture, tacit and explicit knowledge.

Knowledge Management

The focal point of this study is tacit knowledge management and its value. Business management scholars and practitioners do not have the same opinion on the definition of Knowledge Management; subsequently, there are many definitions of Knowledge Management in use.

The term Knowledge Management is subordinate to diverse interpretations and meanings due to the way the term is applied in different domains. Knowledge Management focuses on generating, keeping, organizing, and reassigning knowledge within an organization (Anantatmula, 2009; McHugh, 2010; Sherwood & Covin, 2008). The objective of Knowledge Management is to increase useful knowledge in the organization through the sharing of appropriate data. Knowledge Management focuses on holding, transferring, and utilizing the firm's explicit and tacit knowledge (Sherwood & Covin, 2008). One of the reasons companies practice Knowledge Management is to

explore and exploit the collective knowledge of the company in order to compete effectively (Shang, Lin, & Wu, 2009). Knowledge Management is the ability of obtaining, incorporating, storing, and sharing knowledge for the reason of building and sustaining competitive advantage (Lin, Liu, Hsu, & Wu, 2008). One of the objectives of Knowledge Management is to leverage knowledge as a strategic asset to attain competitive advantage and to generate value for organizations (Anantatmula, 2009; Gardner et al., 2012). Knowledge Management programs that center on tacit knowledge help organizations to achieve their long-term objectives because this knowledge is hard to imitate (Chen & Mohamed, 2010).

Organizational Performance and Organizational Effectiveness

This study looks into the role of different types of tacit knowledge on organizational performance or organizational effectiveness. Currently, the meaning of performance is defined as successfully completing a task or achieving a stated goal (Mintz & Currim, 2013), in order to hold a viable advantage over competitors (Bolívar-Ramos, García-Morales, & Mihi-Ramírez, 2011). Defining performance is more taxing than identifying its measures. There are different definitions of performance; some of these definitions are as follows. A business performs well when it achieves the specific objectives set by the management (Bolívar-Ramos et al., 2011; Mintz & Currim, 2013). Performance can have a completely different meaning according to the environment (Yu, Hamid, Ijab, & Soo, 2009). Performance should concern the decisions made or the choices made by taking into consideration the data or information available when the decision is made (Yu et al., 2009). One of the major tools in use today to measure performance is the Balanced Scorecard (Rompho, 2011). This is a management tool used

to monitor organizational performance against specific goals (Yu et al., 2009; Rompho, 2011). In businesses, organizations define profit as an objective measure of organizational effectiveness (Lampkin & Raghavan, 2008). However, Balanced Scorecard does not focus only on financial measures that reflect past performance, but it emphasizes balancing financial variables with internal business process operations, which includes financial as well as non-financial variables (Humphreys & Trotman, 2011; Yu et al., 2009).

The concept of organizational effectiveness has been around for many years and there is no agreement on a single definition. There are four approaches to deal with the issue of organizational effectiveness; these include system resources, goals, strategic constituency and the internal process approach (Ashraf, 2012). The system resource approach focuses on how a company acquires scare resources outside the organization in order to perform effectively (Ashraf, 2012). The goal approach focuses on the degree to which a business attains its objectives (Quratul-Ain, 2012). The strategic constituency approach focuses on how a company satisfies multiple strategic factions outside and inside the organization (Ashraf, 2012). The internal process approach centers on how well internal processes and procedures are adequate in the organization (Ashraf, 2012). This study will only consider the goal approach of organizational effectiveness and organizational performance. Organizational effectiveness is the extent an organization achieves a specified goal (Das, 2012; Tziner & Levy, 2010). The term organizational effectiveness and organizational performance are interchangeable in this study.

Organizational Knowledge Creation

This study involves the creation of new knowledge from experiences to solve organizational problems. The theory of knowledge creation has taken over knowledge management literature. The creation of organizational knowledge creation came from the differentiation between tacit and explicit knowledge (Matsudaira, 2010; Nonaka & von Krogh, 2009). Tacit and explicit knowledge can be lay out along a continuum; at one extreme end of the continuum, we have tacit knowledge embedded in our minds, and intricate to articulate, at other extreme end of the continuum, we have explicit or codified knowledge that it is simple to articulate (Matsudaira, 2010; Nonaka & von Krogh, 2009). As we travel along the continuum, tacit knowledge becomes more explicit. Knowledge transformation from tacit to explicit happens during the contact between both tacit and explicit knowledge (Nonaka & von Krogh, 2009). Knowledge transformation from tacit to explicit is the solution of organizational knowledge creation. Organizational knowledge creation came from the conversion procedure of explicit knowledge and the four stages of tacit knowledge: socialization, externalization, combination, and internalization (Matsudaira, 2010; McIntyre, Harvey, & Moeller, 2012; Nonaka & von Krogh, 2009).

The first phase of knowledge creation involves socialization. During social interaction, people share their tacit knowledge or experiences. Socialization is the transformation from tacit knowledge to tacit knowledge or the sharing of individual experiences (Matsudaira, 2010; McIntyre et al., 2012). The second phase of knowledge creation is externalization. During this stage, tacit knowledge is changed into explicit knowledge. It is the verbalization of tacit knowledge into explicit concepts (Matsudaira,

2010; McIntyre et al., 2012). The third phase is the combination, which is the alteration of explicit knowledge into more difficult and systematic sets of explicit knowledge (Matsudaira, 2010; McIntyre et al., 2012). The final phase is the internalization that is the process of personifying explicit knowledge into tacit ready to use knowledge (Matsudaira, 2010; McIntyre et al., 2012). Organizational knowledge creation is the conception of new ideas through exchanges between tacit and explicit knowledge in people's mind. Organization's competitive advantage relies on employees' ability to generate new knowledge. In Knowledge Management, tacit knowledge possesses a stronger strategic role than explicit knowledge (Chen & Mohamed, 2010). Tacit knowledge is linked to organization performance enhancement (Kesti & Syväjärvi, 2010). Consequently, focusing on tacit knowledge is the solution to accomplish organizational objectives such as developing durable competitive advantage and innovation (Ngah & Jusoff, 2009).

Characteristics of Tacit Knowledge

Polanyi (1996) invented the expression tacit knowledge to illustrate the knowledge acquired from day by day experience. Tacit knowledge is greatly private and hard to express, making it complex to communicate or share with others. Individual insights, instincts, feelings, mental models, experiences, hard to pin down skills or know-how, ways of approaching problems, understandings, organizational routines, procedures, beliefs and practical intelligence make up this type of knowledge (Chen & Mohamed, 2010; Lubit, 2001; Mládková, 2012). Tacit knowledge is profoundly implanted in actions, experience, emotions or values that people adopt in their lives (Fetterhoff et al., 2011; Subashini, 2010). Sternberg and Hedlund (2002) viewed tacit

knowledge as a facet of practical intelligence. Practical intelligence is the knowledge that reveals the realistic ability to learn from the experience and to use that knowledge to solve problems and to pursuit of personal goals (Baum, Bird, & Singh, 2011).

Tacit knowledge has three characteristics or features. The first feature of tacit knowledge is that it is gained with slight or no assistance from other people (Sternberg & Hedlund, 2002; Taylor, 2007). This means that the mentor or the manager do not openly teach what the employee should learn. Instead, the employee himself pulls out the essential lesson from the experience. The second feature is that tacit knowledge is procedural; it is closely associated with skills acquisition and takes the form of "know-how" rather than "know what" (Sternberg & Hedlund, 2002; Taylor, 2007). It is a specific knowledge about how to react appropriately in a particular circumstance. Procedural or practical knowledge is a perfect example of tacit knowledge and every tacit knowledge is procedural, however not all knowledge that follows a specific procedure is tacit (Sternberg & Hedlund, 2002). The third feature is that tacit knowledge is basically useful and helps people attain their personal goals (Sternberg & Hedlund, 2002; Taylor, 2007). There is a coherent relationship between the abovementioned three features of tacit knowledge; they are related to one another in logical manner (Sternberg and Hedlund, 2002).

Categories of Tacit Knowledge

The literature reveals the existence of many types of tacit knowledge. Tacit knowledge is subconscious, deeply embedded in people's routines, procedures, resentments, commitments and ideas (Mládková, 2012). The great examples of tacit knowledge are skills, mental models and practical intelligence (Chen & Mohamed, 2010).

Johannessen and Olsen (2011) distinguished four varieties of tacit knowledge including, "heuristics, holistic causal conception, intuition, and pattern conception" (p.149). Heuristics referred to a self-educating method where the subject learns by doing (Johannessen & Olsen, 2011). When an individual uses the heuristics technique to solve a problem, he can use his educated guess or common sense. Holistic causal conception involves holistic causal understanding of a situation and the interconnection between the parts that constitute the entity (Johannessen & Olsen, 2011). Intuition is the ability to perceive things instinctively out of a conscious framework (Hogarth, 2010). Pattern conception refers to the arrangement of a large number of facts following certain rules (Johannessen & Olsen, 2011). An individual with an excellent level of competence understands the information that is included in patterns and he is able to decode or perceive the patterns that composed other patterns (Johannessen & Olsen, 2011).

The above different varieties of tacit knowledge can be grouped in categories. Lubit (2001) categorizes four groups of tacit knowledge including "hard to pin down skills or "know--how," mental models, ways of approaching problems, and organizational routines" (p.166). Hard to pin down skills is a wealth of expertise at the fingertips that many skilled workers develop after years of experience allowing them to become experts or masters in their fields (Lubit, 2001). Mental models or schemas are how a person understands the way the world is constructed, and how things are interrelated; they help us to comprehend problems and uncover the way to solve those problems (Rebernik & Sirec, 2007). The third category of tacit knowledge is the way or the manner in which individuals solve difficulties**.** Tacit knowledge is behind the strategies people use to solve problems because the ways people approach problems is a result of mental patterns

individuals have acquired through experience (Lubit, 2001; Rebernik & Sirec, 2007). The fourth category is organizational routines. The majority of the tacit knowledge of an organization resides in its routines or ways of producing things (Lubit, 2001; Rebernik & Sirec, 2007). For the purpose of this study and for reasons of simplifications, this researcher opts for Lubit's model of the above four kinds of tacit knowledge.

Categories of Tacit Knowledge and Organizational Effectiveness

As Johannessen and Olsen (2011) pointed out, different kinds of tacit knowledge have different influences on the types of innovations in reaching goals. Johannessen and Olsen (2011) stated that, different sorts of tacit knowledge play diverse roles for different kinds of innovations. Each type of tacit knowledge provides unique advantages to innovation (Rebernik & Sirec, 2007). In order to achieve different types of innovations we need different types of tacit knowledge. Johannessen and Olsen (2011) distinguished four types of innovation goals including incremental innovations, modular innovations, architectural innovations, and radical innovations and stated that different kinds of tacit knowledge impact each of them. Rebernik and Sirec (2007) focus on the combination of tacit technical skills and tacit cognitive skills in developing different types of innovative abilities. Rebernik and Sirec (2007) distinguished between three types of innovative abilities. The first types of innovative abilities include whole-concept solutions, guiding visions, and revolutionary breakthroughs. The second types of innovative abilities include sophisticated and creative solutions to specific problems as well as innovations in techniques, methods, and processes. The third types of innovative abilities include visualization of tangible outputs, the ability to target and achieve desired results through bodily actions. In order to achieve those innovation goals it is crucial to identify the sort

of tacit knowledge or combination of tacit knowledge required to achieve those specific goals.

Incremental innovation is a series of little improvements that redefines and extends an established design by using existing routines (Hoonsopon & Ruenrom, 2012). This means that incremental innovation improves an existing system without changing the underlying core design concepts. The type of tacit knowledge required for incremental innovations are heuristics in the sense that incremental innovations improve product architectures by focusing on their individual part within restricted bounds (Johannessen & Olsen, 2011); and heuristics that is built up by learning by practicing, is also limited by the bounds set by the item in consideration (Johannessen & Olsen, 2011). Visualization or mental picture of tangible outputs or the ability to target and accomplish desired results through physical actions can be is achieved by the combination of skills acquired through learning-by-doing, pattern-matching cognition, and filtering ability. Incremental innovation requires heuristics (learning-by-doing) or its combination with pattern conception (Mascitelli, 2000; Rebernik & Sirec, 2007).

Architectural innovation rearranges only the architecture or the design of the product without changing its constituents (Jaspers, Prencipe, & Ende, 2012). The type of tacit knowledge required for architectural innovations are intuition. In order to appreciate the relationship between intuition and architectural innovations, it is important to make a distinction between the intuitions held by an experienced manager and the customers he serves (Johannessen & Olsen, 2011). Customers send information to the market about their needs and wants at a very low frequency level (Johannessen & Olsen, 2011). Highly experienced managers have an intuition that allows them to perceive the information sent

by the consumers and combine that information with a variety of possible solutions that lead them to see new architectural solutions, which meet customer's future expectations (Johannessen & Olsen, 2011).

Modular innovation involves a significant change in the concepts a product but its architecture remains the same (Murphy, Perera, & Heaney, 2008). The holistic causal conception is the kind of tacit knowledge required for achieving modular innovations in the sense that holistic casual conception is about the mutual relationship between an entity and its parts (Johannessen & Olsen, 2011). Sophisticated and creative solutions to specific problems such as innovations in techniques, methods, or processes can be achieved by the combination of narrow technical specialization gained through education and experience on one hand, and mental models, schemata, and problem-solving skills on one other hand (Mascitelli, 2000; Rebernik & Sirec, 2007). Modular innovation or change techniques, methods, or processes can be achieved by the use of holistic causal conception or its combination with narrow technical specialization gained through education and experience on the one hand, and mental models, schemata, and problem-solving skills on the other hand.

Radical innovation introduces a new dominant, important and unique design in a product that is superior to the existing products (Hoonsopon & Ruenrom, 2012); it involves a different set of performance attributes relative to what already exists (Govindarajan, Kopalle, & Danneels, 2011). A radical innovation introduces change in a product's structural design as well as in its core concepts (Hoonsopon & Ruenrom, 2012; Johannessen & Olsen, 2011). The type of tacit knowledge required for radical innovations are pattern conception because it is relevant to the way emerging

opportunities develop. Individuals with an excellent competence level of pattern conception can easily perceive what it is missing, and can act in such a way to create radical innovation (Johannessen & Olsen, 2011). Whole-concept solutions, guiding visions, or revolutionary breakthroughs actions can be achieved by the following combination of deep specialization(s), plus broad multidisciplinary understanding, highly trained intuition, systems thinking, insight, and gut-feeling (Mascitelli, 2000; Rebernik & Sirec, 2007). Radical innovation or revolutionary breakthrough actions require pattern conception or its combination with deep specializations, highly trained intuition, insight, and gut-feel (Mascitelli, 2000; Rebernik & Sirec, 2007).

Dimensions of Tacit Knowledge

In his seminal work, Nonaka (1994) suggested that tacit knowledge principally holds both cognitive and technical dimensions. For him, the cognitive element includes "mental models such as schemata, paradigms, beliefs, and viewpoints" that help people to recognize and identify their worlds (Nonaka, 1994, p.16). Conversely, the technical aspect includes elements such as "concrete know-how, crafts, and skills" that people use to solve definite problems (Nonaka, 1994, p.16). Insch & Gary (2005) and Insch et al. (2008) proposed a model of tacit knowledge that added a social component or dimension of tacit knowledge. Insch et al. (2008) suggested that, although tacit knowledge concerns an individual worker and the task he performs, this worker must interact with other workers in order to complete his job. The social component of tacit knowledge concerns the comprehension of how a worker should cooperate with other workers in a particular social setting (Insch et al. 2008). In brief, the three main dimensions suggested in the literature about tacit knowledge are cognitive, technical and social scopes.

Dimensions of Tacit Knowledge and Organizational Effectiveness

The different dimensions of tacit knowledge influence organizational effectiveness. In fact, Insch et al. (2008) proposed a cognitive aspect of tacit knowledge, which is a sort of self-conception that employees use to perform a specific task (Insch et al., 2008). Indeed, in their model, the cognitive dimension of tacit knowledge includes self-motivation and self-organization (Insch et al., 2008). Self-motivation skills involve an understanding of the attitudes or a state of mind that is important for employees to achieve specific goals (Insch et al., 2008). Self-organization skills allow workers to set up the appropriate situation or an environment required to perform their work (Insch et al., 2008). The more a worker possesses self-motivation skills, the more he performs his task effectively as well as the more a worker possesses self-organization skills, the more he performs his task effectively (Insch et al. (2008).

As said by Insch et al. (2008), the technical dimension of tacit knowledge consists of the technical skills necessary in performing a particular job. When an employee performs a task for a long period, he ends up by finding the best way to accomplish that particular task which becomes a habit (Insch et al., 2008). The technical dimension includes individual and institutional technical skills (Insch et al., 2008).

Individual technical skills involved a comprehension of the different stages a worker must go through in order to perform his job adequately as well as the knowledge of using technology to complete his task (Insch & Gary, 2005; Insch et al., 2008). Institutional technical skills include how a worker understand the way his job fit into the bigger picture (Insch et al., 2008). The more a worker possesses individual technical

skills, the more he performs his task efficiently as well, the more a worker possesses institutional technical skills the more he performs is task adequately (Insch et al., 2008).

Insch & Gary (2005) and Insch et al. (2008) put forward a social aspect of tacit knowledge that is about how employees interact with others. In reality, this social dimension includes task-related and general social interaction (Insch & Gary, 2005; Insch et al., 2008). Task-related social interaction involves knowing who to turn to for advice or information needed to perform a specific task (Insch & Gary, 2005; Insch et al., 2008). General social interaction includes interaction in any social situation not specifically job related where the employee may learn more about his job (Insch & Gary, 2005; Insch et al., 2008). Stronger task-related social interactions are a source of higher performance as well, since stronger general social interactions can be a source of higher performance (Insch & Gary, 2005; Insch et al., 2008).

Gap in the Literature

The literature did not treat organizational or corporate culture as an independent dimension of tacit knowledge. It suggested three major dimensions of tacit knowledge including cognitive, technical and social dimensions. Insch et al. (2008) included organizational culture in the social dimension of tacit knowledge, but treated as a minor component. Inch et al. (2008) see learning of both corporate culture and hierarchy as a component of the social side of tacit knowledge. The organizational culture is important to success and must be incorporated in the assessment and the discourse of tacit knowledge as an independent dimension because organizational culture plays a major role in the prediction of organizational performance by encouraging employees to act appropriately (Shahzad, Luqman, Khan, & Shabbir, 2012). Culture is the value set that

drives decisions about what we do or do not do. In addition, organizational culture takes a significant part in the effectiveness of knowledge sharing initiatives as well as it helps to determine the value of that knowledge (Chin-Tsang, 2009). Moreover, the sharing of tacit knowledge under a firmly set organizational culture provides a better competitive advantage (Salah Eldin, 2009). Furthermore, tacit knowledge is useful only if it is entrenched in a meticulous organizational culture (Rebernik & Sirec 2007). For the above reasons, organizational culture must be considered a main dimension of tacit knowledge. This study fills the gap by integrating an organizational culture dimension of tacit knowledge as an independent and a main dimension of tacit knowledge. This organizational culture dimension includes an understanding of the culture that exists in the organization about tacit knowledge sharing and why and how this existing culture leads to organization effectiveness. The organizational culture dimension of tacit knowledge also includes the employee's resentments and feelings about the culture that prevails in the organization.

Summary

Organizations carry out Knowledge Management to discover and take advantage of the collective knowledge in an organization in order to compete successfully (Shang, Lin, & Wu, 2009). A successful Knowledge Management is the methodical management of knowledge so that workers can obtain, generate, seize, accumulate and make use of knowledge to increase organizational potential. Organizational effectiveness or performance is the extent to which a company achieves a specified goal (Tziner & Levy, 2010). Tacit knowledge helps organizations to achieve specific goals. Knowledge Management activities that take into account tacit knowledge help organizations to

achieve their long-term objectives (Chen & Mohamed, 2010). Successful people are those who have the ability to capture and obtain tacit knowledge that is deeply ingrained in actions, procedures, routines, commitments, ideas, values, and emotions of individuals or groups (Chen & Mohamed, 2010; Lubit, 2001; Mládková, 2012; Nonaka& von Krogh, 2009). This requires "self-motivation skills", "self-organization skills", "individual technical skills", "institutional technical skills", "task-related social skills"; "task related interaction, social interaction skills", "general social interaction skills" (Insch et al., 2008, p.565), as well as a corporate culture that encourages tacit knowledge sharing; as well as prevents knowledge hoarding (Chin-Tsang, 2009; Salah Eldin, 2009). Different kinds of tacit knowledge have different influence on innovation goals (Johannessen & Olsen, 2011). In order to achieve superior performance; an employee can combine different dimensions or different types of tacit knowledge (Rebernik & Sirec 2007). The Figure 2 not only summarizes the aforementioned theories about the role of tacit knowledge in organizational effectiveness but also illustrates of the basis of the research questions of this study.

Independent variables Dependent variable

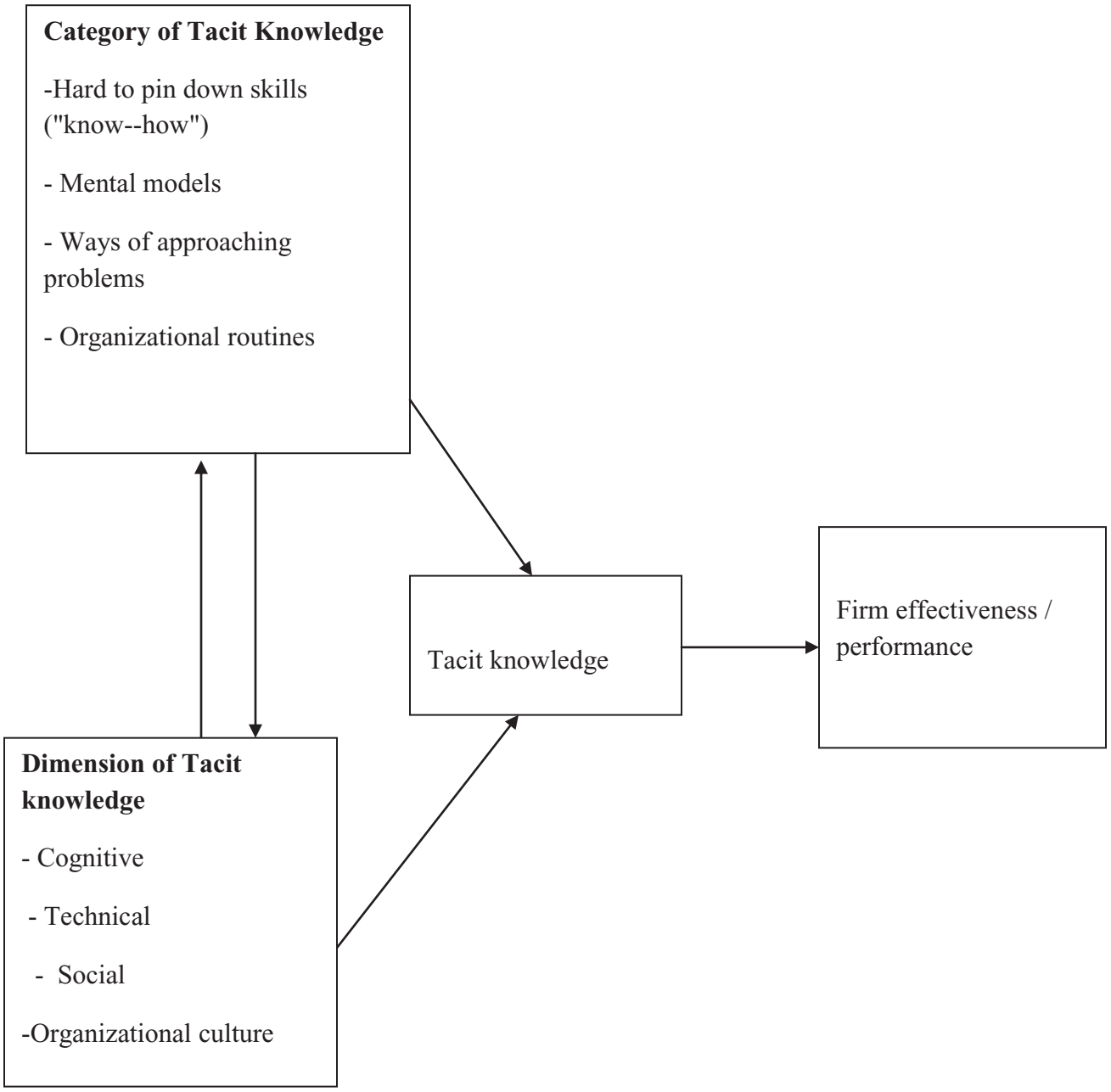

Figure2. Illustration of the Basis of the Research Questions
Note: The model takes into account the role of different categories and different dimensions of tacit knowledge in organizational effectiveness; adapted from Insch et al. (2008, p.565), Lubit (2001), Nonaka and von Krogh (2009), Mládková (2012), Salah Eldin (2009) and Chin-Tsang (2009).

Chapter III: Research Methodology

This study alleges that the adequate management of tacit knowledge allows organizations to enhance their effectiveness. This study is non-experimental research, particularly a causal comparative research design (See chapter I). The research methodology of this study was a quantitative approach using a survey with a Likert scale for measurement (Alreck & Settle, 2004). The goal of this quantitative survey method was to test an objective theory by examining the relationship between tacit knowledge and organizational effectiveness. The examination of the relationship between tacit knowledge and organizational effectiveness was based on the opinions of 220 experienced computer engineers, lawyers, physicians, and teachers. The objective of this study was to determine whether there are any differences in the perception of the role of tacit knowledge on organizational performance according to the opinions of the aforementioned professionals. An extra goal of this study is to determine which categories and dimensions of tacit knowledge have more impact on organizational performance in each industry according to the opinions of the participants. This chapter discusses the research philosophy, variables, instrumentation, data collection, quantitative validity, reliability, the target population, sampling strategy, data analysis, and summary.

Research Philosophy

Researcher's belief or worldview plays a significant role in his choice of the research design. Creswell (2008) suggested the existence of four different types of worldview including "post-positivism, constructivism, advocacy/participatory, and pragmatism" (p.6). People who hold the positivism /post-positivism worldview accept as true that one realty exist and it is the duty of the researcher to find out that reality

(Robson, 2002). In addition, people with a social constructivist's worldview have difficulties to accept the existence of an objective reality, which can be identified, and they believe that the obligation of the investigator is to grasp the many social constructions of meaning and knowledge (Robson, 2002). Moreover, people with an advocacy/participatory worldview consider that researchers must interfere in political change that may impact the lives of members of a specific society (Creswell, 2008). Furthermore, the pragmatic worldview results of actions, circumstances, and consequences rather than existing condition like in post-positivism (Creswell, 2008). According to Robson, (2002), people with positivism views hold a deterministic philosophy in which causes probably determine effects or outcomes. Researchers who have a positivism /post-positivism worldview tend to solve problems by identifying and assessing the causes that influence outcomes. This study holds a post positivism worldview that shapes its quantitative approach. As Creswell (2008) pointed out, the accepted approach to research by post-positivists is that the researcher begins with a theory, gathers data that either supports or refutes the theory, and then makes necessary revisions before additional tests are made. This study followed the same path by starting with the theory that proper management of tacit knowledge leads to improved organizational performance.

Variables

The dependent variable is organizational effectiveness or performance. It is the extent an organization achieves a specified goal (Tziner & Levy, 2010). The effectiveness or performance measurement framework that adds strategic non-financial performance measures to traditional financial metrics in order to give a more balanced view of

organizational performance (Yu et al., 2009). Organizational performance or organizational effectiveness in this study is any specific goal a company intends to achieve including any non-financial performance such as quality of products, services, employee, and customer satisfaction in addition to traditional financial metrics of profitability.

The independent variable is tacit knowledge that includes:

Categories of tacit knowledge

- Hard to pin down skills ("know--how")
- Mental models
-Organizational routines
- Ways of approaching problems

Dimensions of tacit knowledge

Cognitive

-Highly trained intuition
-Systems thinking
-Problem-solving skills
-Self-motivation
-Self-organization skills
-Schemata

Technical

- Deep specialization
-Individual technical skills
-Institutional technical skills
- Skills acquired through learning-by-doing

- Skills acquired through learning-by-doing

Organizational culture

-Understanding of the corporate culture about tacit knowledge sharing

- Resentments and acceptance of the corporate culture about tacit knowledge sharing

Instrumentation

The survey instrument was specially designed for this study (see appendix A). The survey instrument took into account the review of the literature to formulate the questionnaires. The survey questionnaires concerned demographic information and questions relating to the role of tacit knowledge on organizational effectiveness. The questions one, two, and three provide demographic information while questions four and five addressed the issue of the role of different categories and different dimensions of tacit knowledge on organizational effectiveness. The questions six and seven addressed the questions of the categories and dimensions of tacit knowledge that are critical or more required for the effectiveness of the professions involved in the study. Prior to the collection of any data, Institutional Review Board (IRB) had approved the survey instrument for its correctness in gathering data in accordance with the human research standard. This researcher has already received the approval from the IRB. This researcher used SurveyMonkey, an online survey tool to collect data in relation to the research questions.

A pilot study was conducted to ensure a higher rate of validity and reliability. The survey questionnaires in Appendix A were used in the pilot study. In addition, the researcher has asked some open-ended questions with a comment box to collect qualitative data for a face validity check of the survey question design. The open-ended questions asked the respondents to give their opinions about the face validity of this

instrument. Does it seem well designed? Does it seem like a reasonable way to gain the information? Does it measure what it is intended to measure? How can we improve it? The target population for the pilot study was 40 experienced professionals of each the four previously designated professions (ten participants of each profession).

Reliability Testing

A measure is reliable when it is consistent and produces accurately the same result every time a test is repeated (Warner, 2008). In this study, Cronbach's alpha test (Field, 2009) was performed using Statistic Package for the Social Sciences (SPSS) to evaluate the instrument's reliability.

Face Validity Testing

With face validity, researchers determine if the test seems to measure what it is intended to measure. Face validity is more of a form of logical or conceptual validity than analytical validity, as it measures validity based on the face value of a measure or simply whether, it will make sense to a study participant (Warner, 2008). The objective is to determine whether a test appears to measure the target variable. The pilot study tested the face validity of the survey questionnaires by asking the participants some open-ended questions about their opinions of the validity of the instrument.

Target Population

The target population includes computer engineers, lawyers, physicians, and teachers in the United States who have at least five years of experience in their jobs.

Sampling Strategy

A non-probability sampling, which does not engage the researcher in a random selection, was used in this study (Robson, 2002). This study uses a purposive sampling, particularly an expert sampling. Robson (2002) refers to expert sampling of selected individuals who know or have experience and expertise in a specific domain. The sample includes experienced computer engineers, lawyers, physicians, and teachers in the United States who have at least five years of experience in their jobs. This researcher chose expert sampling because it was the best way to have reliable information about the role of tacit knowledge on organizational performance.

Participants & Data Collection

The Participants are 220 experienced computer engineers, lawyers, physicians and teachers, in the United States who had at least five years of experience in their jobs. The participants were divided into four groups or strata of 55 participants from each profession. The study used the survey in Appendix A, which was specifically developed and deployed for this study. Survey Monkey, a web-based surveys tool had provided a platform for data collection. The approach to survey data collection was a self-administered survey, which the respondents filled out in the answers by themselves using SurveyMonkey. An alternative to the web-based data collection was a paper-and-pencil version of the questionnaire for the companies without internet access or those who preferred the printed version. The printed version of the questionnaire was used only for the pilot study. The responses of printed version and the web version were codified and entered directly into SPSS.

Data Analysis

The Statistical analysis used SPSS version 19.0 to analyze the descriptive and inferential statistics. The descriptive statistics includes an examination of the frequencies. The inferential statistics includes the Kruskal-Wallis test (Field, 2009). The Kruskal-Wallis test, which is an extension of the Mann-Whitney U test to three or more groups (Field, 2009; Warner, 2008) , was used to determine whether there is any difference in the perception of the role of tacit knowledge on organizational performance according to the opinion of the representatives of each profession. An analysis of the responses' frequencies helped to determine which categories or dimensions of tacit knowledge have more impact on organizational performance in each profession according to the opinions of their experienced workers.

Summary

This quantitative study is a causal comparative design using a cross-sectional, self-designed survey to determine whether there is any difference in the perception of the role of different dimensions and different categories of tacit knowledge on organizational performance according to the opinion of experienced workers. This study used a purposive sampling to select 55 participants of each of the four professions involved in the study. The statistical analysis used SPSS version 19.0 to describe the sample and the research variables.

Chapter IV: Data Collection and Analysis

As aforesaid, the problem this research draws attention to is the neglect of the use of tacit knowledge, which can lead to organizational ineffectiveness. This study was intended to determine whether diverse sorts of tacit knowledge play significant and specific role in different professions and organizations. An extra aspiration of this study is to find out the categories or dimensions of tacit knowledge that make a greater impact on organizational performance in each of the four professions according to the opinions of their envoys in this research. This chapter takes into account the data collection process, participant's demographics and data analysis. The data analysis includes an analysis of the participants' response, an analysis of research questions, and an analysis of research hypotheses. Finally, this chapter offers a summary of the method of the data collection as well as the consequential results.

Data Collection Process

Pilot Study

The objective of the pretest was to appraise the face validity and the reliability of the survey questionnaire as well as to detect any problem before sending the questionnaire to larger group of individuals. Data were collected through two avenues including a web-based data collection and a paper-and-pencil version of the questionnaire. Initially, the link to access the survey questionnaires on Survey Monkey website was sent via email to approximately 50 individuals as well as the printed version of the survey questionnaires to15 individuals. The principal investigator did not get the

target number of 40 participants including 10 computer engineers, 10 lawyers, 10 physicians and 10 teachers having at least five years in their professions due to a low response rate. He initiated a second round of sending out the link to access the survey questionnaires as well as the printed version of the survey. Anytime the targeted number of 10 participants in a category of profession was reached, the principal investigator stopped sending the survey to that particular category of profession. The researcher continued the process until the target number of 10 participants was reached in each of the four professions involved in the study. The subsequent sections give a succinct synopsis of the results of the pilot study.

Result of the Pilot Study

The survey questionnaires asked the respondents some open-ended questions with a comment box to collect their opinions about the face validity of the survey instrument. The open-ended questions are as follows: Does this survey seem like a reasonable way to get opinions about the role of different types of tacit knowledge on organizational effectiveness in diverse professions? Does this survey questionnaire assess the participants' perceptions or opinions about the role of different types of tacit knowledge on organizational effectiveness? Does the wording of this survey questionnaire is ambiguous? How can we improve this survey questionnaire? The below Table 4.1 summarizes the outcomes of the pilot study.

Table 4.1
Result of the Pilot Study

Questions	Responses	Frequency	Percent
Does this survey seem like a reasonable way to get opinions about the role of different types of tacit knowledge on organizational effectiveness in diverse professions?	Yes	34	85%
	Yes but have difficulty with question 5 and question 6	3	8%
	Did not responded	3	8%
Does this survey questionnaire seem to assess the participants' perceptions or opinions about the role of different types of tacit knowledge on organizational effectiveness?	Yes	37	93%
	Did not responded	3	8%
Does the wording of this survey questionnaire is ambiguous?	Yes	37	93%
	Did not responded	3	8%
How can we improve this survey questionnaire?	Concerns with the survey' length	4	10%
	Concerns with Questions 5 and 6.	3	8%

Face Validity Testing

Face validity testing was conducted to ensure that the survey questionnaire was an appropriate instrument to collect the participants' perceptions about the role of different

types of tacit knowledge on organizational. Face validity assess the researcher‘s personal appraisal of the correctness of the instrument for measuring a notion rather than whether the instrument measures what the investigator wants to measures (Frankfort-Nachmias & Nachmias, 2008, p.150). On other the hand, Warner (2008, p.864) pointed out that an instrument has face validity when it seems to measure what it proposed to measure. According to the results of the pilot study (Table 4.1), the researcher can conclude that the survey instrument is appropriate to measure the participants' perceptions about the role of different types of tacit knowledge on organizational effectiveness because 85% of the respondents think the survey questionnaire is a reasonable way to get opinions about the role of different types of tacit knowledge on organizational effectiveness in diverse professions, 93% of the participants believe that the survey questionnaire assesses the participants' perceptions or opinions about the role of diverse types of tacit knowledge on organizational effectiveness, 93% of the respondents think that the wording of the survey questionnaire was not ambiguous. Since the survey questionnaire is an appropriate tool to collect the participants' perceptions about the role of different types of tacit knowledge on organizational effectiveness as well as it seems to compute what it proposed to quantify which is the participants' perceptions about the role of different types of tacit knowledge the researcher can say that the survey instrument of this study has a face validity.

Reliability Testing

Reliability is the capability of an instrument to obtain the same result repeatedly (Field). It measures the consistency of an instrument across different circumstances and across time. This pilot study has utilized Cronbach's alpha test to appraise the reliability

of the Likert scale utilized to assess the participant perception about the importance of diverse type of tacit knowledge in the effectiveness of their professions. Cronbach's alpha was chosen because it is a popular measure of internal consistency that is it generally used to determine the reliability of Likert scale questionnaire The Table 4.2, SPSS Output for Reliability Testing shows Cronbach's alpha of .762 demonstrating an acceptable level of internal consistency.

Table 4.2

SPSS Output for Reliability Testing

Reliability Statistics

Cronbach's Alpha	N of Items
.762	15

Improvements or Changes in the Survey Instrument

Some modifications have been made before the final survey was sent out. This, because there were some concerns rose during the pilot study. Those concerns need to be addressed before sending the survey to a larger number of participants. Some of the respondents think that the survey is a little bit long. In order to correct that issue, the principal investigator decided to reduce considerably the number of the words the respondents have to read in order to fill out the questionnaire without changing the meaning of the questions. For example, in the survey questionnaire, “Hard to pin down skills or know-how that is stored in employees’ heads, which is personal, acquired mainly through education, training, and experience” was replaced by “Hard to pin down skills or

know-how". Another example is that "Organizational routines or a coordinated, repetitive set of organizational activities that employees use to perform tasks efficiently in your organization or profession" was replaced by "Organizational routines"

An additional change was made in order to make the questions 5 and 6 easier to understand because some of the respondents have expressed difficulties with those two questions. The objective the questions 5 and 6 is to determine which category or dimension of tacit knowledge make a greater impact on organizational effectiveness in each of the four professions according to the opinions of their representatives in this research. Those questions asked the participants to rank the different categories and dimension of tacit knowledge in the order of their priority in the effectiveness of your organization or profession from the most required or important to the least required or important. In order to make those questions easier to understand and to answer without changing the purpose of those questions, the principal investigator decided to change those two questions in multiple choices question by asking the respondents to choose the category and the dimension of tacit knowledge that they think that is the most important for their professions or that makes the greatest impact on organizational effectiveness in their professions or organizations.

Another improvement in the survey instrument is the insertion of pages breaks in order to minimize respondents' fatigue. This concern particularly the question 4, a Likert type of question that invited the participants to rate the value of 15 different types of tacit knowledge in the effectiveness their professions. The question 4 was split in two (4 and 5). The question 4 regards eight different types of tacit knowledge while question 5 considers seven different types of tacit knowledge. The initial survey instrument had six

questions and the final survey instrument has seven questions. After, the above changes the real data collection began.

Actual Data Collection

The true data collection began with two ways including a web-based data collection and a paper-and-pencil version of the questionnaire. After collecting some data through the printed version of the questionnaire, the principal investigator decided to abandon the collection through paper-and-pencil version of the questionnaire and to consider only the web-based data collection. The reason is that it would be intricate to handle vast amount of paper-and-pencil version of the questionnaire while Survey Monkey website offers an easy way treat those data. The collection through survey Monkey website occurred through two paths. The first path is the distribution of the link to access the survey questionnaire, which occurred by sending hundreds of email to respondents. The second way of collecting data survey Monkey website is the purchase of the participants with Survey Monkey. Survey Monkey has millions of respondents in the US and investigators can access those participants by buying responses through the collector named “buy new targeted audience”.

At the start, the survey questionnaire was sent out by e-mail to roughly 130 respondents and 100 responses were bought at Survey Monkey through the collector called “buy new targeted audience”. After 10 days of collecting the data, 183 responses were collected, which is less than the required number of 220 respondents including 55computer engineers, 55 lawyers, 55 physicians and 55 teachers having at least five years in their professions. The principal investigator continued the data collection by

buying an additional 100 responses at Survey Monkey and by continuing sending e-mail to respondents. The researcher stopped the data collection when he got 264 responses; at this point he realized that he has enough data to conduct his analysis.

Participant Demographics

The population of the study consists of computer engineers, lawyers, physicians and teachers in the United States. The first three questions of the survey invite the respondents to give some demographic information. Those questions asked the respondents to specify the name of their organizations, their professions and the number of years working in that profession. A total of 264 Participants completed the questionnaire including 71 computer engineers, 62 lawyers, 59 physicians and 72 teachers. The table 4.3 summarizes the percentage of participants per profession who answered the questionnaire.

Table 4.3
Participation by Profession

Profession	Percent	Frequency
Computer Engineers	26.9%	71
Lawyers	23.5%	62
Physicians (Doctors)	22.3%	59
Teachers	27.3%	72

Years of experience of the participants are an important demographic factor in this study. The table 4.4 shows the experience of the participants. Of the 264 Participants, 10.6% has less than 5 years of experience**.** Precisely, 24.2% of the respondents have 5 – 10 years of experience**.** Just 20.1% of the respondents have 10 – 15 years of experience.

Simply, 18.6% of the respondents have 15 – 20 years of experience. Exactly, 6.1% of the respondents have 20 – 25 years and finally, 20.5% of the respondents have more than 25 years. This is relevant in the sense that only the participants that had at least five years of experience are considered in this study. The table 4.4 indicates the years of experience of 264 Participants who completed the questionnaire.

Table 4.4
Years of Experience of the Participants

Years of experience	Percent	Frequency
Less than 5 years	10.6%	28
5 – 10 years	24.2%	64
10 – 15 years	20.1%	53
15 – 20 years	18.6%	49
20 – 25 years	6.1%	16
More than 25 years	20.5%	54

The target population consists of 220 computer engineers, lawyers, physicians and teachers in the United States having at least 5 years of experience in their professions. In order to achieve this goal, the researcher selected 220 from the 264 participants who answered the survey questionnaire. Since, the target population includes 55 computer technicians, 55 lawyers, 55 surgeons, and 55 teachers in the United States who have at least five years of experience in their jobs, the 10.6% or the 28 participants having less than five years have been removed automatically from the study because this study considers only professionals who have at least 5 years of practice in their professions. The selection of the rest of participants that will be part of data analysis is based on years of experience of the participants and on the completeness of the questionnaire. This in order to make sure that there is no missing data. Although Survey Monkey website is good at helping researchers to collect responses without missing data or misplaced

surveys like in the case of paper-and-pencil version of the questionnaire, this researcher took an extra care to verify that the surveys selected are with no missing data. The table 4.5 illustrates the frequency of the years of experience of the professionals selected to conduct the statistical analysis.

Table 4.5
Frequency of Years of Experience of the Selected Professionals

Years of experience	Response Percent	Response Count
5 – 10 years	27.8%	62
10 – 15 years	23.2%	52
15 – 20 years	18.8%	42
20 – 25 years	6.7%	15
More than 25 years	22.0%	49

Data Analysis

Besides the questions concerning the demographic information, the questions 4 and 5 of the survey invited the participants to rate the importance of different kinds of tacit knowledge in the effectiveness of their professions. The respondents were asked to signify their perceptions about the role of diverse sorts of tacit knowledge in the effectiveness of their professions. A five point Likert scale (not important, below average importance, average importance, above average importance, and very important) was proposed the participants to express their preferences. At the same time as, the questions 6 and 7 asked the participants to choose the greatest category of tacit knowledge and its greatest dimension in the effectiveness of their professions or organizations. The data analysis includes analysis of the participants' response, analysis of research hypotheses, analysis of the research questions, summary of the key findings, and summary.

Analysis of the Participants' Response

This section presents the responses of the 220 selected participants. Firstly, this section describes how the 220 selected participants all the four professions including computer engineers, lawyers, physicians and teachers taken as an entity have expressed their opinions. Secondly, it analyses how the 55 selected participants within each profession have expressed their perceptions. Descriptive statistics especially frequencies are a way through which this researcher assesses the participants' perception of the role diverse categories and dimension of tacit knowledge in the effectiveness of their professions.

Analysis of the Responses of the 220 Selected Participants Taken as a Whole

The responses of the 220 selected participants taken as one body were analyzed through the lens of descriptive statistics. The question 4 and 5 invited the respondents to rate the significance of 15 types of tacit knowledge in the effectiveness of their professions or organizations. Of the 220 selected participants, 91.9% thinks that "hard to pin down skills or know-how" is very important or is above average importance in the effectiveness of their professions. Only, 6.8% of 220 selected participants consider "hard to pin down skills or know-how" as having average importance in the effectiveness of their professions. And just, 1.4 % thinks that "hard to pin down skills or know-how" is below average importance in the effectiveness of their professions. The below Table 4.6a and Table 4.6b summarize the frequency of the responses of the 220 selected participants taken as one unity for each of 15 types of tacit knowledge. The relevance of these two tables is not to answer any of the three research questions of this study that are focus on the differences across professions but to assess the overall perception of the participants

about the importance of diverse types of tacit knowledge in the organizational effectiveness. An examination of these two tables shows that in general the participants overwhelmingly responded that the 15 types of tacit knowledge involved in this study were either very important or above average importance in the organizational effectiveness.

Table 4.6
Overall Frequency for Selected Participants Taken as a Whole (in Percent)

Question 4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Hard to pin down skills or "Know-how		1.4	6.8	15.5	76.4
Employees' mental models or ways of thinking and acting		0.5	8.2	22.3	69.1
The way employees approach or solve problems in your profession		0.5	9.1	20.9	69.5
Organizational routines		2.3	19.1	49.1	29.5
Employees' Self-Motivation		0.5	15.0	49.1	35
Employees' Self-Organization		0.5	7.3	45.5	46.8
Problem solving skills		-	4.1	28.6	67.3
Highly trained intuition		1.4	5.9	26.4	66.4

Table 4.6b
Overall Frequency for Selected Participants Taken as a Whole (in Percent)

Question 5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills: understanding of he steps needed to complete one's tasks efficiently			5.5	18.2	76.4
Institutional technical skill: understanding of how one's tasks fit into the bigger picture		1.8	23.2	55.0	20.0
Employees' skills acquired through learning by doing		0.5	7.3	27.3	65.0
Employees' interaction with other employees in term of performing one's job		4.1	24..5	49.1	22.3
Employees' informal interaction with clients, patients, customers, or others in any social situation	0.5	11.4	28.6	23.6	35.9
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing	0.5	3.6	14.5	64.1	16.8
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing	0.9	3.6	11.4	56.4	27.3

The question 6 asked the participants choose the category of tacit knowledge that they think is the most important for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Exactly, 34.1 % of 220 selected participants believe that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions. While, 29.5% of that population believes that "mental models or ways of thinking and acting", is the most important tacit knowledge for their professions. At the same time as 30.9% of them chooses the "way employees approach and solve problems" as the most significant tacit knowledge for their professions. Whereas, 5.5% of 220 selected participants consider "organizational routines" as the greatest tacit knowledge for their professions. The significance of the below Table 4.8 that summarizes the frequency of the responses of the 220 selected

participants taken as a whole is to appraise the overall perception of the participants about category of tacit knowledge that makes the greatest impact on organizational effectiveness.

Table 4.8
Greatest Category of Tacit Knowledge

Question 6: Choose the category of tacit knowledge that you think that is the most important for your profession or that makes the greatest impact on organizational effectiveness in your profession or organization?	Frequency	Percent
Hard to pin down skills or "know how"	75	34.1%
Mental models or ways of thinking and acting	65	29.5%
The way employees approach and solve problems	68	30.9%
Organizational routines	12	5.5%

The question 7 asked the participants choose the dimension of tacit knowledge that they think is the most essential for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Of the 220 selected participants, 50.9% perceive that “cognitive dimension” makes the greatest impact on organizational effectiveness in their professions. Precisely, 41.4% of 220 selected participants believe that “technical dimension” is the most important dimension of tacit knowledge for their professions. Nine participants (4.1%) of the target population choose the “social dimension” as the most significant dimension of tacit knowledge for their professions. Simply 3.6% of 220 selected participants consider “organizational routines” as the greatest tacit knowledge for their professions. The relevance of the below Table 4.9 that summarizes the frequency of the responses of the 220 selected participants taken as a

whole is to observe the overall perception of the participants about the dimension of tacit knowledge they think is the most significant for organizational performance.

Table 4.9
Overall Frequency Table for Dimensions of Tacit Knowledge

Question 7: Choose the dimension of tacit knowledge that you think that is the most important for your profession or that makes the greatest impact on organizational effectiveness in your profession or organization?	Frequency	Percent
Cognitive dimension	112	50.9%
Technical dimension	91	41.4%
Social dimension	9	4.1%
Corporate culture dimension	8	3.6%

Analysis of the Responses of Computer Engineers

This section analyses only the responses of the 55 selected computer engineers. The question 4 and 5 asked the respondents to rate the responsibility of 15 type of tacit knowledge in the effectiveness of their professions or organizations. Of the 55 selected computer engineers, 94.6% feels that "hard to pin down skills or know-how" is very important or is above average importance in the effectiveness of their professions. While, 5.5 % of them think that "hard to pin down skills or know-how" have average importance in the effectiveness of their professions. The below Table 4.10a and Table 4.10b summarize the frequency of the responses of the of the 55 selected computer engineers for each of 15 types of tacit knowledge. These two tables are relevant to the Research Question 1 that seeks to determine whether are there any differences in the perceptions of experienced of experienced computer engineers, lawyers, physicians, and teachers about the influence of diverse kinds of tacit knowledge on the organizational effectiveness of

their professions in the sense that the responses of computer engineers can be compared to other categories of profession.

Table 4.10a
Frequency Table for Selected Computer Engineers (in Percent)

Question 4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Hard to pin down skills or "Know-how			5.5	18.2	76.4
Employees' mental models or ways of thinking and acting		1.8	10.9	29.1	58.2
The way employees approach or solve problems in your profession		1.8	16.4	27.3	54.5
Organizational routines		5.5	20.0	40.0	34.5
Employees' Self-Motivation		1.8	18.2	58.2	21.8
Employees' Self-Organization			9.1	50.9	40.0
Problem solving skills			3.6	27.3	69.1
Highly trained intuition		5.5	7.3	36.4	50.9

Table 4.10b
Frequency Table for Selected Computer Engineers(in Percent)

Question 5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills: understanding of the steps needed to complete one's tasks efficiently			5.5	12.7	81.8
Institutional technical skill: understanding of how one's tasks fit into the bigger picture		3.6	20.0	58.2	18.2
Employees' skills acquired through learning by doing		1.8	7.3	25.5	65.5
Employees' interaction with other employees in term of performing one's job		5.5	29.1	49.1	16.4
Employees' informal interaction with clients, patients, customers, or others in any social situation	1.8	29.1	41.8	10.9	16.4
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing		9.1	18.2	56.4	16.4
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing	1.8	10.9	9.1	49.1	29.1

The question 6 asked the participants choose the category of tacit knowledge that they think is the most important for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Practically half (50.9%) of 55 selected computer engineers think that "hard to pin down skills or know how" make the greatest impact on organizational effectiveness in their professions. While, 20.0% of those selected computer engineers believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. Whereas, 25.5% of 55 selected computer engineers believe that "The way employees approach problems or solve problems" is the most important tacit knowledge for their professions. At the same

time as, 3.6% of them perceive "Organizational routines" as the greatest tacit knowledge for their professions. The underneath Table 4.12 that summarizes the frequency of the responses of the 55 selected computer engineers helps to answer partially the Research Question 2 that looks for the greatest category of tacit knowledge in the effectiveness of different professions in the sense that it provides the most important category of tacit knowledge for computer engineers including "hard to pin down skills or knowhow" followed by "The way employees approach problems or solve problems".

Table 4.12
Frequency Table for Greatest Categories of Tacit Knowledge for Computer Engineers

Categories of tacit knowledge	Frequency	Percent
Employees' hard to pin down skills or "Knowhow"	28	50.9%
Employees 'mental models or ways of thinking and acting	11	20.0%
The way employees approach problems or solve problems	14	25.5%
Organizational routines	2	3.6%

The question 7 asked the participants to choose the dimension of tacit knowledge that makes the greatest impact on organizational effectiveness in their organizations. The vast majority, 83.6% of 55 selected computer engineers see the "technical dimension" as the most important dimension of tacit knowledge in the effectiveness for their professions. Six of 55 selected computer engineers (10.9%) believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. While, 3.6% of the 55 selected computer engineers feel that the "corporate culture dimension" is the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. No more than1.8% of the 55 selected computer engineers think that the "social dimension" is the most significant dimension of tacit

knowledge in the effectiveness for their professions. The below Table 4.13 that summarizes the frequency of the responses of the 55 selected computer engineers as regards to the greatest dimension of tacit knowledge in their professions or organizations is relevant to the Research Question 3 that searches for the most important dimension of tacit knowledge in the effectiveness of different professions. Because it helps to answer in part that research question by showing that, the "Technical dimension" is the most important dimension of tacit knowledge in the organizational effectiveness for computer engineers followed by cognitive dimension.

Table 4.13
Frequency Table for Greatest Dimensions of Tacit Knowledge for Computer Engineers

Dimensions of tacit knowledge	Frequency	Percent
Cognitive dimension	6	10.9%
Technical dimension	46	83.6%
Social dimension	1	1.8%
Corporate culture dimension	2	3.6%

Analysis of the Responses of the Lawyers

This section analyses only the responses of the 55 selected lawyers. The question 4 and 5 solicited the respondents to rate the magnitude of diverse types of tacit knowledge in the effectiveness of their professions or organizations. Overpoweringly, 74.5% of the 55 lawyers think that "hard to pin down skills or know-how" is very important in the effectiveness of their professions. Exactly, 18.2 % of the 55 lawyers believe "hard to pin down skills or know-how" have above average importance in the effectiveness of their professions. While, 5.5 % of the 55 lawyers think that "hard to pin

down skills or know-how" have average importance in the effectiveness of their professions. Merely, 1.8 of the 55 lawyers believe "hard to pin down skills or know-how" have below average importance in the effectiveness of their professions. The below Table 4.14a and Table 4.14b that summarize the frequency of the responses of the 55 selected lawyers for each of 15 types of tacit knowledge are relevant to the Research Question 1 that seeks to determine whether are there any differences in the perceptions of the role of diverse types of tacit knowledge across professions. Because they answer partially the Research Question 3 by providing the perceptions of lawyers that can be compared to other categories of profession.

Table 4.14a
Frequency Table for Selected Lawyers (in Percent)

Question 4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Hard to pin down skills or "Know-how		1.8	5.5	18.2	74.5
Employees' mental models or ways of thinking and acting			3.6	16.4	80.0
The way employees approach or solve problems				12.7	87.3
Organizational routines		1.8	25.5	58.2	14.5
Employees' Self-Motivation			21.8	49.1	29.1
Employees' Self-Organization			7.3	52.7	40.0
Problem solving skills			1.8	20.0	78.2
Highly trained intuition				21.8	78.2

Table 4.14b
Frequency Table for Selected Lawyers (in Percent)

Question 5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills: understanding the steps needed to complete one's tasks efficiently			7.3	14.5	78.2
Institutional technical skill: understanding of how one's tasks fit into the bigger picture			29.1	56.4	14.5
Employees' skills acquired through learning by doing			3.6	50.9	45.5
Employees' interaction with other employees in term of performing one's job		5.5	12.7	60.0	21.8
Employees' informal interaction with clients, patients, customers, or others in any social situation			1.8	23.6	74.5
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing		1.8	16.4	70.9	10.9
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing		1.8	14.5	61.8	21.8

The question 6 asked the participants choose the category of tacit knowledge that they think is the most important for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Almost half (50.9 %) of the 55 lawyers believe that "The way employees approach problems or solve problems" is the most important tacit knowledge for their professions. Precisely, 36.4 of 55 selected lawyers believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. Whereas, 7.3% of 55 selected lawyers think that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions. Specifically, 5.5 of the 55 lawyers believe that "organizational routines" as the greatest tacit knowledge for their

professions. The below Table 4.15 that summarizes the frequency of the responses of the 55 selected lawyers is relevant in the sense that it helps to respond partially the Research Question 2 that tries to discover the most significant category of tacit knowledge in the effectiveness of different professions by showing that the "ways of approaching and solving problems" is the most essential tacit knowledge for lawyers followed by "mental models or ways of thinking and acting".

Table 4.15
Greatest Categories of Tacit Knowledge for Lawyers

Categories of tacit knowledge	Frequency	Percent
Employees' hard to pin down skills or "Knowhow"	4	7.3%
Employees 'mental models or ways of thinking and acting	20	36.4%
The way employees approach problems or solve problems	28	50.9%
Organizational routines	3	5.5%

The question 7 asked the participants choose the dimension of tacit knowledge that they think is the most significant for their professions or that makes the greatest impact on organizational effectiveness in their organizations. The greater part of 55 selected lawyers (85.5%) believes that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. While, 10.9 % of 55 selected lawyers see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. Accurately, 3.6 % of the 55 selected lawyers think that the "social dimension" is the most significant dimension of tacit knowledge in the effectiveness for their professions. The below Table 4.16 that summarizes the frequency of the responses of the 55 lawyers is relevant to the Research Question 3 that seeks out for the most significant dimension of tacit knowledge in the

effectiveness of different professions. Because it helps to answer in some way that research question by showing that that "cognitive dimension" is the most essential dimension of tacit knowledge in the organizational effectiveness for lawyers.

Table 4.16
Frequency Table for Greatest Dimensions of Tacit knowledge for Lawyers

Dimensions of tacit knowledge	Frequency	Percent
Cognitive dimension	47	85.5%
Technical dimension	6	10.9%
Social dimension	2	3.6%
Corporate culture dimension		

Analysis of the Responses of the Physicians

This section analyses only the responses of the 55 selected physicians. The question 4 and 5 asked the respondents to rate the role of diverse sorts of tacit knowledge in the effectiveness of their professions or organizations. A predominant number of the 55 physicians (83.6%) think that "hard to pin down skills or know-how" is very important in the effectiveness of their professions. While, 5.5 % of the 55 physicians believe "hard to pin down skills or know-how" have above average importance in the effectiveness of their professions. Exactly, 7.3 % of the 55 physicians think that "hard to pin down skills or know-how" have average importance in the effectiveness of their professions. No more than3.6 % of 55 selected physicians think that "hard to pin down skills or know-how" is below average importance in the effectiveness of their professions. The below Table 4.17a and the Table 4.17b that summarize the frequency of the responses of the 55 selected for physicians regarding their perception about importance of 15 different types of tacit knowledge is relevant to the Research Question 1 that seeks to determine whether are there any differences in the perceptions of the role of diverse types of tacit knowledge across professions. Because they help in answering to

some extent the research question 3 by providing the perceptions of physicians that can be compared to other categories of profession.

Table 4.17a
Frequency Table for the Selected Physicians (in Percent)

Question 4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Hard to pin down skills or "Know-how		3.6	7.3	5.5	83.6
Employees' mental models or ways of thinking and acting			9.1	25.5	65.5
The way employees approach or solve problems			10.9	21.8	67.3
Organizational routines		1.8	16.4	50.9	30.9
Employees' Self-Motivation			16.4	58.2	25.5
Employees' Self-Organization		1.8	10.9	56.4	30.9
Problem solving skills			9.1	32.7	58.2
Highly trained intuition			3.6	12.7	83.6

Table 4.17b
Frequency Table for the Selected Physicians (in Percent)

Question 5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills: understanding the steps needed to complete one's tasks efficiently			1.8	12.7	85.5
Institutional technical skill: understanding of how one's tasks fit into the bigger picture		3.6	21.8	56.4	18.2
Employees' skills acquired through learning by doing			5.5	10.9	83.6
Employees' interaction with other employees in term of performing one's job		3.6	18.2	61.8	16.4
Employees' informal interaction with clients, patients, customers, or others in any social situation		16.4	40.0	25.5	18.2
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing	1.8	3.6	7.3	70.9	16.4
Employees' understanding of the effectiveness organizational culture of tacit knowledge sharing	1.8	1.8	10.9	56.4	29.1

The question 6 asked the participants to choose the category of tacit knowledge that they think is the most vital for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Of the 55 selected physicians, 41.8 % think that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions. While, 34.5 % of 55 selected physicians believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. Whereas, 18.2 % of the 55 physicians believe that "the way employees approach problems or solve problems" is the most important tacit knowledge for their professions. At the same time as, 5.5% of the 55 Physicians believe that "Organizational routines" is the greatest tacit knowledge for their professions. The underneath Table 4.19 that summarizes the frequency of the responses of the 55 selected physicians is relevant in the sense that it helps in answering partially the Research

Question 2 that tries to uncover the most critical category of tacit knowledge in the effectiveness of different professions by showing that the "hard to pin down skills or knowhow" is the most important tacit knowledge for physicians followed by "mental models or ways of thinking and acting" and "The way employees approach problems or solve problems".

Table 4.19
Frequency Table for the Greatest Categories of Tacit Knowledge for Physicians

Categories of tacit knowledge	Frequency	Percent
Employees' hard to pin down skills or "Knowhow"	23	41.8%
Employees 'mental models or ways of thinking and acting	19	34.5%
The way employees approach problems or solve problems	10	18.2%
Organizational routines	3	5.5%

The question 7 asked the participants choose the dimension of tacit knowledge that they think is the most essential for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Of the 55 selected physicians, 54.5 % see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. Whereas, 38.2 % of 55 selected physicians believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. As, 5.5% of 55 selected physicians think that that "corporate culture dimension" the most important dimension of tacit knowledge in the effectiveness for their professions, only 1.8 % of the 55 selected physicians think that the "social dimension" is the most significant dimension of tacit knowledge in the effectiveness for their professions. The below Table 4.20 that summarizes the frequency of the responses of the 55 physicians is relevant to the Research Question 3 that searches for the highest

dimension of tacit knowledge in the effectiveness of different professions. Because it helps to answer in some way that research question by showing that "technical dimension" is the most essential dimension of tacit knowledge in the organizational effectiveness for physicians followed by "cognitive dimension"

Table 4.20
Frequency Table for the Greatest Dimensions of Tacit Knowledge for Physicians

Dimensions of tacit knowledge	Frequency	Percent
Cognitive dimension	21	38.2%
Technical dimension	30	54.5%
Social dimension	1	1.8%
Corporate culture dimension	3	5.5%

Analysis of the Responses of the Teachers

This section analyses only the responses of the 55 selected teachers. The question 4 and 5 asked the respondents to rate the importance of diverse type of tacit knowledge in the effectiveness of their professions or organizations. Of the 55 selected teachers, 70.9 % of the 55 teachers think that "hard to pin down skills or know-how" is very important in the effectiveness of their professions. While, 20.0 % of the 55 teachers believe "hard to pin down skills or know-how" have above average importance in the effectiveness of their professions. Accurately, 9.1% of the 55 teachers think that "hard to pin down skills or know-how" have average importance in the effectiveness of their professions. It is important to notice that when the frequency of "above average importance" is added to the frequency of "very important in the Table 4.21a, 90.9 % of the 55 teachers perceive

that “hard to pin down skills or know-how” as above average importance or either very important in the effectiveness of their professions. The underneath Table 4.21a and Table 4.21a that sums up the frequency of the responses of the 55 selected teachers regarding their perception about importance of 15 different types of tacit knowledge is relevant to the Research Question 1 that seeks to determine whether are there any differences in the perceptions of the role of diverse types of tacit knowledge across professions. Because they help in answering to some extent the research question 3 by providing the perceptions of teachers that can be compared to other categories of profession.

Table 4.21a
Frequency Table for the Selected Teachers (in Percent)

Question 4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Hard to pin down skills or “Know-how			9.1	20.0	70.9
Employees' mental models or ways of thinking and acting			9.1	18.2	72.7
The way employees approach or solve problems			9.1	21.8	69.1
Organizational routines			14.5	47.3	38.2
Employees' Self-Motivation			3.6	30.9	65.5
Employees' Self-Organization			1.8	21.8	76.4
Problem solving skills			1.8	34.5	63.6
Highly trained intuition			12.7	34.5	52.7

Table 4.21b
Frequency Table for the Selected Teachers (in Percent)

Question 5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills: understanding the steps needed to complete one's tasks efficiently			7.3	32.7	60.0
Institutional technical skill: understanding of how one's tasks fit into the bigger picture			21.8	49.1	29.1
Employees' skills acquired through learning by doing			12.7	21.8	65.5
Employees' interaction with other employees in term of performing one's job		1.8	38.2	25.5	34.5
Employees' informal interaction with clients, patients, customers, or others in any social situation			30.9	34.5	34.5
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing			16.4	58.2	25.5
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing			10.9	58.2	30.9

The question 6 asked the participants choose the category of tacit knowledge that they think is the most central for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Of 55 selected teachers, 36.4 % think that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions. While, 29.1 % of the 55 teachers believe that "The way employees approach problems or solve problems" is the most important tacit knowledge for their professions. At the same time as, 27.3 % of 55 selected teachers believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. Concurrently, four of the 55 teachers (7.3 %) believe that "organizational routines" is the greatest tacit knowledge for their professions. The below

Table 4.23 that illustrates the frequency of the responses of the 55 selected teachers is significant in the sense that it helps to respond partially the Research Question 2 that tries to seeks for the most crucial category of tacit knowledge in the effectiveness of different professions by showing that the "hard to pin down skills or know how" is the most important tacit knowledge for teachers followed by "way of approaching and solving problems" and "mental models or ways of thinking and acting".

Table 4.23
Frequency Table for the Greatest Categories of Tacit Knowledge for Teachers

Categories of tacit knowledge	Frequency	Percent
Employees' hard to pin down skills or "Knowhow"	20	36.4%
Employees 'mental models or ways of thinking and acting	15	27.3%
The way employees approach problems or solve problems	16	29.1%
Organizational routines	4	7.3%

The question 7 solicited the participants to choose the dimension of tacit knowledge that they think is the most considerable for their professions or that makes the greatest impact on organizational effectiveness in their organizations. Most of the 55 selected teachers (65.5 %) believe that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. While, 15.5% of 55 selected teachers see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. Concurrently, 8.6 % of the 55 selected teachers think that the "social dimension" is the most significant dimension of tacit knowledge in the effectiveness for their professions. At the same time as 5.2 % of 55 selected teachers

think that that "corporate culture dimension" the most important dimension of tacit knowledge in the effectiveness for their professions. The Table 4.24 that illustrates the frequency of the responses of the selected teachers as regards to the greatest dimension of tacit knowledge in their professions or organizations is relevant to the Research Question 3 that seeks the utmost dimension of tacit knowledge in the effectiveness of different professions. Because it helps to answer in part that research question by showing that, the "cognitive dimension" with the higher frequency is the most essential dimension of tacit knowledge in the organizational effectiveness for teachers.

Table 4.24
Frequency Table for Greatest Dimensions of Tacit Knowledge for Teachers.

Dimensions of tacit knowledge	Frequency	Percent
Cognitive dimension	38	65.5%
Technical dimension	9	15.5%
Social dimension	5	8.6%
Corporate culture dimension	3	5.2%

Analysis of Research Hypotheses

This segment discusses the findings of the study as they connect to the research hypotheses. The objective of this section is to verify whether the findings support the hypotheses. The following are the null hypothesis and alternative hypothesis used to assess the statistical inference of the study.

Null Hypothesis

H0: The distributions of the four groups or professions are equal. There is no difference in the perception of the impact of different types of tacit knowledge on organizational performance according to the opinion of the representatives of different professions.

Alternative Hypothesis

H1: The distributions of the four groups or professions are different. There are differences in the perception of the impact of different types of tacit knowledge on organizational performance according to the opinions of the representatives of different professions.

Kruskal-Wallis test is a non-parametric method employed to determine the differences involving several independent groups (Field, 2009). Based on ranked data, it appropriate when the measure used to assess the dependent variable is interval, ratio ordinal level and when the independent variables concern more than two independent groups (Field, 2009). This researcher chose Kruskal-Wallis test because an ordinal level such as Likert scale was used to gauge the perception of the influence of different types of tacit knowledge on organizational performance according to the opinions of four groups of profession. The Kruskal–Wallis test helped to determine whether there is any difference in the perception of the importance of each type of 15 tacit knowledge considered in the study on organizational effectiveness according to the opinions of 220 experienced computer engineers, lawyers, physicians, and teachers selected for the study. The SPSS Output Table 4.24a and Table 4.24b show the result of the Kruskal-Wallis test including the Chi-Square, the degree of freedom (df), and the asymptotic significance (Asymp Sig) for each type of tacit knowledge considered in the study.

Table 4.25a

The SPSS Output for the Kruskal-Wallis Test

	Hard to pin down skills or "Knowhow"	Employees' mental models or ways of thinking and acting	The way employees approach problems or solve problems in your profession	Organizational routines	Employees' Self-Motivation	Employees' Self-Organization	Problem solving skills
Chi-Square	2.394	6.376	15.116	8.329	30.953	28.042	5.843
df	3	3	3	3	3	3	3
Asymp. Sig.	.495	.095	.002	.040	.000	.000	.119

Table 4.25b

The SPSS Output for the Kruskal-Wallis Test

	Highly trained intuition	Individual technical skills	Institutional technical skill	Employees' skills acquired through learning by doing	Employees' interaction with other employees in term of performing one's job	Employees' informal interaction with clients, patients, customers, or others in any social situation	Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing	Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing
Chi-Square	22.811	10.447	2.456	14.119	2.588	76.408	5.436	1.807
df	3	3	3	3	3	3	3	3
Asymp. Sig.	.000	.015	.483	.003	.460	.000	.143	.613

The p value for the null hypothesis plays an essential role in the interpretation of the result of the Kruskal-Wallis test (Field, 2009). If the P<.05 the null hypothesis is rejected, if the P > or = 05 the null hypothesis is retained. IBM SPSS Statistics 19.0 gave the statistical results in the Table 4.27 for each of the 15 sorts of tacit knowledge. For instance, the first type of tacit knowledge is "hard to pin down skills or know-how" and the Kruskal–Wallis test revealed that its distribution is the same across categories of profession; with the Sig .495 > 05, the null hypothesis is retained. Another example is the third tacit knowledge, "the way employees approach problems or solve problems in organizations" its distribution is not the same across categories of profession; with the Sig .002 < .05 the null hypothesis is rejected. Table 4.27 summarizes the result of the inferential analysis. The main hypothesis of this study stipulates that there are differences in the perception of the impact of different types of tacit knowledge on organizational performance according to the opinions of the representatives of different professions. The result of Kruskal-Wallis test in the Table 4.27 shows that seven out of the 15 types of tacit knowledge have the same distribution across categories of profession therefore, do not support the main hypothesis. However, eight out the 15 types of tacit knowledge have the different distributions across categories of profession therefore, support the main hypothesis.

Table 4.27

Hypothesis Test Summary

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Hard to pin down skills or "Know-how" is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.495	Retain the null hypothesis.
2	The distribution of Employees' mental models or ways of thinking and acting is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.095	Retain the null hypothesis.
3	The distribution of The way employees approach problems or solve problems is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
4	The distribution of Organizational routines is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.040	Reject the null hypothesis.
5	The distribution of Employees' Self-Motivation is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
6	The distribution of Employees' Self-Organization is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
7	The distribution of Problem solving skills is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.119	Retain the null hypothesis.
8	The distribution of Highly trained intuition is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
9	The distribution of Individual technical skills is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.015	Reject the null hypothesis.
10	The distribution of Institutional technical skill is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.483	Retain the null hypothesis.
11	The distribution of Employees' skills acquired through learning by doing is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
12	The distribution of Employees' interaction with other employees in term of performing one's job is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.460	Retain the null hypothesis.
13	The distribution of Employees' informal interaction with clients, patients, customers, or others in any social situation is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
14	The distribution of Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.143	Retain the null hypothesis.
15	The distribution of Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing is the same across categories of Profession.	Independent-Samples Kruskal-Wallis Test	.613	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The above table Hypothesis Test Summary shows that the Kruskal–Wallis test was significant for eight out the 15 types of tacit knowledge including the way employees approach problems or solve problems, organizational routines, employees' self-motivation, problem solving skills, highly trained intuition, and individual technical skills, employees' skills acquired through learning by doing, employees' informal interaction with clients, patients, customers, or others in any social situation. However, the test does not show which category or categories of profession are responsible for the significant Kruskal–Wallis result. In order to solve this problem, post-hoc comparisons especially the Bonferroni test (Field, 2009) will be conducted for those eight types of tacit knowledge.

Table 4.28

Post-hoc Comparisons

Multiple Comparisons

Bonferroni

Dependent Variable	(I) Profession	(J) Profession	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
The way employees approach problems or solve problems in your profession	Computer engineers	Lawyers	-.52088*	.12469	.000	-.8529	-.1889
		Physicians	-.21178	.12469	.545	-.5438	.1202
		Teachers	-.23743	.12414	.343	-.5680	.0931
	Lawyers	Computer engineers	.52088*	.12469	.000	.1889	.8529
		Physicians	.30909	.12412	.081	-.0214	.6396
		Teachers	.28344	.12356	.137	-.0456	.6125
	Physicians	Computer engineers	.21178	.12469	.545	-.1202	.5438
		Lawyers	-.30909	.12412	.081	-.6396	.0214
		Teachers	-.02565	.12356	1.000	-.3547	.3034

	Teachers	Computer engineers	.23743	.12414	.343	-.0931	.5680
		Lawyers	-.28344	.12356	.137	-.6125	.0456
		Physicians	.02565	.12356	1.000	-.3034	.3547
Organizational routines	Computer engineers	Lawyers	.16397	.14378	1.000	-.2189	.5468
		Physicians	-.09057	.14378	1.000	-.4734	.2923
		Teachers	-.23148	.14314	.644	-.6126	.1497
	Lawyers	Computer engineers	-.16397	.14378	1.000	-.5468	.2189
		Physicians	-.25455	.14312	.460	-.6356	.1265
		Teachers	-.39545*	.14248	.036	-.7748	-.0161
	Physicians	Computer engineers	.09057	.14378	1.000	-.2923	.4734
		Lawyers	.25455	.14312	.460	-.1265	.6356
		Teachers	-.14091	.14248	1.000	-.5203	.2385
	Teachers	Computer engineers	.23148	.14314	.644	-.1497	.6126
		Lawyers	.39545*	.14248	.036	.0161	.7748
		Physicians	.14091	.14248	1.000	-.2385	.5203
Employees' Self-Motivation	Computer engineers	Lawyers	-.09125	.12527	1.000	-.4248	.2423
		Physicians	-.10943	.12527	1.000	-.4430	.2241
		Teachers	-.64352*	.12472	.000	-.9756	-.3114
	Lawyers	Computer engineers	.09125	.12527	1.000	-.2423	.4248
		Physicians	-.01818	.12470	1.000	-.3502	.3139
		Teachers	-.55227*	.12414	.000	-.8828	-.2217
	Physicians	Computer engineers	.10943	.12527	1.000	-.2241	.4430
		Lawyers	.01818	.12470	1.000	-.3139	.3502
		Teachers	-.53409*	.12414	.000	-.8646	-.2035
	Teachers	Computer engineers	.64352*	.12472	.000	.3114	.9756
		Lawyers	.55227*	.12414	.000	.2217	.8828
		Physicians	.53409*	.12414	.000	.2035	.8646
Employees' Self-Organization	Computer engineers	Lawyers	-.03098	.11615	1.000	-.3402	.2783
		Physicians	.13266	.11615	1.000	-.1766	.4419
		Teachers	-.45370*	.11563	.001	-.7616	-.1458

	Lawyers	Computer engineers	.03098	.11615	1.000	-.2783	.3402
		Physicians	.16364	.11561	.950	-.1442	.4715
		Teachers	-.42273*	.11510	.002	-.7292	-.1163
	Physicians	Computer engineers	-.13266	.11615	1.000	-.4419	.1766
		Lawyers	-.16364	.11561	.950	-.4715	.1442
		Teachers	-.58636*	.11510	.000	-.8928	-.2799
	Teachers	Computer engineers	.45370*	.11563	.001	.1458	.7616
		Lawyers	.42273*	.11510	.002	.1163	.7292
		Physicians	.58636*	.11510	.000	.2799	.8928
Highly trained intuition	Computer engineers	Lawyers	-.46700*	.12185	.001	-.7915	-.1425
		Physicians	-.48519*	.12185	.001	-.8096	-.1607
		Teachers	-.09590	.12131	1.000	-.4189	.2271
	Lawyers	Computer engineers	.46700*	.12185	.001	.1425	.7915
		Physicians	-.01818	.12129	1.000	-.3411	.3048
		Teachers	.37110*	.12075	.014	.0496	.6926
	Physicians	Computer engineers	.48519*	.12185	.001	.1607	.8096
		Lawyers	.01818	.12129	1.000	-.3048	.3411
		Teachers	.38929*	.12075	.009	.0678	.7108
	Teachers	Computer engineers	.09590	.12131	1.000	-.2271	.4189
		Lawyers	-.37110*	.12075	.014	-.6926	-.0496
		Physicians	-.38929*	.12075	.009	-.7108	-.0678
Individual technical skills	Computer engineers	Lawyers	.05017	.10643	1.000	-.2332	.3336
		Physicians	-.07710	.10643	1.000	-.3605	.2063
		Teachers	.22354	.10596	.216	-.0586	.5057
	Lawyers	Computer engineers	-.05017	.10643	1.000	-.3336	.2332
		Physicians	-.12727	.10594	1.000	-.4094	.1548
		Teachers	.17338	.10547	.610	-.1075	.4542
	Physicians	Computer engineers	.07710	.10643	1.000	-.2063	.3605
		Lawyers	.12727	.10594	1.000	-.1548	.4094
		Teachers	.30065*	.10547	.029	.0198	.5815

	Teachers	Computer engineers	-.22354	.10596	.216	-.5057	.0586
		Lawyers	-.17338	.10547	.610	-.4542	.1075
		Physicians	-.30065*	.10547	.029	-.5815	-.0198
Employees' skills acquired through learning by doing	Computer engineers	Lawyers	.13737	.12233	1.000	-.1884	.4631
		Physicians	-.22626	.12233	.394	-.5520	.0995
		Teachers	.03770	.12179	1.000	-.2866	.3620
	Lawyers	Computer engineers	-.13737	.12233	1.000	-.4631	.1884
		Physicians	-.36364*	.12177	.019	-.6879	-.0394
		Teachers	-.09968	.12123	1.000	-.4225	.2231
	Physicians	Computer engineers	.22626	.12233	.394	-.0995	.5520
		Lawyers	.36364*	.12177	.019	.0394	.6879
		Teachers	.26396	.12123	.183	-.0588	.5868
	Teachers	Computer engineers	-.03770	.12179	1.000	-.3620	.2866
		Lawyers	.09968	.12123	1.000	-.2231	.4225
		Physicians	-.26396	.12123	.183	-.5868	.0588
Employees' informal interaction with clients, patients, customers, or others in any social situation	Computer engineers	Lawyers	-1.65320*	.16441	.000	-2.0910	-1.2154
		Physicians	-.38047	.16441	.130	-.8183	.0573
		Teachers	-.97950*	.16368	.000	-1.4153	-.5437
	Lawyers	Computer engineers	1.65320*	.16441	.000	1.2154	2.0910
		Physicians	1.27273*	.16365	.000	.8370	1.7085
		Teachers	.67370*	.16292	.000	.2399	1.1075
	Physicians	Computer engineers	.38047	.16441	.130	-.0573	.8183
		Lawyers	-1.27273*	.16365	.000	-1.7085	-.8370
		Teachers	-.59903*	.16292	.002	-1.0328	-.1652
	Teachers	Computer engineers	.97950*	.16368	.000	.5437	1.4153
		Lawyers	-.67370*	.16292	.000	-1.1075	-.2399
		Physicians	.59903*	.16292	.002	.1652	1.0328

*. The mean difference is significant at the 0.05 level.

The above Table 4.28 (Multiple Comparisons) shows that the mean difference is significant at the .05 level. However, the problem with "Multiple Comparisons" is that it augments the type I error (Field, 2009). The type I error occurs because a researcher rejects the null hypothesis when it is in reality true (Warner, 2008). In order solve this problem, Field (2009) recommends to be selective about the comparison by using Bonferroni correction which instead of using .05 as the critical value of significance for each test, uses .05 divided by the number of comparisons. This study recognizes only the findings that are significant below .05/4= .0125 as the trustworthy or reliable ones.

The results in Table 4.28 shows for "way employees approach problems or solve problems", Computer engineers vs. Lawyers_ Sig. = .000 which is lower than the Sig. level of .05. The difference in the perception of Computer engineers vs. Lawyers about this type of tacit knowledge is significant. When using Bonferroni correction, Lawyers_ Sig. = .000 still below .0125 which is a reliable difference in their perceptions about the role of that particular type of tacit knowledge.

The findings in Table 4.28 shows for "organizational routines", Lawyers vs. Teachers_ Sig. = .036 which is lower than the Sig. level of .05. The perception of the role of this type of tacit knowledge in organizational effectiveness differs for those two categories of profession. However, when using Bonferroni correction, Lawyers vs. Teachers_ Sig. = .036 is higher than 0.0125, the difference in their perception is not reliable. Therefore, the null hypothesis is retained for "organizational routines", at the level of significance of .0125.

The interpretation of the result in Table 4.28 shows for “employees' self-motivation”, Computer engineers vs. Teachers_ Sig. = .000 which is lesser than the Sig. level of .05. Lawyers vs. Teachers_ Sig. = .000 which is inferior to the Sig. level of .05. Physicians vs. Teachers_ Sig. = .000 which is lower than the Sig. level of .05. This means that there is a significant difference in how those pairs of profession perceive the importance “employees' self-Motivation”. Even so, when using Bonferroni correction, all pairs of profession Sig. = .000 still under .0125 which is trustworthy significant difference in their perceptions about the importance of that specific tacit knowledge.

For, “employees' self-organization”, Computer engineers vs. Teachers_ Sig. = .001 which is inferior to the Sig. level of .05. Lawyers vs. Teachers_ Sig. = .002 which is lesser than the Sig. level of 0.05. Physicians vs. Teachers_ Sig. = .000 which is inferior to the Sig. level of 0.05. There is significant difference in how those pair of profession sees the value of that type tacit knowledge. However, when comparing those significance level to .0125, only Lawyers vs. Teachers_ Sig. = .002 is not below .0125. Therefore, when using Bonferroni correction there is no significant difference in how Lawyers vs. Teachers perceives the value of that particular type tacit knowledge.

The examination of the Table 28 regarding “highly trained intuition”, shows Computer engineers vs. Lawyers_ Sig. = .001 which is lower than the Sig. level of .05. Computer engineers vs. Physicians _ Sig. = .001 which is lower than the Sig. level of .05. Lawyers vs. Teachers_ Sig. = .014 which is lesser than the Sig. level of .05. Physicians vs. Teachers_ Sig. = .009 which is inferior to the Sig. level of 0.05. These pairs of groups vary in their opinions about the role of “Highly trained intuition” in organizational effectiveness. In favor of “Individual technical skills”, Physicians vs. Teachers_ Sig. =

.029 which is inferior to the Sig. level of .05. These two professions diverge in their view about the role of this type of tacit knowledge in performance of their organizations. Although, when using Bonferroni correction to the above, simply Computer engineers vs. Lawyers_ Sig. = .001, Computer engineers vs. Physicians _ Sig. = .001, Physicians vs. Teachers_ Sig. = .009 are lower than .0125. Therefore, there is significant difference in how those pair of professions perceives the role of "highly trained intuition" in the effectiveness of their professions.

The analysis of the Table 4.28 concerning "employees' skills acquired through learning by doing", Lawyers vs. Physicians _ Sig. = .019 which is inferior to the Sig. level of .05. These two categories of profession differ in their view about the role of this type of tacit knowledge in performance of their organizations. Conversely, when using Bonferroni correction, Lawyers vs. Physicians _ Sig. = .019 is higher than .0125. Therefore, there is no significant difference in how those two professions perceives the importance of that precise tacit knowledge in the effectiveness of their professions. Consequently, the null hypothesis is retained for "employees' skills acquired through learning by doing" at .0125 level of significance.

A closer look of the Table 4.28 in favor of "employees' informal interaction with clients, patients, customers, or others in any social situation" shows Computer engineers vs. Lawyers_ Sig. = .000 which is inferior to the Sig. level of .05. Computer engineers vs. Teachers _ Sig. = .000 which is inferior to the Sig. level of .05. Lawyers vs. Physicians _ Sig. = .000 which is inferior to the Sig. level of .05. Lawyers vs. Teachers_ Sig. = .000 which is lower than the Sig. level of .05. Physicians vs. Teachers_ Sig. = .002 which is inferior to the Sig. level of .05. These pairs of professions disagree in their view about the

role of this type of tacit knowledge in performance of their organizations. On the other hand, when using Bonferroni correction, all pairs of professions significance still less than .0125 which is a trustworthy difference in their perceptions about the importance of that specific tacit knowledge.

The objective of Bonferroni correction is to avoid the type I error that happens when a researcher rejects the null hypothesis but it is in reality true (Warner 2008). Its application to this study has allowed retaining the null hypotheses for "organizational routines" and "employees' skills acquired through learning by doing" at level of significance of .0125. Those null hypotheses were previously rejected at level of significance of .05. The Kruskal–Wallis test was significant for eight out the 15 types of tacit knowledge including the way employees approach problems or solve problems, organizational routines, employees' self-motivation, problem solving skills, highly trained intuition, and individual technical skills, employees' skills acquired through learning by doing, employees' informal interaction with clients, patients, customers, or others in any social situation. With the application of Bonferroni procedures, the Kruskal–Wallis test was significant for only six out the 15 types of tacit knowledge including the way employees approach problems or solve problems, employees' self-motivation, problem solving skills, highly trained intuition, and individual technical skills, employees' informal interaction with clients, patients, customers, or others in any social situation.

Analysis of the Research Questions

This section analyzes the results in connection to the research questions. The following are the research questions that this section attempts to answer.

RQ1: Are there any differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types or categories of tacit knowledge on the organizational effectiveness of their professions?

RQ2: What categories of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants?

RQ3: What dimensions of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants?

The first research question is: Are there any differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types or categories of tacit knowledge on the organizational effectiveness of their professions? In order to answer this research the researcher used the results of the Independent-Samples Kruskal-Wallis test used to verify the research hypothesis 1 "There are differences in the perception of the impact of the different types of tacit knowledge on organizational performance according to the opinions of the representatives of different professions" because of the connection between the research question 1 and research hypothesis 1.

The results of the Kruskal-Wallis test summarized in the Table 4.27 shows that out of the 15 types of tacit knowledge, seven have the same distribution across categories of profession. Those seven kinds of tacit knowledge include "hard to pin down skills or know-how", "employees' mental models or ways of thinking and acting", "problem solving skills", "institutional technical skill: understanding of how one's tasks fit into the

bigger picture:, “employees’ interaction with other employees in term of performing one’s job”, “employees’ feelings and acceptance of the organizational culture of tacit knowledge sharing”, “employees’ understanding of the effectiveness of the corporate culture of tacit knowledge sharing”. Because those seven types of tacit knowledge have the same distribution across categories of profession, the researcher can conclude that there are no big differences in the perceptions of experienced computer engineer, lawyers, physicians, and teachers about the influence of those seven types of tacit knowledge on the organizational effectiveness of their professions.

The results of the Kruskal-Wallis test also show that, out of the 15 types of tacit knowledge eight have different distribution across categories of profession. Those eight types of tacit knowledge include the way employees approach problems or solve problems, organizational routines, employees' self-motivation, problem solving skills, highly trained intuition, and individual technical skills, employees' skills acquired through learning by doing, employees’ informal interaction with clients, patients, customers, or others in any social situation. For the reason that those eight have different distributions across categories of professions, the researcher can conclude that there are differences in the perceptions of experienced computer engineer, lawyers, physicians, and teachers about the importance of those eight types of tacit knowledge on the organizational effectiveness of their professions. With the application of Bonferroni procedures, only six out the 15 types of tacit knowledge including the way employees approach problems or solve problems, employees' self-motivation, problem solving skills, highly trained intuition, and Individual technical skills, employees’ informal interaction with clients, patients, customers, or others in any social situation. To answer

the research question based on the Kruskal-Wallis test, the researcher can conclude that there are differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types or categories of tacit knowledge on the organizational effectiveness of their professions. This means that the influence or the importance or the role of tacit knowledge in organizational effectiveness differ from one profession to another.

The second research question is: what categories of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of their participants? The question 6 is in direct connection with the second research question. The question 6 asked the participants to choose the category of tacit knowledge that they think is the most important for their professions or that makes the greatest impact on organizational effectiveness in their organizations. The use descriptive statistics especially frequencies are helpful in the determination of the most important tacit knowledge in each profession.

The above analysis of the question 6 shows that 50.9% of the 55 selected computer engineers think that “hard to pin down skills or know how” makes the greatest impact on organizational effectiveness in their professions at the same time as 25.5% of 55 selected computer engineers believe that “the way employees approach problems or solve problems” is the most important tacit knowledge for their professions. This researcher has concluded that “hard to pin down skills or knowhow” is most essential tacit knowledge for their professions followed by “the way employees approach problems or solve problems” for computer engineers.

Of the 55 selected lawyers, 50.9 % believe that "the way employees approach problems or solve problems" is the most important tacit knowledge for their professions while 36.4% of 55 selected lawyers believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. According to the above frequencies, the researcher has concluded that the" ways of approaching and solving problems" and "mental models or ways of thinking and acting" are the two most important tacit knowledge for lawyers .

Less than the half (41.8 %) of 55 selected physicians think that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions whereas 34.5 % of 55 selected physicians believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions. The researcher has concluded that "hard to pin down skills or knowhow" is the most important tacit knowledge for physicians followed by "mental models or ways of thinking and acting".

Precisely, 36.4 % of 55 selected teachers think that "hard to pin down skills or know how" makes the greatest impact on organizational effectiveness in their professions while 27.3 % of 55 selected teachers believe that "mental models or ways of thinking and acting" is the most important tacit knowledge for their professions at the same time as 29.1 % of the 55 teachers believe that "the way employees approach problems or solve problems" is the most important tacit knowledge for their professions. Those numbers show that the most important tacit knowledge for teachers are "hard to pin down skills or know how", the "way of approaching and solving problems", and "mental models or

ways of thinking and acting". The Table 4.29 summarizes the most significant categories of tacit knowledge in organizational effectiveness by profession.

Table 4. 29
Most Important Categories of Tacit Knowledge in Organizational Effectiveness by Profession

Professions	Most important categories of tacit knowledge in organizational Effectiveness
Computer engineers	-"Hard to pin down skills or know how" (50.9 %) - "The way employees approach or solve problems "(25.5%)
Lawyers	- "The way employees approach problems or solve problems" (50.9 %) -"Mental models or ways of thinking and acting" (25.5%)
Physicians	- "Hard to pin down skills or know how" (41.8 %) -"Mental models or ways of thinking and acting" (34.5 %)
Teachers	-"Hard to pin down skills or know how" (36.4 %) "The way employees approach problems or solve problems" (29.1 %) -"Mental models or ways of thinking and acting (27.3 %)

The third research question is what dimensions of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants? The question 7 is in direct connection with the third research question. The question 7 asked the participants choose the dimension of tacit knowledge that they think is the most significant for their professions or that makes the greatest impact on organizational effectiveness in their organizations. The use descriptive statistics especially frequencies are helpful in the determination of the most significant dimension of tacit knowledge in each profession.

The above analysis of the responses to the question 7 shows that 83.6% of 55 selected computer engineers see the "technical dimension" as the most important dimension of tacit knowledge in the effectiveness for their professions while 10.9% of 55 selected computer engineers believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. This researcher reached the conclusion that the "Technical dimension" is the most important dimension of tacit knowledge in the organizational effectiveness for computer engineers followed by "cognitive dimension".

The above analysis of the responses to the question 7 shows that 85.5% of 55 selected lawyers believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions whereas 10.9 % of 55 selected lawyers see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. Therefore, "cognitive dimension" is the most essential dimension of tacit knowledge in the organizational effectiveness for lawyers followed by "technical dimension".

The analysis of the responses of the question 7 shows that 54.5 % of 55 selected Physicians see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions while 38.2 % of 55 selected physicians believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions. Consequently, "technical dimension" is the most essential dimension of tacit knowledge in the organizational effectiveness for physicians followed by "cognitive dimension".

The examination of the responses of the question 7 shows that 65.5 % of 55 selected Teachers believe that that "cognitive dimension" makes the greatest impact on organizational effectiveness in their professions while 15.5% of 55 selected Teachers see the "technical dimension" as the most noteworthy dimension of tacit knowledge in the effectiveness for their professions. As a result, "cognitive dimension" is the most essential dimension of tacit knowledge in the organizational effectiveness for teachers followed by "technical dimension". A closer look of the underneath Table 4.30 revealed something that this researcher did not except. The two most two important dimension of tacit knowledge in organizational effectiveness in each profession involved in the study are cognitive dimension and technical dimension.

Table 4.30
Frequency of Most Important Dimensions of Tacit Knowledge in Organizational Effectiveness by Profession

Professions	Most important dimension of tacit knowledge in organizational effectiveness
Computer engineers	- Technical dimension (83.6%) - Cognitive dimension (10.9%)
Lawyers	- Cognitive dimension (85.5%) - Technical dimension (10.9 %)
Physicians	- Technical dimension (54.5 %) - Cognitive dimension (38.2 %)
Teachers	- Cognitive dimension (65.5 %) - Technical dimension (15.5%)

Summary of Key Findings

This study revealed some significant findings about the role of tacit knowledge in organizational performance. For example, the outcome of the statistic analysis revealed that at least six out the 15 types of tacit knowledge have the different distributions across categories of profession showing that those types of tacit knowledge do not have the same importance or influence or role in each of the four professions involved in the study according to the opinion of their representative in the study. Another significant finding is that the diverse types of tacit knowledge should not be neglected or taken as granted according to the opinions of 220 experienced professional. Those experienced professional found overwhelmingly that the 15 types of tacit knowledge involved in this study were either very important or above average importance in the organizational effectiveness. This is illustrated by the Table 4.31 that shows a summation of the frequencies of "very important" and "above average importance".

Table 4.31
Frequency for Tacit Knowledge That Are Very Important or Above Average Importance (in Percent)

	All selected participants Taken as a whole	Computer Engineers	Lawyers	Physicians	Teachers
Hard to pin down skills or "Know-how	91.9	94.6	92.7	89.1	90.9
Employees' mental models or ways of thinking and acting	91.4	87.3	96.4	91	90.9
The way employees approach or solve problems in your profession	90.4	81.8	100	89.1	90.9
Organizational routines	76.6	74.5	72.7	81.8	85.54
Employees' Self-Motivation	84.6	80	78.2	83.7	96.4
Employees' Self-Organization	92.3	90.9	92.7	87.3	98.2
Problem solving skills	95.9	96.4	98.2	90.9	98.1
Highly trained intuition	92.8	87.3	100	96.3	87.2
Individual technical skills: understanding of the steps needed to complete one's tasks efficiently	94.6	94.5	92.7	98.2	92.7
Institutional technical skill: understanding of how one's tasks fit into the bigger picture	75	76.4	70.9	74.6	78.2
Employees' skills acquired through learning by doing	92.3	91	96.4	94.5	87.3
Employees' interaction with other employees in term of performing one's job	71.4	65.5	81.8	78.2	60
Employees' informal interaction with clients, patients, customers, or others in any social situation	59.5	27.3	98.1	43.7	69
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing	80.9	72.8	81.8	87.3	83.7
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing	83.7	78.2	83.6	85.5	89.1

One of the key findings unveiled through the survey is that the two most important dimensions of tacit Knowledge in organizational effectiveness in all professions involved in this study are cognitive dimension and technical dimension. This is illustrated by the Table 4.30. Another key findings revealed through the survey is the most important categories of tacit knowledge in organizational effectiveness by profession (Table 4.29). For computer engineers, the result of the survey showed that "hard to pin down skills or know how" and "the way employees approach or solve

problems" are the two most vital categories of tacit knowledge in their organizational effectiveness. For lawyers, based on the results of the survey the two most required categories of tacit knowledge are "The way employees approach problems or solve problems" and "mental models or ways of thinking and acting". For physicians, based on the results of the survey, the two most essential categories of tacit knowledge in their organizational effectiveness are "hard to pin down skills or know how "and "mental models or ways of thinking and acting". For teachers, according to the results of the survey, the three most required categories of tacit knowledge in their organizational effectiveness are: "hard to pin down skills or know how", "the way employees approach problems or solve problems", and "mental models or ways of thinking and acting".

Summary

This chapter essentially presents the data collection process, the data collected and their analysis. The data collection process begun with a pilot study aiming to test the face validity and reliability of the survey questionnaire as well as to detect any problem before sending the questionnaire to larger group of individuals. The analysis of result of the pilot study has showed that the survey instrument of this study has face validity because 93% of the participants of the pilot has validated that the survey questionnaire measures what it intended to measure which is the participants' perceptions about the role of diverse sorts of tacit knowledge on organizational effectiveness. In addition, the examination of result of the reliability testing has showed Cronbach's alpha of .762 indicative of an acceptable level of internal consistency due to the fact it varies between zero and one. Moreover, due to the results of the pilot study, some modifications have been made to the initial survey instrument in order augment the effectiveness of the survey responses

before the final survey was sent out. An analysis of the participants' response has allowed the researcher to verify the research hypotheses as well as to answer research questions. The result of Kruskal-Wallis test (Table 4.2 7) shows that seven out of the 15 types of tacit knowledge have the same distribution across categories of profession therefore, do not support the main hypothesis which is the distributions of the four groups or professions are different. However, eight out the 15 types of tacit knowledge have the different distributions across categories of profession therefore, support the main hypothesis. With the application of Bonferroni procedures, only six out the 15 types of tacit knowledge including the way employees approach problems or solve problems, employees' self-motivation, problem solving skills, highly trained intuition, and individual technical skills, employees' informal interaction with clients, patients, customers, or others in any social situation support the main hypothesis. The analysis of the responses of the question 6 allowed the researcher to answer the second research question see Table 4.29: Most important categories of tacit knowledge in organizational effectiveness by profession. In the same way, the analysis of the responses of the question 7 allowed the researcher to answer the third research question see Table 4.30: Most important dimension of tacit knowledge in organizational effectiveness by profession.

Chapter V: Discussion, Implications, and Recommendations

In today dynamically changing business environment, effectiveness requires organizations to operate ever more skillfully and quickly (Ty & Anurit, 2010). Acting skillfully and quickly requires the use a particular type of knowledge: tacit knowledge that is gained through experience. Even though, numerous studies recognize the strategic role of tacit knowledge in organizational effectiveness (Chen & Mohamed, 2010; Goffin & Koners, 2011), it is clear that many companies continue to undervalue the importance tacit knowledge (Mládková, 2012) and do not use it as management tool to improve their organizational effectiveness. As Ngah & Jusoff (2009) pointed out, the neglect of diverse types of tacit knowledge such as individual insight, intuition, hunches or cognitive mental models has reduced organizational potential for innovation and sustainable competitiveness. This study underscores the problem of the neglect of the use of tacit knowledge, which can lead to organizational ineffectiveness. Thus, one of the objectives of this study is to show that diverse kinds of tacit knowledge play specific and significant role in the effectiveness of different professions. Consequently, tacit knowledge should not be neglected as a management tool. This chapter including an overview of key finding, discussion of the finding, limitations, implications , recommendation for future studies, and summary.

Overview of the key findings

This study revealed some noteworthy findings about the function of tacit knowledge in organizational effectiveness. The experienced professional involved in this study overwhelmingly indicated that that the 15 types of tacit knowledge involved in this study were either very important or above average importance in the organizational

effectiveness (see Table 4.31). This implies that those different types of tacit knowledge play an important role in the organizational effectiveness and should not be ignored. In addition, the results of the inferential analysis of this study show that those different types of tacit knowledge play different role or have different importance in the effectiveness of each profession. Moreover, it was found that the most two important dimensions of tacit knowledge in all professions involved in the study are cognitive and technical dimension see (Table 4.30).

Discussion of the Findings

This study was conducted because, despite the growing acknowledgement of the strategic role of tacit knowledge in organizational performance, many organizations still overlook its importance. The intend of this study is to show the importance of different types and dimensions of tacit in organizational effectiveness as well as to demonstrate that different types tacit knowledge play different role in different professions or organizations. In order to achieve those goals, the researcher of this study used a five point Likert-type scale varying from not important to very important to ask experienced computer engineers, lawyers, physicians, and teachers to rate the importance of 15 different types tacit knowledge in effectiveness of their professions or organizations as well as multiple choice questions to ask them to choose the category and the dimension of tacit knowledge that make the greatest impact on organizational effectiveness in their professions or organizations. This section discusses the key finding in connection to theoretical framework, key finding in connection with the literature review as well as key finding in connection to the gap in literature, key finding in connection to the research questions and hypotheses, and summary.

Key Finding in Connection to Theoretical Framework

There is a parallel between the results of this study and some theories or arguments that make up the theoretical foundation of this study. One of the coincidences between what was uncovered in this study and the theoretical framework concerns the first theory or argument that stipulates that tacit knowledge can be a source for improved organizational performance, competitive advantage, and innovation, as well as the sharing of the tacit knowledge among employees can help companies to be creative and innovative, which in turn enhances their effectiveness (Ngah & Jusoff, 2009; Salah Eldin, 2009). This argument corresponds to the results of this study in the sense that when the participants were invited to rate the value of the 15 types of tacit knowledge in the effectiveness of their professions, the majority of them responded that they are "very important" or "above average importance" for the effectiveness of their professions (See Table 5.1). This confirms that the use of diverse kinds of tacit knowledge can enhance organizational effectiveness.

Another matching between the findings and the theoretical framework of this study involved the forth argument of the theoretical framework that stipulates that organizational culture that deals with tacit knowledge leads to improved organizational effectiveness. This argument matches up with the outcomes of this study in the sense that when the participants were asked to rate the importance of "employees' feelings and acceptance of the organizational culture of tacit knowledge sharing" and the employees' comprehension or knowledge of the effectiveness of the corporate culture of tacit knowledge sharing in the effectiveness of their professions, they overwhelming responded "very important" or "above average importance (See table 5.1). This confirms

that the organizational culture that deals with tacit knowledge leads to a better organizational performance.

Key Finding in Connection With the Literature Review

There is a surprising coincidence between what is uncovered through the survey and the literature review. In the Chapter II (literature review), it was mentioned that in his seminal work, Nonaka (1994) suggested that tacit knowledge essentially holds both cognitive and technical dimensions. One of the key findings revealed through the data collected from the survey is that the two most important dimensions of tacit knowledge in organizational effectiveness in all professions involved in this study are cognitive dimension and technical dimension. A comparison of this finding to the above literature shows that it matches up with Nonaka (1994) influential work which suggests that tacit knowledge mostly hold cognitive and technical dimensions. However, this doesn't mean that the social dimension or other dimensions of tacit knowledge are not important. What it suggests is that the two most important dimensions of tacit knowledge are the cognitive aspect and the technical aspect.

There is also a parallel between the results of this study and the literature review that suggested that each type of tacit knowledge provides unique advantages to innovation (Rebernik & Sirec 2007) or success in every profession requires a specific type of tacit knowledge (Johannessen & Olsen, 2011). This similarity was illustrated by the result of the inferential analysis showing with certitude that at least six out 15 diverse forms tacit knowledge have the different distributions across the four categories of profession demonstrating that those six types tacit knowledge play different or specific role in the organizational effectiveness in each of the four categories of profession.

Another analogy between the results of this study and the literature review concerns the example lawyers using more the cognitive aspect of tacit knowledge, rather than its physical or technical aspect (Johannessen & Olsen, 2011). Concerning this example of lawyers using more the cognitive aspect of tacit knowledge than its physical or technical aspect, there is a correspondence between what is uncovered through the survey and this example. This is illustrated by the table 4.30 that showed that the most important dimension of tacit knowledge for lawyers is "cognitive dimension" (85.5%) followed by "technical dimension" (10.9 %).

Key Finding in Connection to the Gap in Literature

The literature review revealed three major dimensions of tacit knowledge including cognitive, technical and social dimensions. Although it suggested that the sharing of tacit knowledge under a firmly set organizational culture provides a better competitive advantage (Salah Eldin, 2009) as well as that tacit knowledge is valuable only if it is well-established in a particular organizational culture (Rebernik & Sirec 2007), the literature did not treat organizational or corporate culture as an independent and important dimension of tacit knowledge. This study filled the gap by considering organizational culture as a significant dimension of tacit knowledge. The key finding of this study support this view in the sense that when the experienced professionals were solicited to rate the importance of the different type tacit knowledge that make up the corporate dimension of tacit knowledge such "employees' feelings and acceptance of the organizational culture of tacit knowledge sharing" and "employees' understanding of the effectiveness of the organizational or corporate culture of tacit knowledge sharing", they overwhelmingly (more than 70%) responded either very important or above importance

(See Table 4.31). It is important to notice that even the corporate or organizational culture aspect is important; it is not the most important dimension of tacit knowledge. The cognitive side and the technical side play that role as aforementioned.

Key Finding in Connection to the Research Questions and Hypotheses

A significant finding of this study is that diverse sorts of tacit knowledge play different role in the effectiveness of different professions. The rigor with which the statistical analysis was conducted including Kruskal-Wallis test followed by Post-hoc Comparisons and Bonferroni correction have allowed the researcher to determine that seven out of the 15 types of tacit knowledge have the same distribution across categories of profession therefore, do not support the main hypothesis which is the distributions of the four groups or professions are different. However, eight out of the 15 types of tacit knowledge have the different distributions across categories of profession therefore, support the main hypothesis. With the application of Bonferroni procedures, only 6 out the fifteen types of tacit knowledge including the" way employees approach problems or solve problems", "employees' self-motivation", "problem solving skills", "highly trained intuition", "individual technical skills", and "employees' informal interaction with clients, patients, customers, or others in any social situation" support the main hypothesis. This discovery is very important in the sense that it permitted the researcher to conclude that there are differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types or categories of tacit knowledge on the organizational effectiveness of their professions. This means that the influence or the importance or the role tacit knowledge in organizational effectiveness differ from one profession to another. This finding is also a response to the Research

Question1: "Are there any differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types of tacit knowledge on the organizational effectiveness of their professions?" due to the similarity between the Research Question1 and the Research Hypothesis 1.

An important lesson learned from this study is that each organization according to its own specificity needs different dose or combination of different categories of tacit knowledge in order to perform at a higher level. This is illustrated by Figure5.1 (Frequency for Participant's Responses Concerning the Most Important Categories of Tacit Knowledge in Organizational Effectiveness by Profession) that helped to answer the Research Question 2: What categories of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants? When the experienced professional where asked choose the category of tacit knowledge that they think that is the most important for their professions or that makes the greatest impact on organizational effectiveness in their professions or organizations, they were not unanimous in their responses. For example, 41.8 % physicians think that" hard to pin down skills or know how" is the greatest tacit knowledge versus 34.5 % of physicians who think that "mental models or ways of thinking and acting" is the greatest tacit knowledge. They were divided in their responses simply because all those categories of tacit knowledge are not only important in the effectiveness of their professions (See Table 4. 29) but also their organizations need a mixture of those categories of tacit knowledge in order to perform at an advanced level.

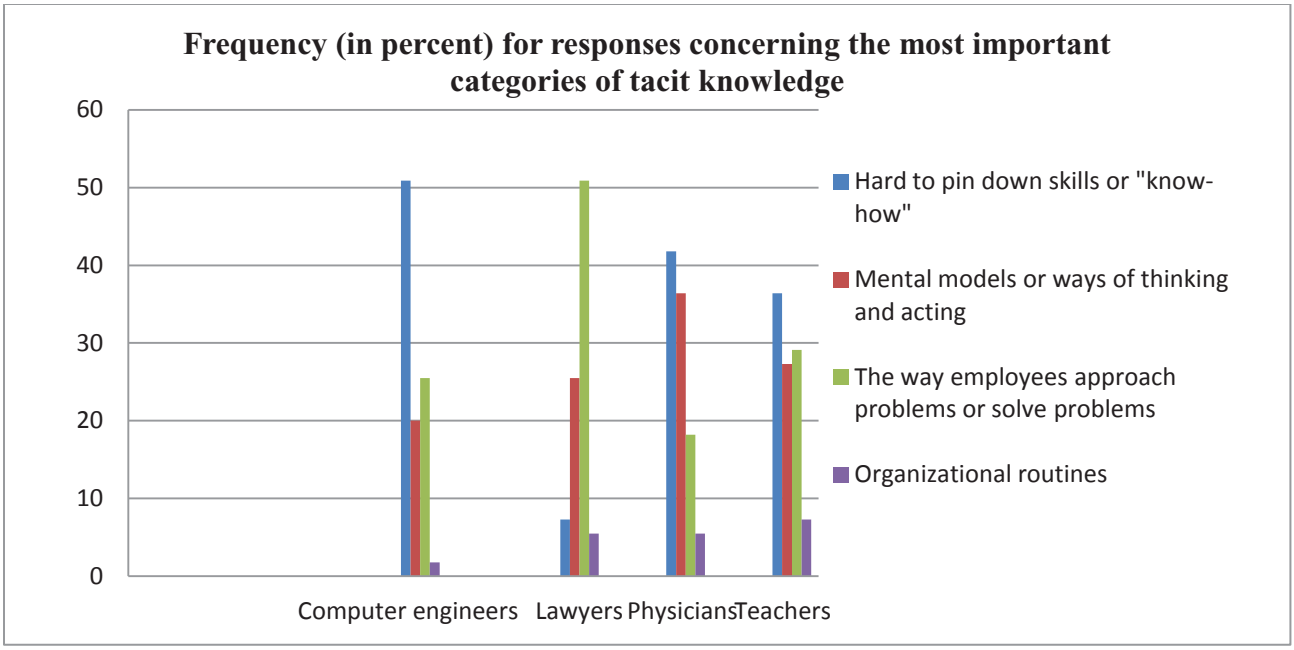

Figure 5.1: Frequency for Participant's Responses Concerning the Most Important Categories of Tacit Knowledge in Organizational Effectiveness by Profession

Another significant finding in the chapter IV is that the most two important dimensions of tacit knowledge in all professions involved in the study are cognitive and technical dimension. This is showed by the Table 4.30 (Frequency of Most Important Dimensions of Tacit Knowledge in Organizational Effectiveness by Profession) and it's below corresponding Figure 5.2. This finding is consistent with the decisive work of Nonaka (1994) that suggests that tacit knowledge holds mainly both cognitive and technical dimensions.

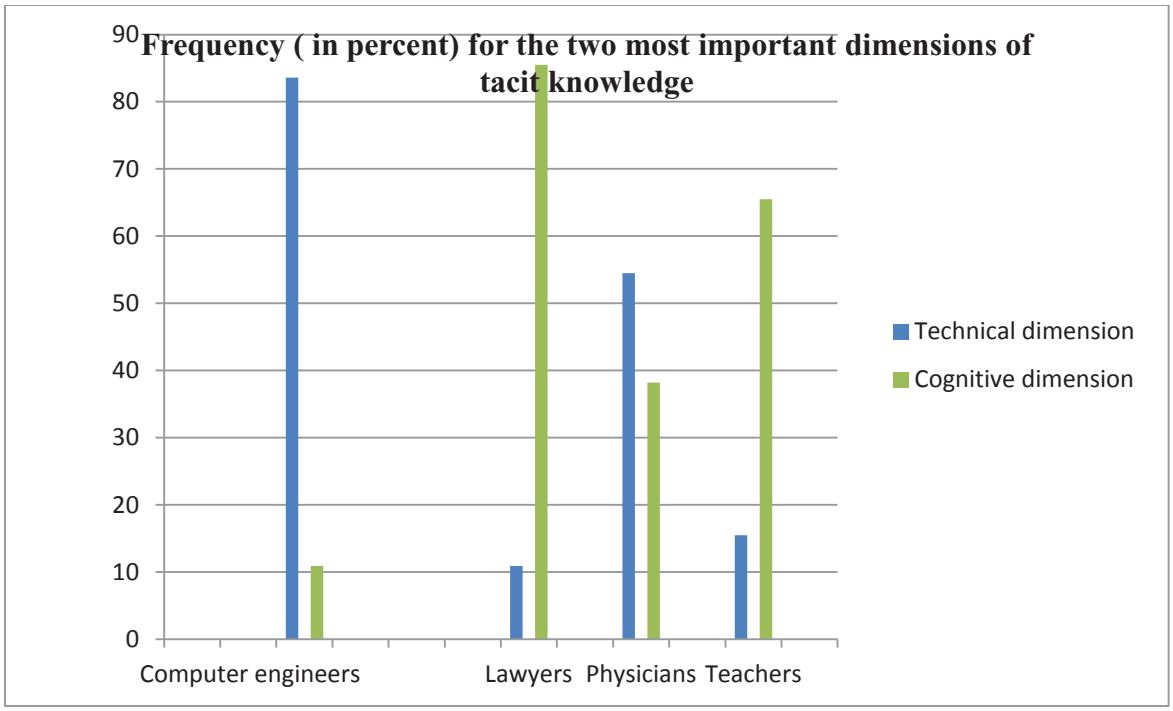

Figure 5.2: Frequency of Most Important Dimensions of Tacit Knowledge in Organizational Effectiveness by Profession

An examination of Table 4.30 and its corresponding Figure 5.1 shows that although the two most important dimensions are cognitive and technical dimension, the frequency of their importance differs from each profession to another. For example, 83.6% of computer engineers think that the technical dimension is most important aspect of tacit knowledge in the effectiveness of their profession versus 10.9% who think that the cognitive dimension is most important aspect of tacit knowledge in the effectiveness of their profession. Inversely, 85.5% of lawyers think that the cognitive dimension is most important aspect of tacit knowledge in the effectiveness of their profession versus 10.9% who think that the technical dimension is most important aspect of tacit knowledge in the effectiveness of their profession. These outcomes are not only a

response a to Research Question 3 (What dimensions of tacit knowledge are more important or have a greater impact on organizational effectiveness in each of the four professions involved in the study according to the responses of the participants?) but also they are consistent with the review of literature that suggested lawyers use more the cognitive aspect tacit knowledge than its physical or technical dimension (Johannessen & Olsen, 2011).

Limitations

This study contains some limitations. Due to the small size of the sample and the purposive sampling technique utilized in this study, the results cannot be generalized because generally, random samples are considered generalizable. Even though the selection of participants involved in the inferential analysis was careful including 220 experienced professional from a total of 264 participants who completed the questionnaire, generalizability of the findings to each profession involved the study cannot be known. Generalizability was not the goal of this study. The intend of this study was to draw the attention of managers and executives of the professions involved in the study as well as other professions and organizations that diverse sorts of tacit knowledge play specific and significant role in organizational effectiveness and should not be ignored. Further research can use a larger population and a random selection to establish that generalizability.

Another limitation of this study is in connection the research method in the sense that the only quantitative method using a survey questionnaire to collect data cannot offer a full understanding and interpretation of the meaning of collected data. Although, this research method was helpful in the comparison across professions, the deeper

significance of those data can be assessed only by future research that use qualitative studies to get a deep comprehension of how the use of tacit knowledge helps companies to enhance their organizational effectiveness or to achieve higher performance and innovation.

Like many online surveys, another of the limitations of this study is the inability of the investigator to verify whether the respondents accurately belong to the precise sample population. It was difficult to the investigator to confirm the respondents' professions and their level of experience. In addition, this research was intended to explore the influence of a diversity of tacit knowledge on organizational effectiveness in various professions in the United States; however, it was limited to only four professions including computer engineers, lawyers, physicians, and teachers. Possibly, the inclusion of more professions in this study may yield different results.

Implications

Implications for Theory

This study contributes to the literature concerning the multidimensional structure of tacit knowledge in the sense that it combines the components of the dimensions of the previous studies. In prior studies (Mascitelli, 2000; Rebernik & Sirec, 2007), the cognitive aspect of tacit knowledge is composed of the following level of knowledge: mental models, schemata, problem-solving skills, highly trained intuition, systems thinking. While, in the studies of Insch & Gary (2005) and Insch, et al. (2008) the cognitive dimension of tacit knowledge is composed self-motivation and self-organization. In this study, the cognitive dimension includes mental models, schemata, problem-solving skills, highly trained intuition, systems thinking, self-motivation and

self-organization. In the similar way, the technical dimension in this study combines skills acquired through learning-by-doing, technical specialization gained through education and experience, deep specialization (Mascitelli, 2000; Rebernik & Sirec, 2007) and personal technical skills, "institutional technical skills" (Insch & Gary 2005; Insch, et al., 2008, p.567).

The above combinations are reflected in survey question7 that asked the participants choose the dimension of tacit knowledge that they think is the most essential for their professions or that makes the greatest impact on organizational effectiveness in their organizations (Appendix A, p.113). In the survey questionnaire, the cognitive dimension includes (employees' mental models, problem-solving skills, highly trained intuition, systems thinking, insight, gut feelings, self motivation and self organization) and the technical dimension includes (employees' skills acquired through learning-by-doing, technical specialization gained through education and experience, deep specialization, individual technical skills, institutional technical skills, understanding of the steps they need to go through to complete their own tasks efficiently as well as their understandings of how their tasks fit into the bigger picture). The reason why this researcher combines the components of the dimensions of the previous studies is to have a more comprehensive and all-inclusive view of the different dimensions of tacit knowledge due to the complexity of its nature.

Another contribution to the literature pertaining to tacit knowledge is that this study integrates an organizational culture dimension of tacit knowledge as an independent and a main dimension of tacit knowledge. Previous studies did not distinguish organizational culture dimension as a significant dimension or aspect of tacit

knowledge. In their work, Inch et al. (2008) differentiate learning of both corporate culture and hierarchy as a component of the social dimension of tacit knowledge. The fact is that the organizational culture dimension is important to success therefore must be included in the analysis and the discourse of tacit knowledge as an independent dimension because organizational culture participates significantly in the prediction of organizational performance by convincing employees to perform properly (Shahzad, Luqman, Khan, & Shabbir, 2012). In addition, organizational culture plays a considerable responsibility in the achievement of knowledge sharing initiatives as well as it facilitates the assessment of the value of that knowledge (Chin-Tsang, 2009). Moreover, when tacit knowledge is shared in organizations that have a firm corporate culture, those organizations become more innovative (Salah Eldin, 2009). Furthermore, tacit knowledge is valuable only if it is implanted in a particular organizational culture (Rebernik & Sirec 2007). For above reasons, this study suggests an organizational or corporate culture dimension of tacit knowledge including employees' feelings and acceptance of the organizational culture of tacit knowledge sharing as well as their comprehension or knowledge of the effectiveness of the organizational culture of tacit knowledge sharing. This means the employees must accept the company's culture about knowledge sharing as well as they must understand why they do not have to hide knowledge learned in the workplace but share it with other employees who need it.

Implications for Practitioners

The results of this study indicate that the experienced professionals overwhelmingly found that the 15 types of tacit knowledge involved in this study were either very important or above average importance in the organizational effectiveness

therefore tacit knowledge should not be neglected as a management instrument. These outcomes may have some repercussions for organizations and their managers. Since tacit knowledge is still overlooked by many managers (Mládková, 2012); the findings of this study can be a wakeup call for those who misjudge the strategic role of tacit knowledge. The findings of this study may push some of the executives who neglect tacit knowledge to recognize its strategic role and start to take it into account in their business activities. In order to use tacit knowledge as a management tool, managers should firstly recognize its strategic role. Once this crucial step of recognition happens, those leaders can use tacit knowledge as a management instrument in order to improve the effectiveness of their organizations. For example, those leaders should create a workplace environment where all employees can contribute to the success of the organization by providing their individual tacit knowledge. Because tacit knowledge is complex and gained through experience, executives can help employees to cultivate their tacit knowledge by initiating continuous learning and apprenticeships as well as they have to make sure that the employees put into practice what they learned properly. In addition, those executives should make sure that the employees share their tacit knowledge and discuss the opportunities to create new knowledge or idea to solve organizational problems and to innovate. This, by organizing formal and informal meetings where employees can share their tacit knowledge or lessons learned. Formal meetings can include coaching or mentoring sessions where the more experienced workers transmit their experiences to the less experienced workers and informal meetings or more relaxed meetings where employees can directly interact with each other regardless of their ranks and share their tacit knowledge or lessons learned along with find out how those individual tacit

knowledge can be combined to generate new suggestions to improve organizational performance and to innovate.

Another implication is that this study provides a way to identify the types of tacit knowledge that are crucial for organizational performance. For example, based on the study findings (Table 4.29), the three most vital categories of tacit knowledge in organizational effectiveness for teachers are: “hard to pin down skills or know how”, the way employees approach problems or solve problems”, “mental models or ways of thinking and acting”. Consequently, education organizations can prioritize those types of tacit knowledge in their knowledge management programs or training programs in order to achieve teacher’s maximum performance. In the same way, the other professions involved in this study, can prioritize the identified most important categories of tacit knowledge in their knowledge management programs or training programs in order to enhance their organizational effectiveness. Although this study involve only four category of professions, it can be extended to other professions or organizations in the sense that they can identify the most important categories and dimensions of tacit knowledge for their organizations and prioritize them in their business activities. In addition, this study can be an encouragement for academics and practitioners to undertake research on the kinds of tacit knowledge that are essential for the success of different companies or professions.

Recommendation for Future Studies

Future studies need to be done in order to explore and understand the effect of different categories and dimensions on organizational performance and effectiveness. The concept of tacit knowledge is not yet totally or fully explored; in the future, scholars

could investigate a new area of the management science: the typology of tacit knowledge that will focus in determining the role of different types of tacit knowledge in organizational effectiveness and in innovation. This will allow the management science to use a tool (tacit knowledge) so far overlooked or neglected to enhance organizational performance of many companies as well as to influence the incremental innovations, the modular innovations, the architectural innovations, and the radical innovations in those companies. It also recommended that future studies use a qualitative or a mixed method approach that includes focus groups and depth interviews with key experts to establish how the use of tacit knowledge has helped and will help organizations to achieve higher performance and innovation.

Further studies may use an experimental or a quasi-experimental research design (Frankfort-Nachmias & Nachmias, 2008; Robson, 2002) to examine this study's view of the gap in the literature by taking as dependent variable organization effectiveness or performance defined in this research as the extent to which an organization achieves a predefined goal; for instance, tacit knowledge sharing in the organization. In addition to choose the two types tacit knowledge that make up the corporate or organizational culture dimension of tacit knowledge in this study: "employees' feelings and acceptance of the organizational culture of tacit knowledge sharing" and "employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing" as independent variables. The experimental research design with randomized controlled trials viewed as the best method to assess the exact impact of an intervention (Frankfort-Nachmias & Nachmias, 2008; Robson, 2002), will involve two groups. The experimental group will receive training about the significance of sharing tacit knowledge in

organizations and the control group will not receive training about the importance of sharing tacit knowledge. The difference between experimental or a quasi-experimental research design is that in the case of the quasi-experimental design, the participants will not be subject to randomly assigned treatment but several observations will be made over time (Frankfort-Nachmias & Nachmias, 2008; Robson, 2002) . The objective is to determine whether the employees who received trainings about the importance of sharing tacit knowledge and who accept the organizational existing culture about tacit knowledge sharing and who understand the effectiveness of that culture will effectively or not share their tacit knowledge with other employees, or whether there are differences in the way those two groups share tacit knowledge in the workplace.

Summary

This study examines the relationship between tacit knowledge and organizational effectiveness or performance. The objective of this research is to show that different categories and dimensions of tacit knowledge play different and significant role in different professions and organizations. This goal was achieve through the use of three research questions and one hypothesis. The Research Question1 "Are there any differences in the perceptions of experienced computer engineers, lawyers, physicians, and teachers about the influence of different types of tacit knowledge on the organizational effectiveness of their professions?" is associated to research hypothesis 1 "There are differences in the perception of the impact of the different types of tacit knowledge on organizational performance according to the opinions of the representatives of different professions". The statistical analysis including Kruskal-Wallis test followed by Post-hoc Comparisons and Bonferroni correction have allowed the

researcher to determine that seven out of the 15 types of tacit knowledge have the same distribution across categories of profession therefore, do not support the main hypothesis which is the distributions of the four groups or professions are different. With the application of Bonferroni procedures, only 6 out the fifteen types of tacit knowledge support the main hypothesis. Based upon the above statistical result, it was concluded that not all types of tacit knowledge have the same influence or importance in different professions or that diverse types of tacit knowledge play different or specific role in the effectiveness of different professions. This finding is an answer to the Research Question1 and to the Research Hypothesis1. The analysis of the responses of the survey question 6 allowed the researcher to answer the second research question see Table 4.29: Most important categories of tacit knowledge in organizational effectiveness by profession. In the same way, the analysis of the responses of the survey question 7 allowed the researcher to answer the third research question see Table 4.30: Most important dimension of tacit knowledge in organizational effectiveness by profession. In brief, this study found that the 15 types of tacit knowledge are important in the organizational effectiveness because the experienced professionals overwhelmingly indicated that they were “very important” or “above average importance” for the effectiveness of their professions (See Table 4.31) as well as diverse types of tacit knowledge play different role or participate differently in the effectiveness of different professions (inferential result). In addition the study revealed that the different categories and dimensions of tacit knowledge are not only important in the effectiveness of their professions but also their organizations need a mixture of those categories and dimensions of tacit knowledge in order to perform at a higher level (Figure 5.1 and Figure5.2). These

findings are capital because they confirmed that tacit knowledge should not be ignored. By exploring the results of this study, the professions involved can prioritize the identified most categories and dimensions of tacit knowledge in their knowledge management programs or training programs in order to enhance their organizational effectiveness or achieve innovation. This can be an example to other professions or organizations to identify the most important types of tacit knowledge for their organizational effectiveness and incorporate them in their knowledge management programs or training programs. This study is a primary step toward the comprehension of how different categories and dimension of tacit knowledge influence organizational performance or effectiveness. For some of the managers who still underestimate the importance of tacit knowledge, this study can be a wakeup call for them. While, for others this study can be the catalyst element that triggers their recognitions of the strategic role of tacit knowledge which is a crucial step toward the use of tacit knowledge as a management tool in order to improve organizational effectiveness. It is expected that these findings will generate the enthusiasm of other researchers to pursuit this form of research.

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Appendix A: Survey Questionnaire

Informed Consent

You are invited to participate in a study that investigates the role of different categories and different dimensions of tacit knowledge on organizational effectivenessn in various professions.Tacit knowledge is the kowledge that is implanted in people's mind and body in form of expertise, skills, and understanding. The confidentiality of all information and records will be maintained.Participants can refuse to participate at any time without penalty. Filling out and submitting this electronic version of this survey is your acceptance of the informed consent and your accord to take part in this survey.

***1. Your organization name**

***2. Chose the profession that best represents your primary job**

- ◯ Computer Engineers
- ◯ Lawyers
- ◯ Physicians (Doctors)
- ◯ Teachers

***3. How many years have you been working in this profession?**

- ◯ Less than 5 years
- ◯ 5 – 10 years
- ◯ 10 – 15 years
- ◯ 15 – 20 years
- ◯ 20 – 25 years
- ◯ More than 25 years

4. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession

	Not important	Below average importance	Average importance	Above average importance	Very important
Hard to pin down skills or "Know-how"	◯	◯	◯	◯	◯
Employees' mental models or ways of thinking and acting	◯	◯	◯	◯	◯
The way employees approach problems or solve problems in your profession	◯	◯	◯	◯	◯
Organizational routines	◯	◯	◯	◯	◯
Employees' Self-Motivation	◯	◯	◯	◯	◯
Employees' Self-organization	◯	◯	◯	◯	◯
Problem-solving skills	◯	◯	◯	◯	◯
Highly trained intuition	◯	◯	◯	◯	◯

5. Rate the importance that the following factors play in the determination of the effectiveness of your organization or profession

	Not important	Below Average importance	Average importance	Above average importance	Very important
Individual technical skills : understanding of the steps needed to complete one's tasks efficiently	◯	◯	◯	◯	◯
Institutional technical skill: understanding of how one's tasks fit into the bigger picture	◯	◯	◯	◯	◯
Employees' skills acquired through learning-by-doing	◯	◯	◯	◯	◯
Employees' interaction with other employees in term of performing one's job	◯	◯	◯	◯	◯
Employees' informal interaction with clients, patients, customers, or others in any social situation	◯	◯	◯	◯	◯
Employees' feelings and acceptance of the organizational culture of tacit knowledge sharing	◯	◯	◯	◯	◯
Employees' understanding of the effectiveness of the organizational culture of tacit knowledge sharing	◯	◯	◯	◯	◯

6. Choose the category of tacit knowledge that you think that is the most important for your profession or that makes the greatest impact on organizational effectiveness in your profession or organization?

- ◯ Employees' hard to pin down skills or "Know-how"
- ◯ Employees 'mental models or ways of thinking and acting
- ◯ The way employees approach problems or solve problems in your organization or profession.
- ◯ Organizational routines

7. Choose the dimension of tacit knowledge that you think that is the most important for your profession or that makes the greatest impact on organizational effectiveness in your profession or organization?

- ◯ Cognitive dimension (including employees' mental models, problem-solving skills, highly trained intuition, systems thinking, insight, gut feelings, self-motivation and self-organization).
- ◯ Technical dimension (including employees' skills acquired through learning-by-doing, technical specialization gained through education and experience, deep specialization, individual technical skills, institutional technical skills, understanding of the steps they need to go trough to complete their own task efficiently as well as their understanding of how their tasks fit into the bigger picture).
- ◯ Social dimension (including employees' interaction with other employees in term of performing organizational job as well as their informal interaction with clients, students, patients, customers, or others in any social situation).
- ◯ Corporate culture dimension (including employees' understanding of the culture that exists in the organization about sharing tacit knowledge (lesson learned) and why and how this existing culture leads to organization effectiveness as well as employees' acceptance of that organizational culture).

Appendix B: Proof of Permission to Use Any Third-party Instruments

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Title: Tacit Knowledge: A Refinement and Empirical Test of the Academic Tacit Knowledge Scale

Author: Gary S. Insch, Nancy McIntyre, David Dawley

Publication: The Journal of Psychology

Publisher: Taylor & Francis

Date: Nov 1, 2008

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Appendix C: CITI Training Certificate

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
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Learner: Messan KOUDOUOVOH (username: messan2)
Institution: Jones International University
Contact Information Business
17070 Downing street apt 301
Gaithersburg, Maryland 20877 USA
Department: DBA
Phone: 3014044604
Email: messans@aol.com

EDD Students:

Stage 1. Basic Course Passed on 08/30/12 (Ref # 8500537)

Required Modules	Date Completed	Score
Students in Research	08/28/12	10/10 (100%)
History and Ethical Principles - SBR	08/29/12	5/5 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	08/29/12	5/5 (100%)
Research with Children - SBR	08/30/12	4/4 (100%)
Research in Public Elementary and Secondary Schools - SBR	08/30/12	4/4 (100%)
Jones International University	08/30/12	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return

Appendix D: IRB Approval

December 14, 2013

Messan Koudouovoh

17070 Dowining St

Apt 301

Gaitherdburg. 20877

Dear Mr. Koudouovoh,

Congratulations! The JIU Institiutional Review Board has approved through an **Expedited** review, your research, entitled **"An Empirical Investigation of the Role of Different Types of Tacit Knowledge on Organizational Effectiveness in Health Care Industy, Financial Services Industry and Retail Industry in the United States."** You may now defend your research proposal and begin to collect data.

You must notify the IRB of any changes you make to your current research project, including the addition/revision of survey or interview questions.

Please contact the IRB with any questions regarding this approval. Again congratulations! Keep up the hard work! You are almost there!

Thank you,

Barb Donner

Academic Coordinator

Jones International University

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