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The Role of Knowledge Management in Enhancing Innovation in SMEs in the Gaza Strip

دور إدارة المعرفة في تعزيز الابتكار لدى المؤسسات الصغيرة
والمتوسطة في قطاع غزة

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إقرار

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The Role of Knowledge Management in Enhancing Innovation in SMEs in the Gaza Strip

دور إدارة المعرفة في تعزيز الابتكار لدى المؤسسات الصغيرة والمتوسطة في قطاع غزة

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The Role of Knowledge Management in Enhancing Innovation in SMEs in the Gaza Strip

وبعد المناقشة العلنية التي تمت اليوم الأحد 22 ربيع الأول 1439 هـ، الموافق 2017/12/10م الساعة الواحدة ظهراً في قاعة مبنى طيبة، اجتمعت لجنة الحكم على الأطروحة والمكونة من:

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عميد البحث العلمي والدراسات العليا

أ.د. مازن اسماعيل هنية



Abstract

This study aims at investigating the role of knowledge management practices in enhancing innovation in the SMEs in the Gaza Strip. Practices investigated are knowledge creation, knowledge acquisition, knowledge sharing and knowledge implementation. The study followed the analytical descriptive approach. Based on the literature review, the researcher designed a questionnaire as a data collection tool. The study targeted the employees of the SMEs in the Gaza Strip working in the information and communication sector (ICT). This was intended to explore the most important knowledge management practices that lead SMEs in the ICT sector to be more innovative. Population of the research consisted of 685 employees in the ranks of director, deputy director, administrative, technician, engineer, designer and other working in 45 ICT enterprises. The study sample was random and it consisted of 246 employees, while the retrieved questionnaires were 246 forms, which represented a 100% response rate.

Correlation and regression analysis were used to examine the relationship between the knowledge management practices and the level of innovation in SMEs working in the ICT sector in the Gaza Strip. This is in addition to assessing the impact of knowledge management practices on that level. The following were the most important findings of the current study:

The results showed that there is a positive correlation between knowledge management practices and the level of innovation process at the targeted SMEs in the Gaza Strip.

The results of the research revealed that Knowledge Creation (KC) and Knowledge Implementation (KI) together have a significant impact on the level of innovation in the targeted SMEs.

Also, the study indicated that most of knowledge management practices are carried out by the SMEs working in the ICT sector in the Gaza Strip. Results showed that knowledge acquisition was ranked first, followed by knowledge sharing, knowledge creation and knowledge implementation, respectively.

The study concluded that there are differences among the respondents in their opinions over the impact of KM on the level of innovation process in SMEs in Gaza that could be attributed to the variables of gender, age, qualification, occupation type, occupation, and years of service.

Finally the study suggested several recommendations for the SMEs working in the ICT sector to enhance KM practices and increase enterprises tendency to be more innovative. These recommendations included the following:

SMEs should exert more efforts to get transformed to an organizational learning theme and apply proper knowledge management practices in this regard. For example; tailored training programs should be designed and implemented for employees working in SMEs in the Gaza Strip to improve their knowledge creation practices.

SMEs should keep on developing, sharing and disseminating information amongst all employees within their structure, and reward their employees who effectively cooperate and share experience.

SMEs should promote sharing technology and information with customers and suppliers to keep on relationships with them and contribute to the innovation process in the organization.

SMEs should set a defined budget for KM initiatives and strengthen the linkage between knowledge and their strategic plans.

SMEs should carry out a regular assessment of the level of employees' knowledge and a periodic assessment of the current state of knowledge management within the organization.

SMEs should invest more in knowledge implementation since it contributes to the innovation of the organization.

Abstract in Arabic Language ملخص الدراسة

تهدف الدراسة إلى استكشاف دور ممارسات إدارة المعرفة في تعزيز الابتكار لدى المؤسسات الصغيرة والمتوسطة العاملة في قطاع غزة. حيث تتمثل ممارسات إدارة المعرفة في خلق وإنشاء المعرفة، والاستحواذ على المعرفة، ومشاركة المعرفة، وأخيراً تطبيق وتنفيذ المعرفة. اعتمدت الدراسة على المنهج الوصفي التحليلي، وقد تم تصميم الاستبانة من قبل الباحث كأداة رئيسة لجمع البيانات، حيث تمثلت عينة الدراسة من الموظفين العاملين في المؤسسات الصغيرة والمتوسطة في قطاع غزة وتحديدًا تلك التي تعمل في قطاع تكنولوجيا المعلومات والاتصالات. وقد تكون مجتمع الدراسة من (685) موظفاً في مستويات إدارية مختلفة (مدير، نائب مدير، إداري، فني، مهندس، مصمم، وغير ذلك من ذوي العلاقة) يعملون في (45) شركة. حيث تم اختيار عينة عشوائية من (246) موظف، وتم توزيع (246) استبانة وكانت نسبة الاسترداد 100%.

ولتحليل العلاقة والأثر بين ممارسات إدارة المعرفة ومستوى الابتكار في المؤسسات الصغيرة والمتوسطة العاملة في قطاع تكنولوجيا المعلومات والاتصالات تم استخدام تحليلي الارتباط والانحدار. حيث تمثلت أهم نتائج الدراسة فيما يلي:

1. أظهرت النتائج أن هناك علاقة إيجابية بين ممارسات إدارة المعرفة ومستوى الابتكار لدى المؤسسات الصغيرة والمتوسطة العاملة في قطاع تكنولوجيا المعلومات والاتصالات والمعلومات في قطاع غزة.
2. أيضاً أظهرت الدراسة أن هناك تأثير إيجابي قوي بين ممارستين من ممارسات إدارة المعرفة ومستوى الابتكار في المؤسسات المستهدفة وهما خلق المعرفة وتطبيق المعرفة.
3. بالإضافة إلى ذلك فقد أشارت الدراسة إلى أن معظم ممارسات إدارة المعرفة يتم تطبيقها في المؤسسات المستهدفة حيث تبين أن الاستحواذ على المعرفة هي أولى هذه الممارسات، ثم مشاركة المعرفة، ويليهما خلق وإنشاء المعرفة، وأخيراً تطبيق وتنفيذ المعرفة.
4. كما وأظهرت الدراسة أن هناك فروق ذات دلالة إحصائية في آراء الموظفين حول أثر إدارة المعرفة على مستوى الابتكار لدى المؤسسات الصغيرة والمتوسطة في قطاع غزة تُعزى إلى (الجنس، العمر، المؤهل العلمي، نوع الموقع الوظيفي، الموقع الوظيفي، وعدد سنوات الخبرة).

وأخيراً، خلصت الدراسة إلى مجموعة من التوصيات التي تساعد على تحسين ممارسات إدارة المعرفة في المؤسسات الصغيرة والمتوسطة وبالتالي زيادة مستوى الابتكار لدى هذه المؤسسات مثل:

1. يُفضل أن تبذل المؤسسات الصغيرة والمتوسطة جهداً أكبر للانتقال إلى نموذج المؤسسات المتعلمة، وتطبيق ممارسات إدارة المعرفة التي تتناسب مع احتياجاتها. على سبيل المثال؛ تطوير برامج تدريبية متخصصة لموظفيها لتطوير مهارات خلق المعرفة والاستحواذ عليها.
2. يفضل أن تقوم هذه المؤسسات بتطوير ونشر المعلومات والمعارف الموجودة بين موظفيها داخل الهيكل التنظيمي ككل، وكذلك تحفيز الموظفين الذي يعملون على مشاركة وتبادل المعارف والخبرات.
3. توظيف التطبيقات التكنولوجية على المستوى الداخلي للمؤسسة أو على صعيد تواصلها مع الجمهور الخارجي والجهات ذات العلاقة، يمثل نقطة مهمة لتعزيز الابتكار في المؤسسات.
4. تخصيص موازنة لمبادرات إدارة المعرفة وربطها باستراتيجيات المؤسسة يمكن أن يساهم في تحسين مستوى الابتكار.
5. يفضل أن تقوم المؤسسات بعملية تقييم دورية لمستوى المعرفة لدى الموظفين وكذلك لممارسات عملية إدارة المعرفة على مستوى المؤسسة ككل.
6. على المؤسسات أن تستثمر في الاستراتيجيات الأمثل لتطبيق المعرفة وتنفيذها، حيث أن هذه الممارسة تؤثر بشكل جيد على مستوى الابتكار.

Dedication

I dedicate this dissertation to my beloved father and my precious mother (Awni and Amal), the persons to which all goodness is attributed. I cannot describe their support for me; I would not make it without them. They push me through each step in my life.

To my brothers, sisters and my beloved family.

To the souls of my grandma and grandpa who were very eager to grow in knowledge.

To all of my supportive friends, I dedicate this.

To the city of light, goodness and peace; Jerusalem. "The whole land is a hotel, and our permanent home is in Jerusalem".

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Ahmed Awni AlKarriri

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List of Abbreviations

PICTI	Palestine's Information and Communications Technology Incubator
PITA	The Palestinian Information Technology Association of Companies
R&D	Research and Development
KA	Knowledge Acquisition
KI	Knowledge Implementation
KS	Knowledge Sharing
KC	Know Creation
DIKW	Wisdom hierarchy, knowledge hierarchy, information hierarchy, and the data pyramid
PCBS	The Palestinian Central Bureau of Statistics
MSE	Micro and Small Enterprise
BPO	Business Process Outsourcing
ITO	Information Technology Outsourcing
ICT	Information Computer Technologies
SMEs	Small and Medium Enterprises
GDP	Gross Domestic Product
PIF	Palestine Investment Fund
IUG	The Islamic University of Gaza
UNIDO	The United Nations Industrial Development Organization

Chapter One
Research General Framework

Chapter One

Research General Framework

Introduction

At these days, especially with the world has been surrounded with a massive amount of data and overload information at every single moment; the competition between countries and organizations transferred from getting data and information to conceptualizing them and getting the knowledge which can lead to the innovative and right intelligence.

At this study, and due to the high importance of knowledge in driving companies and organizations in developing countries toward superior positions; the researcher tries to reveal if the knowledge management which is “The deliberate and systematic coordination of an organization’s people, technology, processes, and organizational structure in order to add value through reuse and innovation” (Dalkir, 2013), are taken in the consideration of SMEs environment in the Gaza-Strip; a place with a very limited area and a high population density with very special situations, and examine the direct contribution of knowledge management practices at SMEs in the Gaza-Strip in determining the knowledge gap and how knowledge management helps SMEs at bridging this gap by exploiting different resources and getting superior outcomes such as gaining competitive advantage, opening the gate of success and leading them to be more innovative.

Knowledge management (KM) process is presented in an integrated cycle; Knowledge creation, knowledge sharing, knowledge acquisition and knowledge implementation. This work seeks to study each part of this circle within the SMEs that work in the ICT sector in the Gaza Strip, find the contribution of each component in creating a potential environment for innovation and then find the role of this integrated components in enhancing innovation at these SMEs. Heading towards SMEs work in the ICT sector comes from the ongoing process of competition in this field and high potential to investigate if there is a real practice of the KM aspects which may lead SMEs to be more innovative, profitable and able to overcome the hard obstacles and challenges that face them in Gaza.

Also, the orientation towards SMEs comes from the significant role of SMEs in creating employment opportunities and in rising the global economy, thus SMEs represents 90% of the total establishments across the world (Nejadirani et al., 2011). Moreover, in the Gaza-Strip as in all of the world there is a noticeable trend toward entrepreneurship and establishing SMEs which means there is a potential environment for competitiveness in spite of the constraints imposed by the Israeli occupation and the harsh living conditions.

At the beginning of the 21st; organizations start deal with knowledge in their daily interactions especially which the technological revolution feeds the life with an intensive amount of knowledge and experiences of others. In light of the previous circumstances; youth leaders, investors and creative people go through entrepreneurship instead of

traditional business entities. Based on their distinguished enthusiasm and passion; Small and Medium Enterprises (SMEs) form an essential source of new ideas and innovations (Dahleez, 2009). Innovation that leads to the superior position among competitors through brainstorming, daily and deep interactions and a good strategy to manage the most valuable assets at SMEs; knowledge and experience in the employees' minds (Baycan, 2013).

When employees leave an organization, their ideas, accumulative experience, valuable relationships and insights leave with them if no endeavours are taken to acquire and share this knowledge in the organization and that may cause a gap and loss of valuable organizational assets and resources by taking their knowledge with them when they leave (Uriarte, 2008).

So, the core knowledge alone cannot fully support an organization to own its competitive advantage, but the way of managing this knowledge and adapting it can do that (Dalkir, 2013). Thus, this loss in an essential asset of organizations created the need to strive and retain the accumulated knowledge and experiences from the minds of people through special tactics and techniques to derive the maximum benefits (Uriarte, 2008). Because of that the concept knowledge management (KM) appears and it is increasingly being recognized and represented as one of the cutting-edge topics which play a critical role for international development and businesses in today's competitive environment. It is considered a base of innovative process which leads to provide a competitive advantage for SMEs. Furthermore, KM is considered the heart and the core success factor of small and medium enterprises "SMEs" because it leads these enterprises to possess high profits and advanced positions (Gholami et al., 2013). So, the majority of organizations are progressively gaining competitive advantages from intellectual assets rather than physical assets which the knowledge lays inside the minds of employees and consultants.

Research Problem Statement

In the recent years, it is obvious that the presence of entrepreneurship culture and avoiding the traditional and bureaucratic works have been growing rapidly in the Gaza-Strip, whereas a high number of youth, university students and graduates in different fields of specializations go toward building or try to build their own businesses with totally trusting on their creativity, great and innovative ideas. The investors start to scale up some of these ideas by providing both logistic and financial support. After that, and as (Dahleez, 2009) said, business incubators provide those entrepreneurs with assistance to fill the knowledge gaps and develop their ideas, business models and facilitate their access to more opportunities that would help them in the way of building their SMEs. Which means; contribute in reducing unemployment, enrich their knowledge and support the local economy.

In an interview with the head of PCTI and PITA in the Gaza Strip (February, 2017), Dr. Nahed Eid stressed the significance role of KM in enhancing the innovational tendencies in the SMEs in the Gaza Strip. However, he focused the light on the weaknesses in the KM practices at SMEs especially those related to knowledge creation, sharing, acquisition and

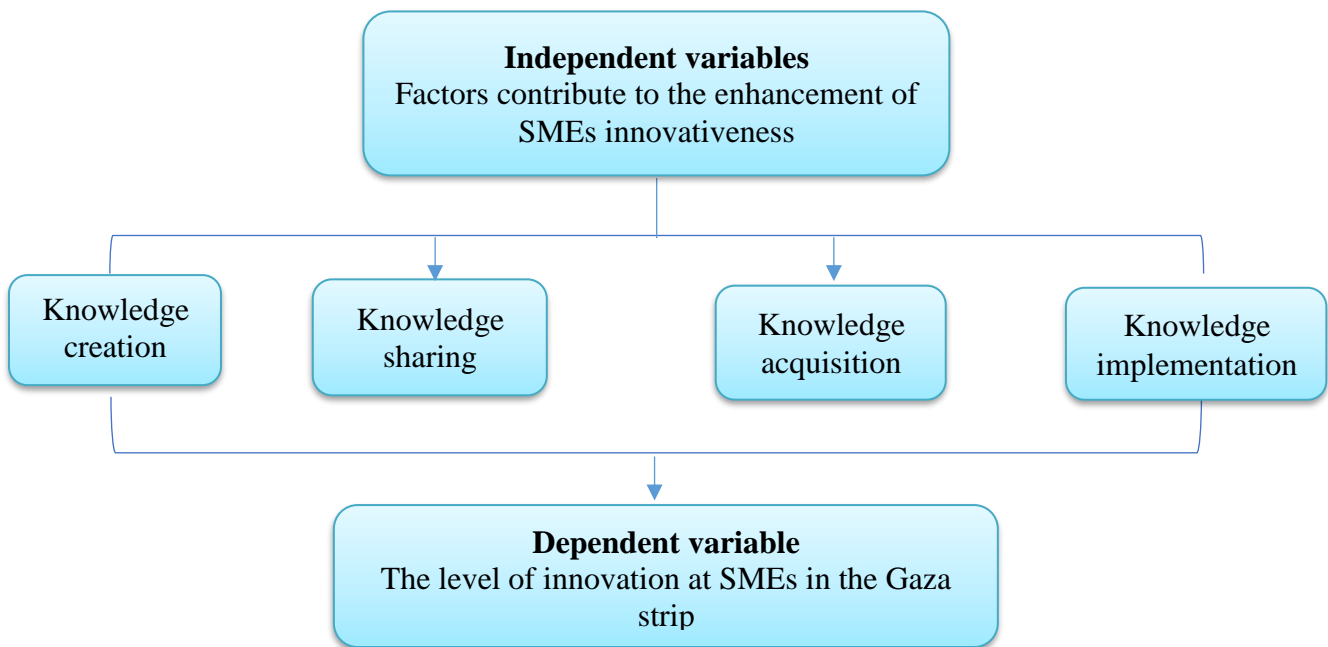
implementation. In the same context, Dr. Eid tackled the importance of supporting and conducting studies on SMEs in the Gaza Strip because they are considered an indispensable part of Palestinian economy; they are the golden futuristic opportunity for the youth. So, it is clear that there is a high potential for SMEs in supporting the local and global economy through taking advantages from intellectual assets which represent the most valuable asset in 21th century. So, while the KM process represents a keystone of gaining the organization’s competitive advantage. Accordingly, the research main question is **“To what extent could KM play a role in enhancing innovation in SMEs”?**

Research Variables

Based on (Uriarte, 2008) , a complete knowledge management process must contain four elements. These elements represent the independent variables of this research that may affect SMEs and play a crucial role in managing their knowledge:

1. Independent Variables
 - a. Knowledge creation
 - b. Knowledge sharing, dissemination and enrichment
 - c. Knowledge acquisition (information storage)
 - d. Knowledge implementation
2. Dependent variable: The level of innovation at SMEs in the Gaza strip.

Figure (1.1): Conceptual framework



Source: Adapted by the researcher, (2016) based on the study (Uriarte, 2008)

Research Hypotheses

Summing up the literature review, KM in general is expected to have a positive impact on the innovative performance of firms. Therefore, the following hypotheses have been developed at this research to investigate if there are relationships between the elements of KM and the innovation success and to what extent these relationships are strong:

1. There is a significant statistical correlation at level $\alpha \leq 0.05$ between KM and the level of innovation process in SMEs in Gaza. Derived Sub-Hypothesis:
 - a. There is a relationship between knowledge creation and the level of innovation in SMEs in the Gaza strip.
 - b. There is a relationship between Knowledge sharing and the level of innovation in SMEs in the Gaza strip.
 - c. There is a relationship between Knowledge acquisition and the level of innovation in SMEs in the Gaza strip.
 - d. There is a relationship between Knowledge implementation and the level of innovation in SMEs in the Gaza strip.
2. There is a significant statistical impact of KM at the level of innovation process in SMEs in Gaza.
3. There are statistical differences at level $\alpha \leq 0.05$ in the responses of the research sample due to the personal characteristics.

Research Aim and Objectives

The aim of this research is to investigate the effect of applying KM practices on the level of innovation in the SMEs in the Gaza Strip and how these practices represent a bedrock of the organization's competitive advantage.

The main objectives of this study are summarized as the following:

1. To review and investigate the applicability of KM strategies in SMEs at the Gaza Strip, Palestine.
2. To assess the impact of KM at the target group of SMEs in the Gaza Strip.
3. To assess the level of innovation at the target group of SMEs in the Gaza Strip.
4. To explore the relationship between KM and the level of innovation in SMEs in the Gaza strip.
5. To suggest recommendations that may help incubators in developing level of innovation at SMEs by activating KM strategies.

Research Importance

This research will be helpful to different actors and parties inside and outside the Gaza strip as demonstrated in the following:

1. To Palestinian economy and community:
 - a. The research will help in enhancing the KM approach at SMEs by producing products and services with innovative features. This approach will lead

- entrepreneurs to expand their projects, reduce unemployment and create the base of the competitive advantage.
- b. Selecting appropriate KM strategies will affect the organization and its products and services through their lifecycle positively.
 - c. Developing a robust platform that prepare and assist entrepreneurs in selecting the most suitable strategies that would make them and their employees more satisfied toward their competitive position. Also, to help at meeting the expectations of the enterprises clients.
2. Palestinian and other researchers:
- a. The study will also help future researchers in the same topic in the Gaza strip by clarifying the importance of using knowledge management strategies in organizations, especially SMEs.
 - b. It will also contribute in bridging the gap between the academia and industry and what steps can be taken to enhance the applications of KM strategies in the SMEs of the Gaza Strip.
 - c. Exploring more KM strategies different from the traditional strategies, by indicating the main advantages of those strategies that stimulate and enhance the competitive advantages.
3. To Incubators:
- a. The study can help incubators by giving them new approaches and techniques on fostering entrepreneurship.
 - b. Identifying factors that could assist ICT incubators in improving their practices in knowledge creation and sharing between the incubated projects and SMEs
 - c. Motivating ICT incubators to be a major influence on KM practices
 - d. Encouraging ICT incubators to develop and build capacity Building programs in the field of KM for SMEs
 - e. Providing SMEs with recommendations may contribute in creating their own competitive advantage through using KM techniques.
4. To the researcher:
- This research will contribute towards enhancing and enriching the knowledge of the researcher regarding the concepts of knowledge management and innovation especially in SMEs through review books, papers, articles and previous studies related to the research subject which will also increasing researcher's researching and analytical thinking skills.

Chapter Two

The Research Literature Review

Chapter Two

The Research Literature Review

Section One: Knowledge and Knowledge Types

Introduction

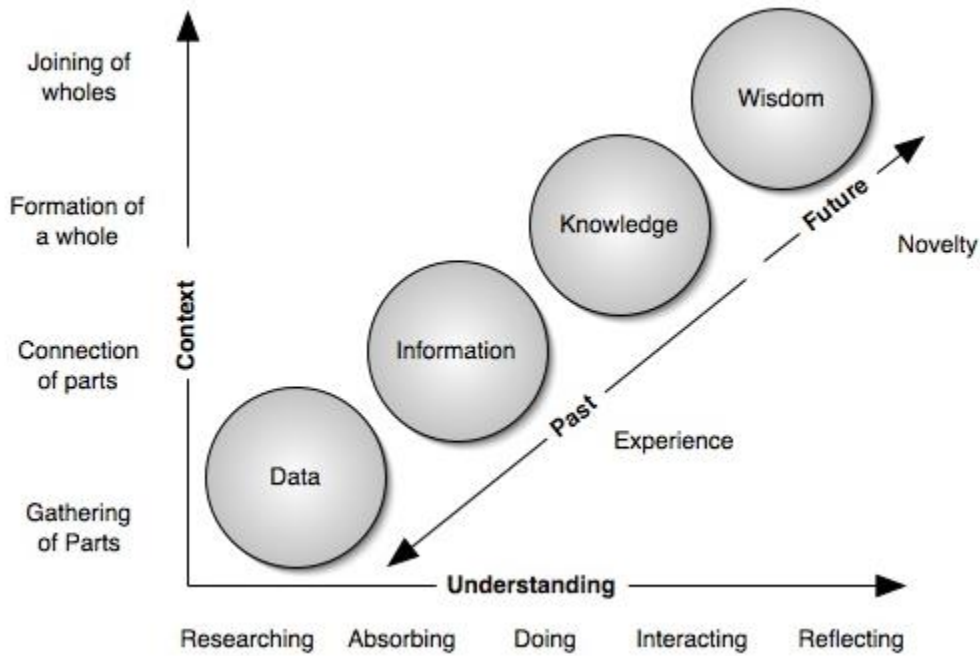
In order to realize knowledge management, it is necessary to understand the concept of the word “knowledge” and to look at what the knowledge is. Definitions of the term knowledge vary relatively, but according to the research literature there is a consensus that knowledge is a developed term describes the evolutions information which is a sophisticated term that describe data. So, this section is designed to give an overview of the term “knowledge”. Whereas, this chapter consists of three parts. The first part introduce the origin and evolution of knowledge. The second one presents the sources and importance of knowledge. And at last, the knowledge types are presented in the third part.

Knowledge Origin and Evolution

According to the previous studies; it is obvious that there is accumulative relationship between data, information, knowledge and wisdom. This relationship looks like an evolution of data till reach to wisdom through different processes, and these four stages are linked, expanded and improved by the learning process which plays a vital role in tying them together (Bierly III et al., 2000). The chain of DIKW was cited to R. L. Ackoff’s article in 1988 and titled as a source for DIKW hierarchy which is used subsequently to contextualize data, information, knowledge and wisdom with respect to one another and to describe the transformational processes from a lower level to a higher level in the hierarchy. Ackoff was a management consultant and former professor of management science at the Wharton School specializing in operations research and organizational theory. Data from his point of view represent the product of observations, and are worthless until they are processed into a usable form to become information. Information is included in answers to questions. Knowledge is refined information into instructions while wisdom means an ability to notice the long-term consequences of any act and evaluate them relative to a benchmark or ideal model(Bernstein, 2011).

The diagrams below show two views of DIKW hierarchy. In the first one and according to (Clark, 2004), data and information deal to the past. They are based on the gathering of facts and adding context. Knowledge deals with the present situations and conditions. It becomes a part of us as something embedded in our minds leads to act and perform confidently. However, when we move to the next level and gain wisdom, we start dealing with the future as we are now able to vision and design for what will be, rather than for what is or was.

Figure (2.1): DIKW Hierarchy



Source: One view of the DIKW hierarchy, (Clark, 2004)

Agabi et al. (2015) provide an explanation for the knowledge hierarchies' items presented above with harmony in the most researchers' definitions as:

Table (2.1): DIKW Definitions

Wisdom	Judging to produce understanding where there was no prior understanding.
Knowledge	This is when patterns of relationships are determined, identified and understood
Information	"Evolves when relationships between the connecting facts are established and understood"
Data	Incoherent collection of facts about a phenomenon that has little basic interest",

Source: Adapted by the researcher, (2016) based on the study (Agabi et al., 2015)

Knowledge is a dynamic and content based, so it depends in the quality of data and conceptualized information. It comes from experience, tactics, peer consultation, ideas and it is conveyed by instructions, answers to how-to questions (Ackoff, 1989). Whereas, (Uit Beijerse, 2000), described knowledge in one of his definitions as an output of a combination of factors: experience, skills, culture, character, personality, feelings, etc. All KM systems are stopped with and or on data which always needs to be accurate in order to shape the most appropriate and useful information. Which Information usually comes as an outcome of data, so analysing more data to be understandable will give us more information. And based on the famous quote "Garbage in Garbage out"; highly accurate and precise data will lead to gain useful and meaningful information. According to (Uriarte, 2008); to transform data into information; it is essential to understand the relationships between the pieces of data or between the collection of data. Information emerges when data are put into a context and combined within a structure (Ahsan & Shah, 2006).

The importance of knowledge comes from the value that is added to data and information when they are developed and having more meaning especially in decision making process. In this context, (Beijerse, 2000) defines knowledge as “something that makes both data and information manageable”. Also, he considers knowledge as an attitude that gives people the desire to think, interpret and act. Within organizations this attitude is very important to stimulate people's curiosity to innovate. Also, he considers knowledge as a combination of an information, a capacity and an attitude that work together to give an efficient and sufficient attention. In academic field and in parallel with the rapid economic development in the world, there are three approaches appeared in universities and colleges to the concept of transforming knowledge to a state of economically useful knowledge. In Europe the concept of the ‘valorization of knowledge’ is commonly used, whereas the concept of ‘commercialization’ is more common in the US and ‘knowledge capitalization’ concept is the third one which is mentioned and used by some scholars (Baycan, 2013). A ‘Knowledge valorization’ is a relatively new term describes the process of adding value to new knowledge in order to be transformed into a new improved product, process or service in the market (Geenhuizen, 2010), a ‘knowledge commercialization’ refers to the process of making money from knowledge either with or without a knowledge transfer (Andriessen, 2005). The third concept, ‘knowledge capitalization’, is defined as ‘ a culture, based on science, that turns into capital when the income stream is generated’ (Etzkowitz et al., 1990).

In the last few years, commercialization and valorization of knowledge have come to be seen as an essential driving force of economic growth (Agrawal, 2001), because of that the traditional role of universities has gradually changed in the knowledge production system. Now, universities are expected not only to sustain or support economic growth but also to contribute in generating that growth of economy through producing new knowledge, sharing knowledge and experiences, investing in human capital and creating new companies (Baycan, 2013).

Based on the above, the following points list the importance of knowledge:

1. Making both data and information manageable.
2. Stimulating the curiosity of people and giving them the desire to think and act.
3. Increasing the motivation through staff involvement.
4. The availability of valuable knowledge in economic field leads to economic growth and generate economic profits.
5. Getting the right knowledge at the right time saves money.

Knowledge Sources

The time we live in is considered as the time of knowledge production or knowledge age while knowledge is formed in many ways. It arises from:

1. All sorts of human interaction and contemplation.
2. It also comes from the knowledge creation centers such as universities, public and private research centers (Baycan, 2013).

Kim et al. (2016), suppose two main sources of knowledge;

1. Physical or computerized knowledge as alternative sources of codified knowledge as a good platform supports the transfer or distribution of knowledge.
2. Social sources of knowledge as a channel for tacit knowledge such as human interaction.

According to (Index, 2015, June), there are primary sources of knowledge;

1. Perception: can be understood through the know-how practices and the experiences of the human senses; sight, touch, hearing, smelling and tasting.
2. Introspection: knowledge of one's self that can be found through internal self-evaluation. For example, I know I am hungry or tired.
3. Memory: represents the storage or capacity that retain knowledge acquired in the past.
4. Reason: discovering necessary truths (such as mathematical truths) through pure reason.
5. Testimony: depends on delivering and acquiring knowledge from others.

Based on the above different sources of knowledge, it is clear that most of these sources depend on the human's abilities such as: analysing, processing, imagining, memorizing, transforming and dealing with information. So, human intellectual represents the backbone of generating new knowledge; this new knowledge always begins with the individuals and the benefits of this new knowledge will be maximized when individuals share it with others in a good and smart way. Sometimes, confusions may happen in companies. Companies might see these confusions like problems, but in fact it might be a rich source of knowledge. First and last, it is clear that human capital represents the main source of knowledge which other sources rely on.

Knowledge Types

Based on many researchers, there are different points of views towards the classification of knowledge. Many researchers categorize knowledge into two main types; information and know-how. Information refers to facts, data, symbols and statements that can be transmitted from different actors (Kogut & Zander, 1992). Know-how typically refers to accumulated skills, experiences, inventions and knowledge which can be kept secret even after development is completed (Von Hippel, 1982).

According to (Lu et al., 2008), there is a consensus among many researchers on two main types of knowledge where they classify these types according to the ease of transferring into:

1. Explicit knowledge, which could be easily codified and shared from one person to another.
2. Tacit or implicit knowledge, which is difficult to be articulated and accessed because it depends mainly on experiences, actions, feelings, and thus can be transferred through direct intensive interpersonal interactions and direct relationships between organizational members.

The following table shows the main differences between explicit and implicit knowledge:

Table (2.2): Prosperities of Tacit Knowledge Vs Explicit Knowledge

Prosperities of Tacit Knowledge	Prosperities of Explicit Knowledge
Adaptability; especially at dealing with new and unexpected situations.	Could be refined, reproduced, reached, reapply and disseminated widely throughout the organization.
Experience, know-how and know-why	Could be learned and trained
Collaborative properties; where cultures and visions can be absorbed and shared.	Could be easily organized, explained and controlled. For example, the vision could be easily translated to mission statement and extract working guidelines from it.
Experiential knowledge can be transferred through coaching and mentoring practices.	Knowledge can be transferred via products, services, and documented processes.

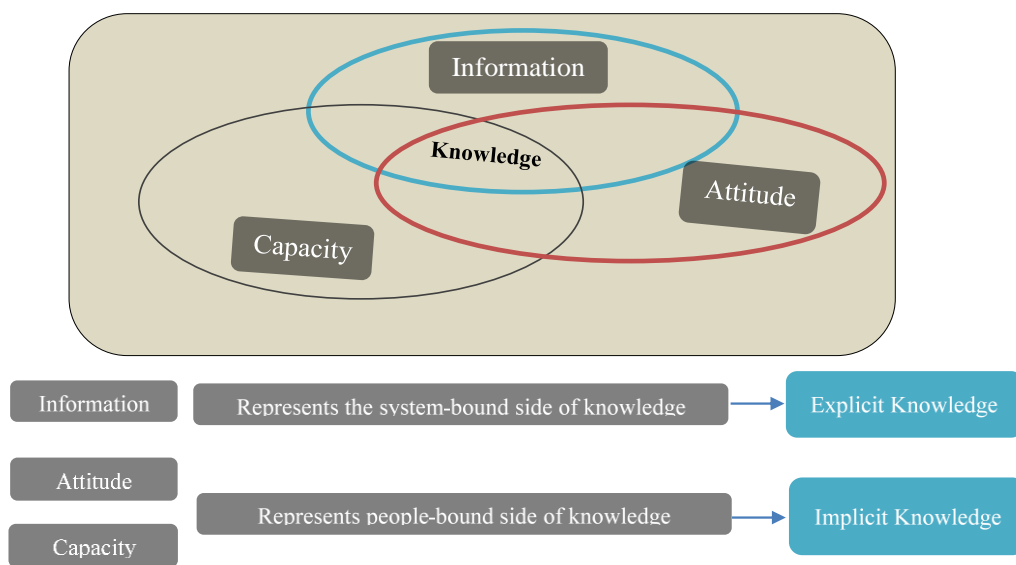
Source: Adapted by the researcher, (2016) based on the study (Dalkir, 2013)

Despite the fact that absorbing tacit knowledge and expressing it directly in words are harder than explicit knowledge; tacit knowledge can be partially transferred through relational arrangements between organizations, such as partnerships, joint ventures, strategic alliances, and networks (Inkpen & Tsang, 2005).

According to Beijerse’s knowledge definition; knowledge has three components, and these components are distinguished into two main sides:

1. The system-bound side of knowledge (information) which is called explicit knowledge,
2. Whilst the people bound side of knowledge (capacity and attitude) which is called implicit knowledge; a knowledge that “is difficult to formalize and therefore difficult to formalize or spread because it is mainly located in people’s hearts and heads”.

Figure (2.2): Three facets of Knowledge



Source: Adapted by the researcher, (2016) based on the study (Beijerse, 2000)

This implicit knowledge is considered as one of the main significant success factors of organizations especially SMEs when it has the ability to grasp people's creative ideas and transform it into usable and applicable explicit knowledge (Beijerse, 2000). These components are illustrated in the above figure (2.2).

Moreover (Polanyi, 1966) covers the tacit knowledge core in the phrase “we know more than we can tell”, and provides more explanation of the concept in such familiar examples as “the ability to recognize faces, ride a bicycle or swim without even the slightest idea of how these things are done.”

Rosenberg (1982), introduces a good definition of tacit knowledge in technology enterprises: “The knowledge of techniques, methods and designs that work in certain ways and with certain consequences, even when one cannot explain exactly why”. Thus, tacit knowledge match practical know-how, so the depth of knowledge and know-how may also have a positive effect on problem solving. (Koskinen & Vanharanta, 2002).

Also, (Beijerse, 2000) handled the concept of knowledge from three viewpoints which is called knowledge domains, and these domains are; organization, marketing and technology. According to the organization; knowledge deals with things such as management, policy, culture, teamwork and human resources. When thinking of knowledge from marketing point of view, then we should think of things such as competition, suppliers, customers, target groups, clients and relation management. And finally, when thinking of technological knowledge, it is substantial to consider knowledge of products, R&D practices, product development and assembly.

Section Two: Knowledge Management

Introduction

Knowledge management (KM) is considered as a backbone of the current and future organizations, especially in the world relying on the human intellectual assets as one of the most important assets. Today, many organizations, especially those that work in a competitive environment, realize the importance of KM practices. So, they use KM mechanisms or models to achieve specific objectives that serve their goals and strategies. This section gives an overview of knowledge management concept through the first part. In the second part the main objectives of KM for organizations are listed and revealed. The third part presents the KM process. The requirements that are needed to apply KM models in organizations are outlined in the fourth part. And in the last, some of the well-known KM models are outlined in the fifth part.

Knowledge Management Concept Overview

knowledge management (KM) has been criticized for being a little bit “fuzzy” (McCUNE, 1999) and there is no exact agreeable definition of KM, but according to (Dalkir, 2013); most academicians and professionals come to an agreement that KM treats both tacit and explicit knowledge in order to add a high value to the organizations. For the time being, knowledge management represents major basis of competition (Zack et al., 2009), so many companies, especially large companies, everywhere are starting to manage their knowledge and intellectual capital in an active way. (DeTienne et al., 2004), particularly tacit knowledge, as it considered like the fuel of innovation because it is unique, hard to mobile, hard to imitable and non-substitutable. Today, knowledge management has become a very essential element for businesses competitiveness by implementing processes that produce changes in organizational culture element, information, motivation and incentives and staff training, so the companies have to direct their units to involve with each other and ensure that skills grow with the organization (Cuevas-Vargas et al., 2014). Also, it leads the organization to achieve its goals by making the knowledge practices or factors more productive by motivating people to develop their capacities or competencies (Beijerse, 2000).

Knowledge management processes should be created to benefit from the current workforce experiences by making them more collaborative with each other and extract vital data and process it appropriately to the organizational needs. Smart processes could help the organization to get the most benefits that may ensure its prestigious position because KM is like a channel for innovation process and through this channel the organization could recognize upcoming trends, anticipate possible scenarios, reduce uncertainty, gain new skills and streamline daily operations (Nowacki & Bachnik, 2015).

Table (2.3): Knowledge Management Definitions

Reference	Definition
(Quintas et al., 1997)	The process of developing new opportunities and meeting the existing and emerging needs by managing all types of knowledge, identifying and exploiting existing and acquired knowledge assets.
(Beijerse, 2000)	The management of information within an organization by steering the strategy, structure, culture and systems and the capacities and attitudes of people with regard to their knowledge. The achievement of the organization's goals by the creation of productive knowledge.
(Uriarte, 2008)	"knowledge management is the conversion of tacit knowledge into explicit knowledge and sharing it within the organization"
(Dalkir, 2013)	"Is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation".

Source: Articulated by the researcher based on the above mentioned references

The Objectives of Knowledge Management in the Modern Century

Darroch (2005), represents knowledge itself as a fruitful resource for an organization. This resource or knowledge asset has to be utilized in a rapid, effective and innovative way, and KM plays a significant supporting function by providing a good coordination mechanism to enhance the conversion of resources into capabilities in order to achieve organizational competitive advantage which most businesses in the modern century are looking for. But why knowledge management is considered as an essential supporting function within the organization?

One of the old and famous explanation of this point was clarified by (Penrose, 1995) as he considered the knowledge of an employee depends on his or her own skills, experiences and abilities to respond to information flowing into the organization and understand new knowledge. Since knowledge is considered as a resource in itself, the way of managing and using this resource by employees will reflect on the quality of services and products that can be delivered by the organization.

Also, the importance of KM comes from its role in maximizing the organisational and individual knowledge by digging up and extracting tacit knowledge and transforming this into explicit knowledge, which then can be interpreted, represented, codified, stored, retrieved, shared and disseminated between employees and organization in general (Baptista Nunes et al., 2006).

Based on massive amount of studies, KM has many objectives. These objectives can be summarized in a short sentence; leading the organization to success and have a superior position. Choy embedded the previous concept by saying that one main purpose of KM is to transform the tacit knowledge and make it explicit to achieve desirable business performance and obtain the competitive advantage (Choy et al., 2006).

Uriarte (2008), said that “knowledge management is the conversion of tacit knowledge into explicit knowledge and sharing it within the organization”. And based on the previous studies it becomes apparent that KM is concerned with the process of identifying, acquiring, sharing and maintaining the valuable and essential knowledge to the organization (Gholami et al., 2013).

The strategic objectives of KM are summarized by (John Parker, 2012), as the following:

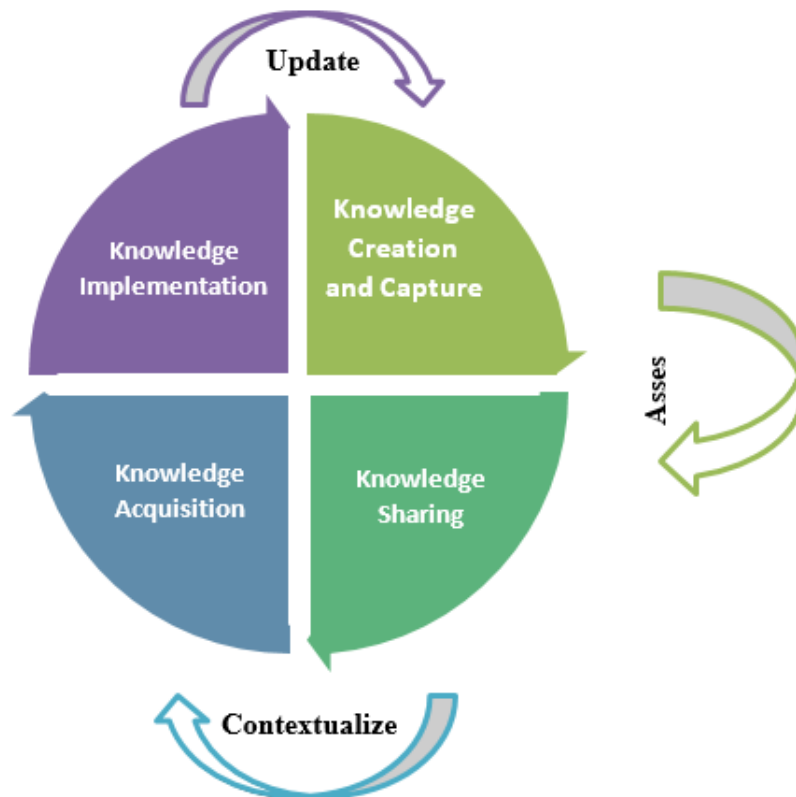
1. Risk reduction and cost saving
2. Productivity improvement
3. Reducing cost, risk and cycle time by exploiting the existing assets
4. Decision-making and performance improvement
5. Strategic planning improvement
6. Developing new technical approaches in a rapid way
7. Settling problems smoothly and effectively
8. Reduction in total training cost
9. Increase the diversity of the labour force

Improved performance can be one of the long term and strategic benefits of fulfilling KM best practices in SMEs, so KM leaderships and CEOs should invest in internal and external resources of knowledge. They should properly change the workplace culture and environmental circumstances so that employees adapt their abilities with the new situation, commit to try new techniques in their work and employ KM practices in fulfilling their activities (Gholami et al., 2013).

Knowledge Management Processes

There are four significant elements that should be existed and applied to ensure a good KM process, where these elements bring the most benefits for organization if it exploited in a good manner. These elements are: (1) Knowledge creation and capture, (2) knowledge sharing, dissemination and enrichment, (3) knowledge acquisition (information storage and retrieval), and (4) knowledge implementation.

Figure (2.3): The Integrated KM Cycle



Source: Adapted by the researcher, (2016) based on the study (Dalkir, 2013)

1. Knowledge creation and capture: Uriarte (2008), proposed knowledge management process as a cycle starts with knowledge creation which is a continuous process in any group or organization appears through interaction between people in many different ways. The first and the primary aim of knowledge management is to capture new and distinguished knowledge that are generated during these such interactions.

The process of creating new knowledge is the most difficult to manage (Uriarte, 2008). It will not be possible without creativity and utilization of internal and external resources of an organization to generate new and valuable knowledge for achieving the organizational goals (Gholami et al., 2013). According to (Moodysson, 2008), knowledge

creation depends on trials, tests and integrated human interaction. And knowledge can be captured and created in various ways based on its type either inside or outside the organization, for example: explicit knowledge from inside and outside of the organization can be captured in different forms such as printed reports, record of meetings, brochures and so on. On the other hand, tacit knowledge can be created and captured during discussions and meetings with office colleagues, stakeholders, institutional partners, consultants and experts (Uriarte, 2008). Also, there are several knowledge-creation activities could help organizations to create and capture the valuable knowledge and reach their goals, such as: brainstorming, problem solving, design and redesign, seminars, workshops and commercialization (Moodysson, 2008).

The level of knowledge differs about the same thing from one to another, therefore people looks at the same thing in different ways. So, brainstorming is one of the most common methodologies used to bring out the most valuable and developed ideas that exists in the brain of the participants with different perspectives (Uriarte, 2008).

2. Knowledge sharing and enrichment: Beijerse (2000), defines Knowledge sharing as; “a primarily knowledge stream that is dependent on the culture of the organization”. And Once knowledge has been created and captured, it needs to be shared throughout the organization (Dalkir, 2013). Sharing knowledge between different levels of an organization or between different organizations represents a crucial aspect within knowledge management (Beijerse, 2000).

The organization can share its created or captured knowledge with its employees (e.g., through memos and instructions), also knowledge sharing can occur between employees themselves (e.g., through group discussions and internal meetings), as well as with people outside the organization (e.g., through seminars and workshops) (Uriarte, 2008). Also, knowledge can be shared by making projects or fact sheets, job rotations, capacity building programs and lunchtime meetings (Beijerse, 2000).

It is important that the correct knowledge gets to the right person at the right time in the right way (Beijerse, 2000). So, knowledge sharing can be facilitated and enhanced by engaging appropriate technologies, operations and systems in the interactive knowledge sharing process between employees themselves or between employees and customers (Koskinen & Vanharanta, 2002).

Knowledge sharing process may face some obstacles due to the culture of employees who are reluctant to share their knowledge freely with their colleagues because they feel that their special knowledge is the reason why they are important to the organization and because of this knowledge they are still employed (Uriarte, 2008).

3. **Knowledge Acquisition:** Knowledge acquisition is an active process. Therefore, Organizations in general and SMEs in particular need to continuously acquire new knowledge from internal and external sources to lead them to innovate effectively (Quintas et al., 1997). A lack of internal intellectual resources may drive the firm towards external knowledge-acquisition (Cassiman & Veugelers, 2006). External knowledge-acquisition can happen in different ways either through formal or informal ways such as creating alliances and collaboration with other entities and individuals or hiring staff with high experiences and distinguished skills. (Davenport, 2005). According to (Grimpe & Kaiser, 2010), the external knowledge-acquisition through R&D may lead the organization to some potential benefits, such as reducing the cost of full time employment and manage the time in an efficient way.

Building external relationships such as social interaction with customers and stakeholders plays a critical role in facilitating knowledge-acquisition and exploitation and that depends on the amount of social capital embedded in such relationships. Thus, organizations are able to enhance and increase the depth, efficiency and the quality of mutual knowledge exchanges through these close social interactions (Lane & Lubatkin, 1998). Knowledge-acquisition from these relationships may be exploited to create a competitive advantage through creating new products, enhancing technological service systems, and reducing sales costs (Yli-Renko et al., 2001).

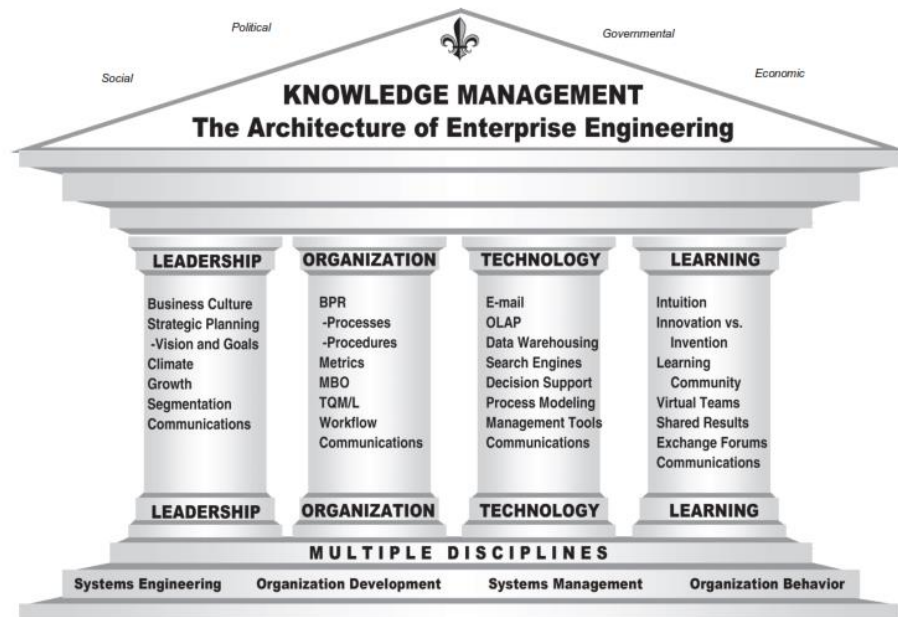
4. **Knowledge Implementation:** Implementing KM remains a challenging task for many businesses and organizations (K. Y. Wong & Aspinwall, 2004). To ensure a good KM implementation, it is essential to build a suitable strategy. Thus, a knowledge management implementation strategy must constitutes a central tenet of the whole business strategy (Sunassee & Sewry, 2002).

Knowledge Management Requirements

One of the most effective way to implement Knowledge Management is through making a good integration of KM and business process workflows. So, employees capture and share knowledge as standard part of the business process. Also, employees will be involved in KM more easily when they know the value proposition for their participation. When employees have the same goals as the organizations they work for; then they will be more motivated to participate in KM (John Parker, 2012).

Ensuring an effective implementation of KM in organizations necessitates some requirements. Dr. Michael Stankosky and associates of the George Washington University Institute of Knowledge Management developed a structure consists of four pillars. These pillars represent critical success factors for KM implementation (Bixler, 2002).

Figure (2.4): critical success factors for KM implementation



Source: (Kebede, 2016)

Here is a brief summary of the four KM implementation pillars shown in figure (2.4):

1. **Leadership:** Deals with the environmental, business and operational strategies including the values, objectives, requirements and sources of knowledge, prioritization, and resource allocation of the organization's knowledge assets (Kebede, 2016). A successful implementation of a KM system requires a good leader at or near the top of an organization who can lead the organization and its employees to a positive change (Bixler, 2002).
2. **Organization:** KM works as a catalyst to transform the culture of the organization. So, the application of knowledge management in the enterprise requires organizational change (Bixler, 2002). Organizations should deal with the aspects of operation of the knowledge assets, including functions, processes, and the structure of the organizations (Kebede, 2016). Also, creating a culture that support KM practices through the organization should represents a high priority for the top management level, whereas designing a systematic formal framework for KM practices depends on rewarding employees for sharing their knowledge can provide employees and managers with clearly defined roles and responsibilities for using knowledge in a good way to enhance the organization's competitiveness. Taking into consideration that KM activities should come after reengineering process not in parallel with it (Bergeron, 2003).
3. **Learning:** Learning represents an essential part of knowledge management (Bixler, 2002). It deals with creating a learning organization. It focuses on organizational behavioral and social aspects. So, the bedrock of learning concentrate on the principles and practices that leads individuals to be more interactive and more aware about the benefits

of sharing knowledge and experiences to the maximum (Kebede, 2016). Learning is considered as the acquisition of knowledge or skills through studies, experiences or instructions. Enterprises must recognize that people learn from each other through interaction, communication, knowledge sharing and building on each other's ideas. So, managers must realize that the best way for create, share and acquire knowledge takes place through a connected process of learning and social interaction (Bixler, 2002).

4. Technology: Technology provides proper environment and tools to ensure a good and smooth KM implementation, while the absence of suitable tools or technology can lead to failure (Bixler, 2002).

Knowledge Management Models

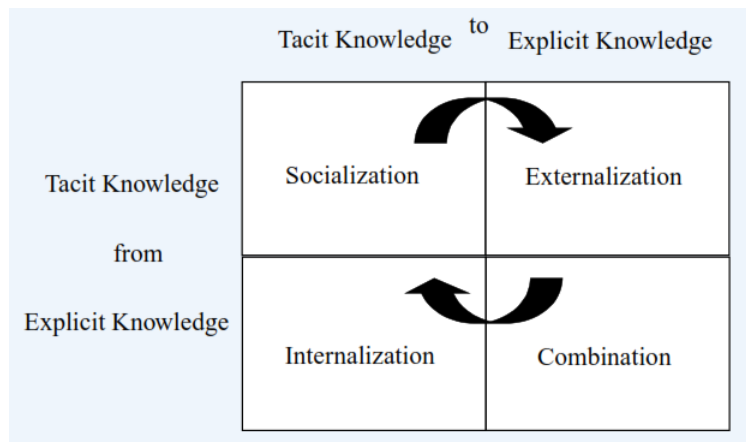
Knowledge management requires organized frameworks which are needed to ensure a good implementation of KM practices. At this part some of well-known KM models are presented. These models were selected because they present a holistic approach of KM, they discussed extensively in the KM literature and they have been implemented and tested with respect to reliability and validity. The following are the most popular KM models based on (Dalkir, 2013).

1. The Nonaka and Takeuchi Knowledge Spiral Model: This model was developed after the success factors of Japanese companies have been studied. The two researchers discovered that the creativity and innovation of those companies did not come from a mechanical process but from elements extremely subjective, especially from the approach oriented much more to the tacit knowledge. The researchers noticed two cultures, western cultures looks to the holder of knowledge (mind) and the physical element as separate entities (Dalkir, 2013). On the other hand, oriental culture believes in unity: mankind and nature, body and mind. In such an environment, knowledge is mainly found not individually but in groups, so; it is easy to be converted, shared and transferred (Cristea & CĂPAȚÎNĂ, 2009).

Nonaka and Takeuchi stress that there is a necessity to integrate both kinds of cultures, in order to gain better instruments. Knowledge creation starts always at the individual level. Beginning from this personal knowledge, mostly tacit, the organizational knowledge would be obtained. Making personal knowledge accessible to others in the company represents the core of this KM model. This type of knowledge creation process takes place as a connected chain in all organizational levels. Knowing that, the creation of knowledge may happens in an unexpected or unplanned way (Dalkir, 2013).

The following figure shows the stages involved in the process of knowledge creation:

Figure (2.5): The Nonaka and Takeuchi Model of Knowledge Conversion

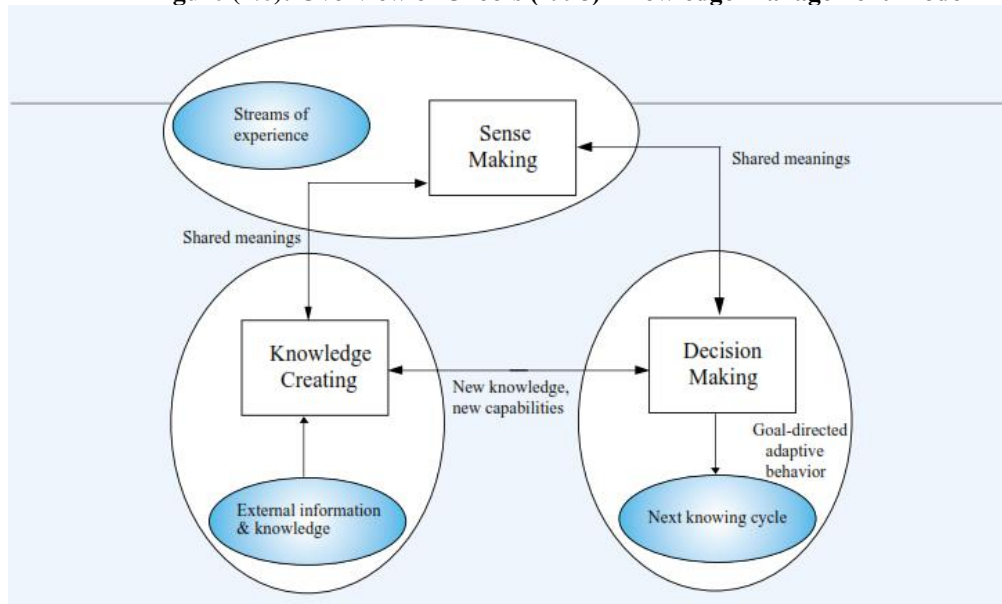


Source: (Dalkir, 2013)

There are four modes of knowledge conversion, as illustrated in figure (2.5):

- a. **Socialization:** From tacit knowledge to tacit knowledge. It relies on sharing knowledge by direct social interactions.
 - b. **Externalization:** From tacit knowledge to explicit knowledge. It offers a tangible form of tacit knowledge by converting it to explicit knowledge. Once knowledge is externalized and became tangible and permanent. It can be easily shared and spread in organization.
 - c. **Combination:** From explicit knowledge to explicit knowledge. There is no knowledge which it is created by itself – it represents a new combination or a representation of an existing knowledge. This process deals with combining knowledge parts to build new forms of knowledge.
 - d. **Internalization:** From explicit knowledge to tacit knowledge. This mode deals with converting shared and/or personal experiences and knowledge to individual mental models. This mode relies on the process of learning by practice (Dalkir, 2013).
2. **The Choo's Knowledge Management Model:** The Choo model is considered as one of the more “realistic” or feasible models of KM. The Choo KM model is particularly well suited to simulations and hypothesis - or scenario-testing applications (Dalkir, 2013). Choo (1998) confirms that the “knowing organizations” are those which use information strategically in the context of three areas; (a) sense making, (b) knowledge creation and (c) decision making. These three areas are highly integrated processes play a vital in making a clear knowledge vision for an organization (Alvarenga Neto et al., 2009).

Figure (2.6): Overview of Choo's (1998) Knowledge Management Model



Source: (Dalkir, 2013)

Knowledge creation can be viewed as the transformation of personal knowledge between individuals through daily interaction activities such as dialogue, discourse, sharing, and storytelling. This phase plays an important role in developing the situation of the current knowledge level to the desired level (Dalkir, 2013). Uncertainty is one of the most common issues that organizations face. Sense making is a long-term goal; it is considered as a guarantee that organizations will adapt and continue to succeed and flourish in a dynamic and turbulent environment through activities that may drive to understand changes, orientations and scenarios about clients, suppliers, competitors and other external environment players (Cristea & CĂPAȚÎNĂ, 2009). The third component of Choo's model involves decision-making. Where the organization must choose the best option among many alternatives according to the strategy of the organization (Alvarenga Neto et al., 2009).

3. The Wiig Model for Building and Using Knowledge: Wiig (1993) approached his KM model based on a specific principle states that; "in order for knowledge to be useful and valuable, it must be organized". Knowledge should be organized in several ways according to the use and purpose of that knowledge (Dalkir, 2013). Also, this model treats the problem of the suitability of the Knowledge coming from a specific source. The source can be; minds of the people or different knowledge bases, tacit or explicit (Cristea & CĂPAȚÎNĂ, 2009).

Dalkir (2013), clarified that Wiig KM model consists of four useful dimensions:

- a. Completeness: how much relevant knowledge is available from given source? Sources may be human minds or knowledge bases (i.e., tacit or explicit knowledge).
- b. Connectedness: refers to the well-understood and defined relations between the several knowledge areas.

- c. Congruency: It is said that knowledge has congruence when all the facts, concepts, perspectives, values, judgments and relational links between the knowledge objects are consistent. The illogical inconsistencies, internal conflicts and misunderstandings should not exist.
- d. Perspective and purpose: reference to the phenomenon through which we “know something” but often from a particular opinion or for a specific purpose. We organize a lot of our knowledge using the dual dimensions of perspective and purpose (e.g., just-in-time knowledge retrieval or just enough “on-demand” knowledge).

Wiig model defines many levels regarding the internalization of knowledge. The following table presents each level:

Table (2.4): Degrees of internalization in Wiig model

Level	Type	Description
1	Novice	Hardly aware or not aware of the knowledge and how it can be utilized.
2	Beginner	Knows about the existence of knowledge and the way to acquire it, but the way of using it still vague.
3	Competent	Knows about the knowledge, but the possibility of utilizing and employing it is limited.
4	Expert	Keeps the knowledge in mind, understands where to apply it, and deals with knowledge without any external intervention.
5	Master	Internalizes the knowledge completely. Has an in-depth understanding with full integration into values, judgments, and consequences of using that knowledge.

Source: (Dalkir, 2013)

Also and according to Dalkir, Wiig (1993) defines three major forms and four types of knowledge:

- a. Forms of knowledge
 - i. Public knowledge, which is explicit and taught that is generally available in the public domain. For example, a published article, book or information on a public website.
 - ii. Shared expertise, which is proprietary knowledge assets that are exclusively held by knowledge workers and shared in their work or embedded in technology. This form of knowledge is usually communicated via specialized languages and representations.
 - iii. Personal knowledge, which is the least accessible but most complete form of knowledge. It is typically more tacit than explicit and is used non-consciously in work, play, and daily life.
- b. Types of knowledge:
 - i. Factual knowledge; deals with data and causal chains, measurements, and readings; usually it is directly observable and verifiable.
 - ii. Conceptual knowledge; contains systems, concepts, and viewpoints (e.g., concept of a track record, a bullish market).

- iii. Expectational knowledge concerns judgments, hypotheses, and expectations held by knowers.
- iv. Methodological knowledge deals with reasoning, strategies, decision-making methods, and other techniques. For example; learning from historical mistakes or forecasting based on trends analyses.

Together, the three forms of knowledge and the four types of knowledge combine to yield a KM matrix that forms the basis of the Wiig KM model. Table (5) outlines the Wiig KM model.

Table (2.5): The Wiig Matrix

Knowledge form	Knowledge Type			
	Factual	Conceptual	Expectational	Methodological
Public	Measuring	Stability, Balance	When stock value exceeds the request, the price drops	Searching for values in variables outside norms
Shared	Forecasts analysis	Market is hot	A small addition will not generate sell problems	The identification of some errors from the past
Personal	The value of the variable is the most suited	The company has very good track records	The suspicion that an analyst made a mistake.	What are the most recent tendencies

Source: (Dalkir, 2013)

The Wiig KM model is probably the most realistic model these days and can easily be integrated into any of the other approaches. This model enables practitioners to adopt a more detailed or refined approach to managing knowledge based on the type of knowledge but goes beyond the simple dualistic (tacit/explicit) knowledge. Its major shortcoming is the lack of research and practical experience involving the implementation of this model.

From the previous models that are used in KM, it is clear that there are differences in how to create value for organizations according to the context of each organization, organization’s goals and the culture of its employees. These differences reflect in choosing and applying the most appropriate model in order to managing knowledge effectively and achieving the organizational goals. These models are used also to explain what happening now and to provide a road map for getting organizations where they want to be with their KM efforts. The following table differentiates between the previous three KM models in the light of literature review:

Table (2.6): Summary of KM models

KM Model	Focuses on
Nonaka and Takeuchi Knowledge Spiral Model	<ul style="list-style-type: none">- Making knowledge shareable- Converting tacit knowledge to explicit and facilitate knowledge transfer.- Focuses in knowledge creation and produce innovation.- This model has become the cornerstone of knowledge creation and transfer theory.
The Choo's KM Model	<ul style="list-style-type: none">- This model focuses on sense making, knowledge creation and decision making. These three highly interconnected processes play a major role in the unfoldment of the organization's knowledge vision.
The Wiig Model for Building and Using Knowledge	<ul style="list-style-type: none">- Well understood relations between knowledge object.- The purpose of knowledge is very important at this model.- Essential dimensions in the WIIG KM model are:<ul style="list-style-type: none">▪ Completeness▪ Connectedness▪ Congruency and▪ Perspective and purpose

Source: Articulated by the researcher based on the above models from literature review

Section Three: Innovation

Introduction

This section clarifies the concept of innovation in 21st century. The first part gives an overview about innovation and its existence, innovation forms and requirements. The second part lists some definitions of innovation. The relationship between KM and innovation is shown in the third part of this section.

Innovation Overview

There is a consensus that innovation is an essential driver for economic growth due to its role in increasing productivity. This is quite true for the advanced economies, which are increasingly depending on innovation and entrepreneurship for their sustained growth (Bottazzi et al., 2003).

Innovative activities produces the rapidly technological change, these activities include smart investments in intangibles such as research and development (R&D) which impacts positively in the long term on both sides; employment rates and incomes. The most advanced economies are depending on innovative practices that stand on a well-structured knowledge with high skill levels (Gualandri & Venturelli, 2008).

Innovative firms grow twice as fast as firms that fail to be innovative. Innovation is not about opening up new markets and increase the firms' sales, thus it can be found in services by offering new and smart ways of serving. Public services like healthcare, education and social security may not generate profits but they do affect the quality of life for millions of people (TIDD & Bessant, 2005).

Gualandri and Venturelli (2008), indicated that enterprises seek to rise their innovativeness level to attain their own competitive advantages; and through their innovation processes and technological changes, they try to expand their market share by achieving lower costs than their competitors.

Innovation occurs at the micro level mainly technical innovation in products (goods and services) and processes. And (Gualandri & Venturelli, 2008) stated that the innovation process includes all scientific, technological, organizational, financial and commercial changes which intended to lead to the new technological implementation and improved products or processes. Technological innovation transforms scientific and technological ideas into new products and processes.

The innovation process may depends on one type of innovation or may consists of a combination of various forms. The main forms of innovation are:

1. Innovation in organizational processes and models.
2. Market innovation, involving the extension of existing products and services to new markets or customers;

3. Marketing innovation, with changes to design and packaging, product positioning, pricing and forms of promotion;
4. Management innovation, in which the management processes and culture are modified; and
5. Infrastructural innovation (Gualandri & Venturelli, 2008).

Innovation Definitions

There are plentiful definitions of innovation in the literature; however, most definitions share the same concept in regard to knowledge, which may be transformed into new products, processes and services to upgrade competitive advantage and meet customers' changing needs (Nyström, 1990), and may be that link between knowledge and innovation comes from the repeated question in the mind of entrepreneurs and CEOs about how to find creative people or how to train people to think outside the box? This question stump most senior executives who know that the ability to innovate is the “secret sauce” of business success (Dyer et al., 2013), so the base of creating innovators is to success in managing the knowledge assets that exist in organizations.

Every business leader agrees that innovation represents an important part of their work. But nobody can quite seem to agree on what it actually is or what it means. The definitions of innovation may vary in their wording, but all of these definitions stress the need to complete the development and exploitation aspects of new knowledge (TIDD & Bessant, 2005). The most studies clarify that innovation heavily depends on knowledge. And table (2.7) lists some definitions of innovation:

Table (2.7): Innovation Definitions

Reference	Definition
(Orlay, 1993)	“Something that is new or improved done by an enterprise to create significantly added value either directly for the enterprise or directly for its customer”
(Trott, 2008)	A process of integrated activities starting from ideas, passing through inventions and ending to their commercialization, where new knowledge is created and applied through these activities.
(A. Wong et al., 2009)	“Designing and implementing the new processes and products effectively to maximize the organization's benefits and to make customers and stakeholders more satisfied”.
(Baregheh et al., 2009)	Innovation is a process with several stages, where organizations exert efforts to transform their ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.
(Robles, 2010)	“Innovation is proportional to the rate of change of knowledge, and that happens when your knowledge about something increases in a very high rate with a very short period of time”
(Lacity & Willcocks, 2014)	Something that improves the service or product provided to customer or reduces its costs, either it is novel or not.

Source: Articulated by the researcher based on the above-mentioned references

Innovation Requirements for SMEs

Reaching the innovative state has different techniques because the nature of innovation varies by industry, and the requirements for innovation are different in different market contexts and competitive environments. For example, companies in the manufacturing industry tend to invest relatively heavily in product innovation and operational innovation, while companies in service industries will tend to prioritise service innovation (Mackinnon, 2007).

The requirements for innovation may be quite different for organizations at different stages. However, there are essential requirements should be achieved, all or some of them, in order to reach organizations to be innovative. According to (OECD, 2004) ,the most important innovation requirements for SMEs are:

1. Ensuring the stability of surrounding conditions to support the entrepreneurship environment.
2. Promoting the culture of entrepreneurship, particularly through training and education.
3. Integrating entrepreneurship at the whole levels of the formal education system, ensuring access to information, skills and expertise relating to entrepreneurship via “lifelong learning” programmes and providing focused vocational training courses.
4. Linking the local development dimension with entrepreneurship projects.
5. Strengthening the factual and analytical basis for policy-making so that policy-makers can take decisions in an informed manner based on empirical evidence.

The relationship between KM and Innovation

The relationship between KM and innovation has been widely discussed during the past years, but the majority of the studies investigated this relationship in large companies. Most researchers reach a consensus that the process of innovation depends heavily on knowledge and the way of managing it. Today, knowledge management becomes an essential managerial task that helps management and organizations in shaping a sound innovation strategy (Lu et al., 2008).

In the literature review it is very clear that companies that incorporate knowledge and innovation as an essential part of organizational management obtain a significant higher operating profit and competitive advantage than those that do not incorporate them (Cuevas-Vargas et al., 2014). For a proper understanding of innovation and its relationship with knowledge (Baycan, 2013) highlights that innovation is an evolutionary, non-linear and interactive undertaking that requires intensive communication and cooperation to facilitate and ensure a continues flow of knowledge, resources and human capital between several bodies like; employees themselves, firms and other organizations such as universities, technology centres, educational establishments, and governments.

Accordingly; innovation is a process which requires an integrated set of resources and measures. And businesses cannot refer innovation to a single resource and they cannot look at a single metric to determine whether they are more innovative than their competitors or

more innovative than a year ago. So, the innovative process is a connected chain that highly dependent on investing in the human capital through enhancing their skills and abilities, enriching their knowledge and experiences, building models for continues learning and creating a fertile environment for innovation (Davila et al., 2012).

The innovation level highly depends on knowledge and knowledge management (Gloet & Terziovski, 2004). Sound and valuable knowledge is created and converted into products, services and processes, especially tacit knowledge while it is viewed as an important factor for competitive advantage (Choy et al., 2006).

Section Four: ICT Small and Medium Enterprises in the Gaza-Strip Context

Introduction

This section presents the dual role of KM and innovation in the SMEs environment and focuses SMEs and ICT sector in the context of the Gaza Strip. The SMEs status in an innovative environment with a massive amount of knowledge is presented in the first part of this section. An overview with some facts about SMEs and ICT enterprises in the Gaza-Strip are presented in the second part of this section. The third part presents the definition of SMEs from different point of views and distinguish between the definition of SMEs in developing and developed countries. SMEs work in the ICT sector in Palestine and Gaza and how they contribute at job creation and employment. The last part lists the main challenges that face SMEs in the Gaza Strip, which should be taken in consideration.

KM and Innovation in the SMEs Environment

Innovation is the life blood of our global economy, and companies that do not invest in innovation; put their future at risk (TIDD & Bessant, 2005). For organizations, innovation represents a great opportunity not only to grow and survive, but also to significantly influence their directions (Davila et al., 2012). The UK office of science and innovation sees the innovation as ‘the motor of the modern economy, turning ideas and knowledge into products and services’(Chesbrough, 2011).

As the famous management writer Peter Drucker said: “Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced” (Drucker, 2014).

In the light of the foregoing, it is obvious that innovation is the heart of entrepreneurship and it is essential for entrepreneurs to search for the sources of innovation. And they need to know and to apply the principles of successful innovation. Roxas (2008), states that the innovation performance at SMEs depends on to the overall creative conduct in using the new and existing knowledge, experiences and ideas in order to solve the existing or future problems. One of the recent studies found that innovation strategy represents a key driver to the success and distinguish of SMEs (Terziovski, 2010).

When we talk about innovation then we talk about a management process and an integral part of the business mentality. It is about encourages truly significant value creation that leads to gain a competitive advantage which represents an essential element for SMEs (Davila et al., 2012).

Even though, SMEs are faced, at the same time, with a series of constraints that may hinder them from initiating or completing their innovative ideas (Kamalian et al., 2011). One of the

recent European report and based in many studies identified the most relevant barriers that hinder SMEs' innovation capacity:

1. The scarcity of financial resources and lack access to finance;
2. Lack of skills needed to manage innovation;
3. Insufficient marketing of innovation and of innovative products and services;
4. Lack of individual and/or collaborative research capabilities in most firms and in particular SMEs;
5. Lack of networking and building smooth relations with external bodies (Inova, 2013).

The rapid technological development and the use of internet in most enterprises make the interaction with clients, suppliers and consumers more easier than before (S. Chen, 1997), which produces significant changes in the nature of the enterprises. So, the newly created business environments require from SMEs to build and improve the skills on a specialization of knowledge in order to improve their innovativeness and provide products and services that are more adequate to their consumer than the ones provided by their competition (Lu et al., 2008).

In SMEs, there are fewer levels of management because it is often managers themselves are the owners. This means that decision-making is shorter than in large organizations (Nada et al., 2012) and the ability to share knowledge and create a good strategy at SMEs is easier than in large organization.

Kiessling et al. (2009), suggest that KM positively affects organizational outcomes, such as the firm's innovation, product improvement and employee improvement. Other research has indicated that applying KM practices in SMEs positively and directly influence and increase staff performance, productivity, innovation and customer satisfaction (Gholami et al., 2013), and that could happen by collecting information from the customers, suppliers and other stakeholders of SMEs and organizing the collected knowledge through modern informational technologies or activities to share this knowledge throughout all organizational levels and implement the shared knowledge in ways that could help to overcome challenges, improve performance, gain competitive advantage and finally reach to a good innovative level (Gholami et al., 2013).

Drucker (2014), represents entrepreneurs as a core of SMEs and innovation as the fuel of entrepreneurs. Also, Drucker describe innovation as a specific trait of entrepreneurs who need to develop their abilities, knowledge and skills continuously to apply the principles of developing a good innovative process thus, assure the high competitive advantages for their SMEs.

SMEs and ICT Enterprises in the Gaza-Strip

Various studies have been conducted on the importance of the SMEs sector, especially in developing countries. Nowadays, a competitive SME sector is considered to be a core component for sustainable development and responsive to the demands of globalization (Roxas, 2008). Palestine in general and Gaza Strip in particular suffers of harsh economic and social conditions, high poverty and high unemployment rate thus the overall unemployment stands at 41.5%, while youth unemployment rates have increased from 28% to 68% at the end of 2014 (Santos, 2016). That means Gaza needs more new enterprises and more entrepreneurs. Whereas, economic growth and development require an effective number of start-ups, which are likely to increase the opportunity of employment and job creation (Elfarra, 2016).

Despite of the unstable and tense situation in Palestine, there are obvious efforts towards economic progress through the expansion of creating businesses and enterprises by citizens themselves and seeking to be self-reliant. And that is demonstrated through the official statistics which count roughly 130,000 business establishments in Palestine, two-thirds of these establishments are located in the West Bank, while one-third is located in Gaza, knowing that 85% of these businesses are entrepreneurship (Martin Brown, 2015).

Small and Medium Enterprises Definition

There is no formal and general unified definition of SMEs even within one country and that is refer to the different SMEs classification's criteria. Thus, the size of SMEs is classified in term of number of employees, capital assets, value added and sales turnover; and this classification differs from country to country (Ardic et al. 2011|2011). Also, most countries use a combination of the number of employees and the assets value in their SMEs' definition (Sous, 2005).

Definition of SMEs in Developed and Developing Countries

SMEs represent the majority of all enterprises. In most of developed countries, SMEs represent around 90% out of total enterprises, while around 60% of available workforce is employed in those businesses (Stefanović et al., 2013). Also, experts in development economics point out that, the vast majority of entrepreneurs in developing countries are involved in micro and small enterprises (MSE), often informal, contributing little to cooperative development, poverty reduction and national growth (Naudé, 2010).

Dababneh and Tukan (2007), assessed many indicators that were commonly used as definition criteria in terms of their relevancy to the size of an enterprise and ease of measurability. The following table summarizes the assessment results:

Table (2.8): Relevance and Measurability of Different indicators for SMEs definition

Relevance and Measurability of Different Indicators		
Indicator	Relevance	Measurability on a national level
Number of Employees	H	H
Annual Sales	M/H	L
Total Assets	M/H	L
Registered Capital	L	H
Total Credit Facilities	L	M
Qualitative Indicators	M	L
H: High M: Medium L: Low		

Source: Dababneh and Tukan (2007)

In light of the above table, three criteria appeared at the forefront of the total studied criteria to for an SME definition: The number of employees, annual sales and total assets. Based on that results, Dababneh & Tukan recommended that the number of employees' indicator is an essential indicator that any enterprise must fall within in order to be defined as an SME.

The United Nations Industrial Development Organization, UNIDO, placed specific emphasis on supporting SMEs because of their leading role in many developing countries (Hobohm, 2001). Also, UNIDO defines SMEs as shown in the following table based on the employees' number and by classifying countries into developing and developed (industrialized) countries:

Table (2.9): SMEs definition according to UNIDO in terms of employees' number

Country	Classification	No. of Employees
Developed Countries	Small	99 or less workers
	Medium	100 – 499 workers
	Large	500 or more workers
Developing Countries	Micro	Less than 5 workers
	Small	5 -19 workers
	Medium	20 – 99 workers
	Large	100 or more workers

Source: (Abor & Quartey, 2010)

Based on the definitions of UNIDO and other researchers, it is clear that definitions varying by countries, and it is important now to investigate the definitions of SMEs in the Palestinian Territories.

Definition of SMEs in Palestine

In the recent years, there is a clear interest in SMEs among different sectors in Palestine such as; academic field, economic field and civil society institutions. Nevertheless, and as (Sous, 2005) showed in his study; there is no clear classification for SMEs in Palestine. Also, there is no accurate or reliable statistics about the number and the scope of SMEs in Palestine. In addition, a great portion of small firms are operating within informal sectors, so they are not registered officially and not counted in any statistical survey.

According to many studies and official reports from different developing countries it is clear that the most widely used criterion to define SMEs is the number of employees. Accordingly, and for statistical purposes, the Palestinian Centre Bureau of Statistics (PCBS) uses the following classifications of enterprises, according to number of employees:

Table (2.10): Classification of enterprises according to PCBS

Definition according to number of employees				
Indicator	Micro Enterprise	Small Enterprise	Medium Enterprise	Large Enterprise
# Employees	1-4	5-19	20-49	50 - more

Source: (PCBS, 2013)

Either in developed or developing countries like Palestine; the high importance of the number of employees as an indicator of defining SMEs comes from the ease of counting and measuring. Therefore, and based on the previous developed table; “SMEs are those enterprises that employ between 5 and 49 employees. Small enterprises are those employing between 5 and 19 employees whereas medium enterprises would be those employing between 20 and 49 employees”.

ICT SMEs in Palestine and Gaza

Over the past few years, Palestine like many other developing countries has improved its capacity to use the ICT sector as a vehicle for economic growth and improvement the quality of people’s life especially in the besieged Gaza. Whereas the advancement of software development, Business Process Outsourcing (BPO)/Information Technology Outsourcing (ITO) and telecommunications technology is not totally limited by the physical movement of goods or people (Sous, 2005).

According to (Corps, 2013), the ICT sector in Palestine represents one of the economic and growth pillars for the Palestinian private sector and the Palestinian Authority. In 2013, the ICT sector employed 3% of the Palestinian workforce with more than 8% contribution to the overall Palestinian GDP and that is because the employees in this field are highly productive and creative. Also, the ICT sector contributes to the overall economy and opens the door of employment to many people; thus, there are many employment opportunities are created in other sectors for every worker employed in the ICT sector. Furthermore, the work at ICT sector in a productive and fruitful way is required and considered as a fundamental component of national infrastructure to facilitate and improve the living conditions and standards particularly in public services.

Job Creation and Employment by Small and Medium Enterprises

SMEs represent central nerve of the national economic development. Where small and medium enterprises play an important role in the distribution of income tax returns and job creation, efficient use of resources and the stability of the family's income (Kongolo, 2010).

In the Arab countries, there is a consensus that SMEs are one of the effective solutions for reducing the unemployment rate and providing job opportunities to a broad base of Arab workforce estimated at about one third of the workforce or more. Furthermore, SMEs help at attracting more foreign investment to the Arab region, which means create livelihoods for millions of needy families and enhance the economies of Arab countries (Elasrag, 2012). The Palestinian economy is considered as an emerging economy with moderate level in human development and relatively high advancement level in education including women who are relatively well educated in comparison to other developing countries (Sabri, 2008).

In Palestine, it is noticeable that the most SMEs are categorized under sole-proprietorship, established for self-employment or family employment purposes. These SMEs serve the local market with highly competitive and fierce environment among themselves (Corps, 2013). Thus, Around 97% of the economic units in Palestine are classified under SMEs units working with around 10 employees (Sabri, 2008).

SMEs Enhancement and Empowerment in Gaza

Entrepreneurship is strongly connected to small and medium sized enterprises (SMEs), which represent the main developing force of the market economies in the developed countries (Stefanović et al., 2013).

In Palestine, the Palestinian government shows a limited contribution in enhancing and supporting SMEs, since the official policy prefers to support large firms, in order to have more job opportunities and to use more advanced technology (Sabri, 2008). On the other hand, SMEs receive an obvious attention from various parties other than the official bodies such as:

1. Many local Palestinian universities started in promoting entrepreneurship culture in Palestine, such as Islamic University of Gaza. The business and technology incubator at IUG aims at transforming the ideas of entrepreneurs into a start-up by the end of the incubation period. Also, it helps SMEs to develop their businesses and knowledge (Elfarrar, 2016).
2. The Palestine Information and Communications Technology Incubator (PICTI), was established in 2004 to provide business and consultancy services to Palestinian entrepreneurs who have unique and innovative projects in various fields. It helps entrepreneurs to exchange technical know-how, develop best practices, develop mentorship programs, organize activities, capacity building and boot camp events, gain donor funding, as well as utilize existing access to international networks (PICTI, 2016).

3. The Palestine Information Technology Association of Companies (PITA), represents more than 143 ICT firms and it is considered as a reference for the ICT sector in Palestine. PITA aims at enhancing the ICT sector in Palestine towards a knowledge and innovation based economy through providing a good business environment, developing a qualified pool of ICT professionals, and improving the positioning of the ICT sector in Palestine internationally by increasing the sector's competitiveness in international markets (Corps, 2013).
4. Palestine Investment Fund (PIF), was established in 2003 as an independent public limited company. The mission of PIF is to empower the Palestinian private sector and contribute to the building of a strong and vital national economy as one of the most important pillars of the future Palestinian state and to enhance its ability in attracting investments. It also seeks to make strategic investments in developmental projects which would be able to create jobs and contribute in sustainable development (PIF, 2015).

SMEs Challenges in Gaza

Elfarrar (2016) stated that entrepreneurs and experts in Gaza agree on most of the factors lead business success in Gaza, thus they found that the most important factors for entrepreneurs' success were;

1. Good management skills
2. Previous experience
3. Marketing and sales promotions
4. Competitive price
5. Good customer services
6. Hard work
7. Access to capital and social skills

While some researchers refer the business success, especially at SMEs, to the high-quality communications, knowledge sharing, energy, enthusiasm and passion for innovation (TIDD & Bessant, 2005). On the other hand (Bayyoud & Sayyad, 2016), tried to reveal the obstacles facing the growth of SMEs in Palestine. And the findings of that study shows that there are high significant challenges and obstacles face SMEs performance in Palestine such as:

1. Instability of political and economic situations,
2. All export and import channels of Palestinian goods are under Israeli control,
3. Lack of skills needed to compete and create a positive competitive environment
4. Lack of skills needed to enter new markets.

Also, and according to (Sabri, 2008), SMEs in general suffer from both internal and external factors as follow.

Internal factors such as:

1. Limited knowledge in international marketing and insufficient management skills, where the majority of SMEs are owned and run by individuals, or by family members.
2. Insufficient equipment, Lack of R&D, SMEs culture follows imitation rather than innovation (except for SMEs in ICT sector).

External factors such as:

1. Political and economic instability
2. New entrants: heavy inflow to cheaper Jordanian, Turkish and other products into the Palestinian market.
3. Lack of supportive Government Policies and Incentive programs for SMEs

Also, PITA showed the following weaknesses that present obstacles toward the growth of the SMEs work in the ICT sector in Palestine (Corps, 2013):

1. The significant gap between the skills and knowledge level of fresh graduates and job market demand.
2. A weak innovative environment for entrepreneurs
3. The absence of integration between IT professionals in the Gaza Strip and the West Bank
4. Limited funding opportunities to support SMEs, where the financing priority goes toward charity works
5. Limited ability of the government to support education, research and development (R&D) in ICT.

Chapter Three

Previous Studies

Chapter Three Previous Studies

Introduction

Many studies have investigated the importance and the relationship between knowledge management and innovation either on large companies or in SMEs. This chapter will focus on studies that carried out innovation and KM aspects and it will also provide a brief synopsis of each of them. This chapter presents 23 previous studies related to the scope of this research. 19 of these studies are foreign and discuss KM and innovation concepts from out of the context of Palestine. Moreover, four are three local and Arabic studies present those concepts in the context of the Gaza strip. The studies were arranged chronologically from newer to older.

Foreign Studies

1. Maldonado-Guzmán, Lopez-Torres, Garza-Reyes, Kumar, Martinez-Covarrubias and Sarkis (2016), Knowledge management as intellectual property: Evidence from Mexican manufacturing SMEs

The purpose of this study is to explore the relationship between knowledge management and intellectual property creation within the context of SMEs manufacturing enterprises. Data were collected through an instrument that was developed based on key constructs adapted from the literature review. An empirical research was conducted in 130 manufacturing SMEs from the Aguascalientes region of Mexico by distributing questionnaires. 125 valid responses were obtained.

Research Results:

1. Positive effects exist between knowledge management and creation of intellectual property in manufacturing SMEs.

Research Recommendations:

- a. More studies are needed for a better understanding of the dynamics of managing knowledge and the creation of intellectual property.
- b. Managers should be able to take better and more effective decisions regarding the creation, management and protection of the knowledge that is created and acquired by their organizations.

2. Dickel and de Moura (2016), Organizational performance evaluation in intangible criteria: a model based on knowledge management and innovation management

This study aims at developing a model to measure organizational performance with a focus on knowledge management and innovation management. A quantitative multi-case research study was applied to three companies in the metal-mechanic sector in southern Brazil. Eight methodological steps were used, assessing internal and also external factors of business management.

Research Results:

- a. The study showed that it is possible to evaluate the level and the strength of the bond between knowledge management and innovation, so we can know more precisely on which competitive level the company is.

Research Recommendations:

- a. The researchers recommended that the performance measurement methodology proposed in the study could be used in future studies to serve as a management tool for companies in which innovation management and knowledge management are shown determinants.

3. Alaarj, Abidin-Mohame, and Bustamam (2016), Mediating Role of Trust on the Effects of Knowledge Management Capabilities on Organizational Performance

This study aims at identifying the effects of knowledge process capabilities and knowledge infrastructures capabilities on organizational performance of Malaysian public companies. Also, it studied trust as a variable that mediates between these two groups of variables, thus; trust was proposed to mediate the relationship between the two groups of variables and organizational performance. The researchers used an online questionnaire as the instrument of data collection. The questionnaires were distributed among senior managers who are employed by public listed companies in Malaysia. Ten point Likret scale was used to assess the questions. The scale ranges from (1) strongly disagree and (10) strongly agree. A total of 176 usable questionnaires were returned out of 419 questionnaires were mailed to respondents.

Research Results:

- a. The results showed that there is a direct significant effect of knowledge process capabilities on organizational performance. But there is a direct effect but not significant of knowledge infrastructure capabilities on organizational performance.
- b. Knowledge process capabilities are more important than knowledge infrastructure capabilities.

Research Recommendations:

- a. The proposed methodology for measuring companies' performance could be used in future studies to serve as a management tool for companies looking for managing their knowledge and innovation.
- b. Companies must promote mutual trust between employees. This could make employees more willing to share their knowledge or to ask for information they need from other colleagues.

4. Nowacki and Bachnik (2015), Innovations within knowledge management

The aim of this research is to study the scope of innovative knowledge management. It tries to figure out the level of knowledge management innovations and how KM innovations could affect company's effectiveness such as; its competitiveness, revenues, buyers' satisfaction and its business partners' satisfaction. It tries to reveal which companies are more qualified in order to implement innovative solutions, large companies or SMEs. Thus, the research sample consists of 608 companies; 270 production enterprises, 170 trading companies, and 168 service organizations. As for their size, there are 176 micro-companies, 152 small, 154 medium, and 126 large companies. The Research conducted in the Polish market.

Research Results:

- a. The study found that not all organizations believe in using knowledge management practices. Thus, some organizations do not manage their knowledge resources because they believe it is not useful and the top management does not know this concept.
- b. More than half of the surveyed companies achieve innovations related to three KM processes: acquiring, leveraging and sharing.
- c. KM innovation level rises as the number of the company employees goes up.

Research Recommendations:

- a. Researchers should use tools which enable more precise measurements of the impact of knowledge management innovations.
- b. There are many circumstances force companies to have innovative solutions that will guarantee them superior results should be studied such as; Business environment and competitors.

5. Vesna Bosilj Vukšić, Professor Mirjana Pejić Bach, Inkinen, Kianto, and Vanhala (2015), Knowledge management practices and innovation performance in Finland

The purpose of this study is to investigate the role of applying and managing knowledge management (KM) practices at improving the innovation performance. The study's population includes a cross-industry sample of companies that included only firms with at least 100 employees. An empirical research was conducted in 1,523 companies in Finland during fall 2013 by distributing questionnaires. 259 responses were received out of the total companies, representing a response rate of 17.0 per cent. Most of the respondents held position such as a HR director or manager.

Research Results:

- a. The study provides an empirical evidence on how various KM practices influence innovation performance.

- b. The study showed that firms are capable to support companies' innovation process through strategic management of knowledge and employing information technology practices.

Research Recommendations:

- a. Managers should consider IT as not only a support system for their decision making and daily traditional practices, but also utilize it to achieve improved innovativeness and firm performance.

6. Liao and Barnes (2015), Knowledge acquisition and product innovation flexibility in SMEs

This study aims to investigate the role of knowledge acquisition (KA) in creating product innovation flexibility in SMEs. It also examines two factors of KA process: relationship quality (RQ); and information capability (IC). The data were collected by surveys conducted over the internet. The final target population consisted of 1,796 are listed in business with fewer than 250 employees. An e-mail was sent to the target population describing the purpose of the research and asking them to participate in the survey. Of the 1,796 targeted names, 207 messages were unable to be delivered, leaving a valid sample of 1,589. After three waves of invitation, a total of 118 respondents either agreed to participate or received the survey for completion, yielding 92 usable responses. Structural equation modeling was used to test the hypothetical framework and path analysis was used to test mediation effects.

Research Results:

- a. The results showed that for SMEs, KA mediates the effect of RQ on PIF, and that KA partially mediates the relationship between IC and PIF.

Research Recommendations:

- a. Researchers should make some empirical studies to identify contingency factors, both within and outside the firm. For example, it is needed to examine the interactive effects of environmental uncertainty, distinct cultural factors, and KA on PIF in SMEs.

7. Massingham and Massingham (2014), Does knowledge management produce practical outcomes

This study examines ways that help Knowledge Management (KM) to demonstrate practical value for organizations. The study is based on empirical evidence from a five year longitudinal study (2008-2013). The research is based on a single case study in a public sector organization in Australia. The sample was 118 respondents, mainly engineering and technical workers. A total of 150 respondents were invited to participate in the study which involved an annual survey and attendance at regular training workshops and related activities, with a participation rate of 79 per cent. Seven methods were identified by this research for measuring practical outcomes from Knowledge Management: learning curve,

experience curve, strategic alignment, connectivity, risk management, value management, and psychological contract.

Research Results:

- a. This paper provides a checklist from which to evaluate KM in terms of financial and non-financial measures and seven practical outcomes from which to identify the organizational problem which may be addressed by KM.
- b. It developed a frame work that managers may use this framework to identify the value proposition in any KM investment.

Research Recommendations:

- a. It is recommended to begin with the problem first – is it competency gaps or low productivity (psychological contract), and so on. Then assess the KM investment against the decision criteria. This method should allow managers to make sensible decisions about KM's ROI.

8. Lin (2014), Contextual factors affecting knowledge management diffusion in SMEs.

The purpose of this study is to develop a research model help at investigating the influence of information technology (IT) support, organizational support, sharing culture and environmental (competitive pressure) contexts on the two stage KM diffusion (KM adoption and implementation) in small and medium enterprises (SMEs). A mail survey was sent to SMEs in Taiwan to obtain the empirical data in order to test the hypotheses. The questionnaire items were revised through an accurate pre-testing in order to assess the content validity. A total of 355 questionnaires were distributed among senior managers of the sampled firms. After one follow-up mailing, 311 questionnaires were returned in total. After eliminating the invalid questionnaires, 119 usable questionnaires were received.

Research Results:

- a. The results showed that technological, organizational, and environmental factors have different effects on KM adoption and implementation stages.
- b. The results indicated that IT support has the strongest effect on KM adoption stage, while sharing culture has the strongest effect on KM implementation stage.

Research Recommendations:

- a. This research was conducted in Taiwan. Hence, the research model should be tested further using samples from other countries.

9. María Ruiz-Jiménez and del Mar Fuentes-Fuentes (2013), Knowledge combination, innovation, organizational performance in technology firms

The purpose of this study is to explore and investigate the effects of innovative products and processes on the relationships between knowledge combination capability and organizational performance. The data were collected from SMEs belonging to the sector of Spanish technology-based firms. This study employed the structural equation model (SEM) to examine the relationships between the variables of the study. Out of 7304, the data were gathered from 998 firms contacted randomly. 224 questionnaires were obtained, 19 of them were rejected because the respondent was not the CEO of the targeted firm. So, there were 205 questionnaires valid for use.

Research Results:

- a. The empirical results showed that product and process innovation and knowledge stimulate the performance of technology based firms (TBFs).
- b. The study showed that knowledge combination capabilities are effective for increasing organizational performance.

Research Recommendations:

- a. Knowledge combination capability should be promoted and shared among all employees in the organization to enhance the innovation development process and generate well entrepreneurial results.
- b. Managers should also identify the barriers that prevent employees from sharing and combining their knowledge.

10. Nada, Ghanem, Mesbah and Turkyilmaz (2012), Innovation and Knowledge Management Practice in Turkish SMEs

The purpose of this study is to understand the factors that affect the innovation management process within Turkish SMEs. The study's sample includes 25 SMEs thus, a number of interviews were conducted at these enterprises using three different innovation auditing models to capture and validate best practice techniques.

Research Results:

- a. The Results revealed that most of SMEs lack of some important factors which play a significant role to the overall success of the organization, such as; innovation strategic plan, culture and an assessment approach which measures the innovation's impact.
- b. The existence of leadership characteristics and solid organizational culture of the targeted SMEs helps at creating a climate of creativity.

Research Recommendations:

- a. SMEs should start the process of defining their innovation agenda and deciding their target position compared with the innovation leaders in their industry.
- b. SMEs are also required to establish and formalize change management practices, assess their business components to understand areas of differentiation and opportunities.

- c. SMEs need to educate management and their employees on the value of collaboration and partnering.
- d. SMEs need to identify gaps and opportunities to support their business environment and employ technological know-how in their innovative efforts, both as a source of ideas and opportunities to enable innovation.

11. Gharakhani and Mousakhani (2012), Knowledge management capabilities and SMEs' organizational performance

This study examines the role of knowledge management (KM) capabilities on small to medium-sized enterprises' (SMEs') organizational performance. Data were collected from 30 SMEs in Iran. Each firm received five questionnaires to answer. The response rate was 60 percent. Relevant statistical analytical techniques, including regression for analysis, were then used.

Research Results:

- a. The results showed that all three factors of KM capabilities used at the study (knowledge acquisition, knowledge sharing, and knowledge application) have positive and significant effects on SMEs' organizational performance.
- b. The results provided an empirical evidence that the organization's capacity to manage knowledge plays an important role between strategic HR practices and innovation level.

Research Recommendations:

- a. Managers should manage their organizations' intellectual capital in an active way to facilitate the process of knowledge acquisition, sharing, and application.
- b. The findings of this study are important for both practitioners and academics.

12. Schiuma, Durst, and Wilhelm (2012), Knowledge management and succession planning in SMEs

This study aims at gaining a better understanding of how a medium-sized firm copes with the risk of knowledge loss due to employee exit or long-term absence. Semi-structured interviews were conducted to collect the data from 14 enterprise's members of German SMEs operating in the printing sector which try to distinguish themselves through quality and service. These participants represented different departments and positions.

Research Results:

- a. The study's findings clearly showed that the organization members are aware of the danger of knowledge loss.
- b. The findings demonstrate the influence of a precarious financial situation on activities related to knowledge management and succession planning.

Research Recommendations:

- a. This study pointed out the important role of employing activities related to succession planning and knowledge management activities to tackle the danger of knowledge attrition, especially tacit knowledge.
- b. There is a need for educational institutions and universities to handle with knowledge loss into their curriculum. This would help future managers and business owners to better tackle this issue in an increasingly knowledge driven business environment.

13. Shang, Lin, and Wu (2009), Service innovation through dynamic knowledge management

The purpose of this study is to investigate how an automobile service firm apply dynamic knowledge management concept to create new service processes. The case study examines a KM system developed and implemented by Fortune Motors, an automobile service firm operating in Taiwan. The study is based on an in-depth case study, semi-structured interviews and extensive access to the secondary data on the firm. The authors formally interviewed eight managers. A qualitative approach was used to analyze the data due to the complexity of contextual content. The researchers developed a model provides a guideline could help practitioners in managing and enhancing the existing knowledge management practices.

Research Results:

- a. The study found that the dynamic capabilities of KM established resource uniqueness by synchronizing the internal and external knowledge.
- b. The study showed the importance of applying the KM system and the critical role of dynamic capabilities of KM in transforming the business processes and creating competitive advantages for the company.
- c. KM capability has facilitated the development of other structural components of intellectual capital.

Research Recommendations:

- a. The sample of this study is selected from the automobile service industry. So, adapting the model to other sectors under different context should be cautious.
- b. This study is based on a single case, the findings may not be generalized.

14. C.-J. Chen and Huang (2009), Strategic human resource practices and innovation performance - The mediating role of knowledge management capacity

This study examines the role of knowledge management capacity in the relationship between strategic human resource practices and innovation performance from the knowledge-based view. A regression analysis is used to test the hypotheses in a sample of 146 firms. The study's population is the top 5000 firms in Taiwan, where 750 questionnaires were distributed and requested to be completed by top executives. 146 valid questionnaire were returned and used for quantitative analysis. Variables in the

questionnaire include background information, strategic human resource practices, knowledge management capacity, and innovation performance.

Research Results:

- a. The results indicated that there is a positive relationship between strategic HR practices and knowledge management capacity, which in turn relate positively to innovation performance.
- b. The results provided an empirical evidence that a wise implementation of KM strategies plays a significant role between HR practices and innovation level.

Research Recommendations:

- a. Managers should recognize and promote the importance of knowledge management capacity. Then they should utilize strategic HR practices to cultivate a better level of knowledge management capacity which in turn will result in favorable innovation outcomes.

15. Harris (2009), Improving tacit knowledge transfer within SMEs through e-collaboration

This exploratory research aims at identifying the SMEs' perceptions towards e-learning and the tendency of owner managers to embrace technology based training in the future. This study is a part of a longitudinal research investigates the potential role of the establishment of collaborative learning environment at supporting effective knowledge transfer. The research methodology explored the attitudes and preferences of managers of SMEs based in the West Midlands region of the UK. An interpretive and qualitative approach were used. For this research, a series of four focus groups were undertaken each containing six owner/managers of UK SMEs. The sampling frame was a Chamber of Commerce/Business Link database. The 24 respondents were selected on a systematic basis of their willingness to participate and represented a cross-selection of industry sectors, namely construction, manufacturing, retailing and services.

Research Results:

- a. The study showed that the respondents interviewed recognized that they and the sector as a whole have a wealth of tacit knowledge that offers them significant leverage in the marketplace.
- b. E-learning has the potential to make a significant difference to individual and organizational performance in the small business sector.
- c. The findings from this research endorse the need for a clear and focused approach to e-learning that facilitates social interaction and learning in order to employ the value of shared tacit knowledge.

Research Recommendations:

- a. Government agencies, universities and the private-sector need to maximize their research efforts in order to fully understand the social and cultural implications in order to offer effective solutions that will allow SMEs to manage and develop their tacit knowledge resources effectively.

16. Dwivedi, Papazafeiropoulo, Supyuenyong, Islam, and Kulkarni (2009), Influence of SME characteristics on knowledge management processes. The case study of enterprise resource planning service providers

This study aims to understand the role of special characteristics of SMEs in influencing their KM processes. An exploratory multiple-case research methodology was conducted. Four enterprise resource planning (ERP) service providers were selected to participate in this qualitative study and they allowed the researchers to get in-depth and detailed information. These four companies are diverse in organizational ownership and management structure. Two of them are local Thai companies and two are subsidiaries of multinational (European) companies. The data was collected through direct observation for people who are working in their workplaces in their companies' offices in order to understand the processes, study policies/procedures, and the environment at the operational level. And there are four main data sources: (1) semi-structured interviews; (2) informal discussions; (3) review of documents; and (4) observations of the working environment.

Research Results:

- a. The study analysis demonstrated that, in general, ownership and management structure as well as culture and behavior characteristics of SMEs seem to have a more positive effect than other SME characteristics on KM processes. System, process and procedure, and customer and market characteristics have a more moderate effect. Human capital management seems to hinder somewhat rather than facilitate KM processes.

Research Recommendations:

- a. The study covered four organizations; all of these organizations are ERP service providers. Hence, the results may not directly apply to businesses work in other fields.

17. Oke, Burke and Myers (2007), Innovation types and performance in growing UK SMEs

This study seeks to explore the predominant types of innovation in SMEs in the UK context, and to reveal if they are predominantly radical or incremental, also it seeks to explore the impact of these innovations on performance. A quantitative empirical research approach was chosen to investigate the research questions. The design of the questionnaire used for this study was based on questionnaire items used in previous studies. Where a web-based survey instrument was used to administer survey questionnaires to a sample of UK SMEs in manufacturing, engineering, electronics, information technology and

telecommunications industries. Data was collected from 784 SMEs and the response rate was 13.8 percent. This response rate is due to the nature of the survey.

Research Results:

- a. The results found that the SMEs tend to focus more on incremental than radical innovations, also it found this focus is related to growth in sales turnover.

Research Recommendations:

- a. Further studies are required to validate the findings of this study in different contexts to ensure or generalize the conclusions.

18. Darroch (2005), Knowledge management, innovation and firm performance

The purpose of this study is to provide an empirical evidence that support the importance of knowledge management within firms. Data were collected from a sample of New Zealand organizations with 50 or more employees using a mail survey sent to CEOs representing these firms from a cross-section of industries. A copy of the questionnaire was mailed to potential respondents. A total of 1,743 surveys were mailed out and 443 were returned and usable (27.8 percent response rate).

Research Results:

- a. The study found that a knowledge management capability enables firms to use their resources more efficiently and so will be more innovative and perform better.
- b. Effective knowledge management enables good quality services to be extracted from tangible and intangible resources. Tangible resources such as; financial resources, equipment, buildings and the qualification profile of employees. Intangible resources are more difficult to describe because it is tacit resources.

Research Recommendations:

- a. More researchers should assert the results by further examining the supporting role of knowledge management within firms, taking in their considerations other firms' circumstances.

19. Egbu (2004), Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: an examination of critical success factors

This study aims at exploring the importance of knowledge management (KM) and intellectual capital (IC) in organizations. It considered the critical factors that are leading organizations to achieve successful innovations. This paper was mainly based on findings from three empirical studies conducted in the United Kingdom. The first study was aimed at developing a prototype-training simulator that will provide experiential learning of the cultural aspects of the innovation process in organizations. Four case studies from four different innovative construction organizations has been studied. The second study was

completed in June 2000 and addressed the exchange of knowledge and the auditing of knowledge assets in small and medium enterprises (SMEs). The third study was conducted between October 2000 and 2001 it considered the role of KM and IC in improving innovations. It also explored the role of IT in this regard.

A combination of qualitative and quantitative research methods were employed. Nineteen ethnographic interviews were conducted among five UK project-based organizations to reveal contextually rich descriptions about the nature of KM in these organizations. The interviewees were chosen from senior management, middle management and junior level personnel. These interviews conducted served as multiple case studies. To supplement these findings postal questionnaires were distributed to project-based organizations in UK construction, manufacturing, aerospace and the utilities. Fifty-five usable questionnaires were received. Of these, 40 were from the construction industry. The interviews were analyzed using the NVIVO software package that assisted in establishing relationships between variables. The postal questionnaires were analyzed statistically using the SPSS software package.

Research Results:

- a. The study found that an innovation strategy needs to sit in parallel with the overall organizational strategy.
- b. There is no best strategy for managing innovations in all organizations. However, any meaningful innovation strategy should have unequivocal support from the top management.

Research Recommendations:

- a. Innovation and KM should be seen as long-term strategic concerns.
- b. The employees in construction sector need more education and training in the areas of innovation management, KM and IC for construction competitiveness.

Local and Arabic Studies

1. Abu-Safar (2015), Factors Affecting knowledge Sharing and ERP System Usage in the Context of ERP Post-Implementation

This study aims at investigating the most important factors that affecting on employees' knowledge sharing and ERP usage in post implementation stage. The study was applied on the European Gaza Hospital departments, where the descriptive analytical method was conducted to achieve its goals. The study population consisted of all the staff members who used this system. The questionnaire was used to collect the primary data, where 265 questionnaires were distributed upon staff members, 235 of them were returned with a response rate of 89%.

Research Results:

- a. The study found that social capital, IT support and self-efficacy play vital roles and have significant impacts on knowledge sharing.

Research Recommendations:

- a. The employee's efficacy is needed to be improved through providing suitable training courses.
- b. It is important to provide staff with IT facilities that could help them in dealing with new knowledge.
- c. It is recommended to build an effective social network between employees, thus expose them to more communication opportunities and be more willing to share their new and valuable knowledge.

2. Al-Ansari, Pervan and Xu (2013), Innovation and business performance of SMEs: the case of Dubai

The objective of this study is to explore the characteristics of the SMEs' innovativeness and to investigate if there is a link between their innovation and business performance in the emerging Dubai market in the United Arab Emirates. The study depended on a sample of SMEs in the manufacturing and service industries that are contributing to the local Dubai economy. Data was collected from 200 SMEs where a structured survey design was used, noted that 97 percent (194/200) of the respondents were in owner manager positions while 3 percent (6/200) were in senior positions within the firms.

Research Results:

- a. The findings revealed more insights into the Dubai SMEs' innovative characteristics and showed that attention given to innovation can ensure a better business performance for SMEs.
- b. The descriptive analyses results indicated that the most common innovative characteristics of SMEs included: business idea, innovation strategies, technical innovations, management as a driver of innovation, customer added-value as innovation development and modification platforms, customers as sources of innovative ideas, new innovation launched and investing in research and development.
- c. The results showed that there is a significant positive link between the innovation and business performance and revealed that the strength of an SME's innovation has a moderate impact on business performance.

Research Recommendations:

- a. Policymakers in Dubai should take new steps toward national policies supporting SMEs through: establishing innovation council and supporting agencies; fostering more entrepreneurship and developing SMEs.
- b. SMEs' managers should take specific actions for building, leading and leveraging of innovation firms in order to achieve better business performances.

- c. Managers should instill innovative behavior in others by allowing individuals to participate in the innovation process and encouraging individuals to look for expanding their knowledge and skills outside their tasks by cross-functional integrations.
- d. The study of SMEs in different cultural contexts could provide different perspectives on innovation. So, a study in other geographical areas could increase the relevance of the findings to other regions.

3. Ali (2012), Determinants Of knowledge sharing in Professional Services (Case study: The Network Operations Directorate In Jawwal Company)

This study aims at revealing the most effective determining factors that stimulate the Knowledge sharing behaviour at the network operations department in Jawwal Company. Four main classes of factors were considered to have the greatest effect on the knowledge sharing performance, such as; motivational factors, environmental factors, technological factors, and individual factors .

The questionnaire was used to collect the respondents' answers of this study, where all employees in the targeted department both in west bank and the Gaza strip participated in this study.

Research Results:

- a. The research's results showed that all factors' groups played a worthy role and great influence on the process of knowledge sharing at various levels of importance.
- b. The strongest effect on the knowledge sharing behaviour was in favour of the motivational factors, where personality and personal perception had significant effect on awareness of sharing knowledge with others.
- c. The organizational culture is considered as a fundamental factor needs to be given a special attention. Also, the availability of leadership characteristics in organizations play an important role in encouraging employees toward sharing their valuable knowledge within the organization.
- d. Also, the study revealed that two technological factors, the availability of Information & Communication Technology (ICT) and the ICT know how, help at facilitating the knowledge sharing practice between employees.

Research Recommendations:

- a. The top management of Jawwal should pay a special attention to the factors that affect the process of knowledge sharing and exert more effort to enhance its performance through treating the areas that need special care.
- b. A strong knowledge management system should be available in Jawwal to treat the knowledge of the employees effectively.

4. EL-Ghorra (2011), The Influence of Knowledge Sharing on the Level of Innovation" A Field Study for Managers at the Palestinian Ministries in the Gaza Strip.

This study aims at investigating the influence of knowledge sharing on the level of innovation at the Palestinian ministries in the context of the Gaza-Strip. The descriptive analytical method used both primary and secondary sources. The study population consisted of all managers at the Palestinian ministries in the Gaza-Strip and they were 777 managers. The study sample was random. Out of the (350) questionnaires distributed, (270) questionnaires were returned and analysed with response rate 77.14%.

Research Results:

- a. The study revealed that there is a good level of innovation at Palestinian Ministries in the Gaza-Strip. But there is a clear absence of a good reward system to enhance and increase the level of innovation and encourage the practices of knowledge sharing.
- b. Managers at the Palestinian ministries seem satisfied with the practices of knowledge sharing.
- c. The multiple regression model explained (65.0%) of the variation in the level of innovation is explained by Knowledge Applicability and Knowledge Availability.

Research Recommendations:

- a. There is a real need to build an environment and culture to support knowledge sharing behavior of the ministries of the Gaza strip.
- b. There is a need to establish a knowledge management system to support the processes of knowledge creation, storage, sharing and application.
- c. Incentives and rewards system should be developed and applied at the ministries of the Gaza-Strip to encourage knowledge sharing among employees and enhance the innovativeness process.

General Commentary

This chapter sheds more light on the studies discussed and addressed various dimensions of knowledge management (KM), innovation, and SMEs performance. Most studies agreed that human factor represents the nerve of organizations. This realization pushed researchers to consensus on the importance of taking care of the organizations' human factor in order to reach innovativeness and improve the performance. So, their studies advise organizations to focus, design and develop special practices and programs on the field of knowledge management (KM) and innovation; especially in SMEs. Since the current study designed to identify the role of KM in enhancing innovation in SMEs in the context of the Gaza Strip. The followings are the general comments resulting from reviewing these studies:

1. Generally, all reviewed studies agreed on the role of knowledge management practices in enhancing the organizations' performance and leading them to be more innovative.
2. A number of studies focused on KM practices; and developed ways to activate and promote these practices inside the organizations.

3. Many studies suggested models that would improve SMEs' performance through activating KM practices.
4. A number of studies identified the most important factors that contribute in enhancing KM process.
5. Many studies tried to identify the SMEs' perceptions towards e-learning and the tendency of owner managers to embrace technology based training in the future. Also, they tried to discover the role of e-collaboration in improving tacit knowledge transfer between employees.
6. A number of related studies explore how the effective management of human capital can make the organization's performance more innovative.
7. Some studies explore the role of KM practices on the product innovation and if there is a relationship between KM practices and practical outcomes.
8. There was no previous Palestinian studies deal directly with the four KM practices that are studied in this study (knowledge creation, knowledge sharing, knowledge acquisition and knowledge implementation).
9. Regarding the tools that were used, most of the previous studies used surveys and questionnaires. While there are some researchers used interviews, and focus groups, the researcher used the most frequent tools: questionnaire and interview.
10. The previous studies populations are varied where the majority are international (foreign studies), some of them are local, regional and Arabic.
11. For the studies' populations and samples, many of them were carried out in different types of organizations and that led to some differences in the final specific results as each field has its own circumstances and contexts.

This study has an advantage over the previous studies by the following:

1. This study deals with the four main practices of KM as an integrated practices lead to innovation, while the previous studies investigated the role of one or two KM practices.
2. This study targets the ICT sector in the context of the Gaza-Strip, where it represents one of the most sectors that rely on innovation as a key driver to create competitive advantages.

Chapter Four

Research Design and Methodology

Chapter Four

Research Design and Methodology

Introduction

The current chapter presents the main aspects of research design including the methodology used and highlight the research design. It explains the source data along with the relevant information about the population and sample used. Furthermore, it shows the analysis of pilot study that was made to examine the validity and reliability of the questionnaire. Likewise, this chapter lists the statistical methods utilized in the analysis of the collected data in order to answer the research questions as well as examine the hypothesis in chapter five.

Research Procedures

In order to achieve the objectives of research, the following procedures were followed and implemented by the researcher:

1. Defining the research problem due to the lack of knowledge in this area at the context of Gaza.
2. Planning a research design by researching on a secondary data and gather evidence to support the argument.
3. Planning a sample and justifying why the specific sample have been chosen.
4. A comprehensive literature review was conducted about KM, innovation and how the relationship between them looks like.
5. Developing a questionnaire including the research variables that need to be measured. The questionnaire was evaluated and reviewed. Also, a pilot study has been conducted.
6. Collecting data through the developed questionnaire from SMEs that work in the field of ICT in Gaza. 246 questionnaire were distributed to the research population (685), and 246 were received.
7. Data analysis and discussion were conducted. Statistical Package for the Social Sciences, (SPSS) was used to perform the required analysis.
8. Presenting the data in written form including the conclusions and recommendations.

Research Methodology

The researcher has used the descriptive analytical method, which attempts to answer the basic question in the study "Impact of KM at the level of innovation process in SMEs in Gaza ", and what the nature of the Phenomenon which is research theme., and analysis of the phenomenon, its environment, and clarifying the relationship between its components. The description is given mainly by units, conditions, relationships, groups, categories, or patterns that do exist. Also, include related opinions and trends about it, as well as the operations contained and the resulting effects. The descriptive approach extends to addressing how the phenomenon works. This approach satisfies the research goals in order

to compare and evaluate the results, raising our hopes to publicize a meaningful content to support the available knowledge of the research theme.

Data Collection Sources

In order to achieve the research objectives, two essential data collection resources were used, which are:

1. **Primary Sources:** to collect the primary data the questionnaire was used as a main tool, which is designed especially to meet the research objectives. This questionnaire was distributed among the study population (685) employees in order to explore their opinions about investigating the impact of KM at the level of innovation process in SMEs in Gaza. The study covered number of 36 small enterprises and 9 medium ones in the Gaza Strip according to the Palestine Information Technology Association of Companies (PITA) out of 143 company work in ICT sector.
2. **Secondary Sources:** in order to address the theoretical background of the study, it has been found on the secondary data collection resources, the likes of books, papers, essays, journals, research studies and reports that have handled the research theme and finally by surfing the internet to the related websites.

Research Population

The study targets the ICT enterprises in the Gaza Strip, which are members at PITA and classified as small and medium enterprises. According to the researcher survey it is found that there are 36 small enterprises and 9 medium ones in the Gaza Strip including (685) employees. The study population consists of all employees work at these enterprises.

Table (4.1): Research Population

Type of Organization	Number of Organizations	Number of Employees
Small (5-19 employee)	36	359 (52.41%)
Medium (20 – 49 employee)	9	326 (47.59%)
Total	45	685

Research Sample

The random sample included 246 employees, according to Retched GEGER formulation

$$n = \frac{((z/d)^2 * (0.50)^2)}{1 + ((1/N) * (((z/d)^2 * (0.50)^2) - 1))}$$

(N= study' population, Z: confidence level at 95% (standard value of 1.96), E:error proportion =0.05).

Questionnaire Design & Procedures

The researcher has found that there is no suitable questionnaires from the related literature. Accordingly, a special questionnaire was designed to fulfil the purpose of the study; studying the role of KM in enhancing innovation in SMEs providing ICT services in the Gaza Strip. The researcher applied the following steps when designing the questionnaire:

1. Gathering information from the literature review, where the researcher collected the various questions related to KM concepts and practices and linked them to the study questions.
2. Discussing the designed questionnaire with the supervisor and came up with the first draft.
3. Presenting a draft copy to the panel of expert referees (Annex I), to evaluate the questionnaire and give any required amendments or notes.
4. Considering the experts feedback, the necessary adjustments on the questionnaire were made before being reviewed with the supervisor.
5. The final copy has been ready to collect the required data.

The questionnaire was provided with a covering letter explaining the purpose of the research, the way of responding, the aim of the research and the security of the information in order to encourage a high response. The questionnaire included multiple-choice questions: which used widely in the questionnaire, the variety in these questions aims first to meet the research objectives, and to collect all the necessary data that can support the discussion, results and recommendations in the research.

The sections in the questionnaires will verify the objectives in this research related to "The impact of KM at the level of innovation process in SMEs in Gaza" as follows:

1. First section: personal data consist of Gender, Age, Qualification, Occupation Type, Type of Organization, Occupation, Years of Service and Field of Work.
2. Second section: related to The Impact of KM at the level of innovation process in SMEs in Gaza through the point of view managers and specialists of Information System, consist of (62) sentences and divided into six fields as follows:
 - a. First Domain: Knowledge creation, consist of (12) Sentences
 - b. Second Domain: Knowledge sharing, dissemination and enrichment, consist of 10 Sentences
 - c. Third Domain: Knowledge acquisition (information storage) ,consist of (10) Sentences
 - d. Fourth Domain: Knowledge implementation, consist of (12) Sentences.
 - e. Fifth Domain: The level of innovation at SMEs in the Gaza Strip, consist of (18) Sentences.

The questioner was distributed in Arabic language because most of the targeted population members are unfamiliar enough with English language.

Personal Characteristics

This section introduces the descriptive statistics of the study respondents' characteristics (Personal information). These sample characteristics include: their gender, age, qualification, occupation type, type of organization, occupation, years of service and the field of work. This descriptive statistical analysis was done using the available data in the first part of the study questionnaire as illustrated in Appendix (B).

A total of (246) randomly employees of the targeted SMEs in the Gaza Strip were responded to the distributed questionnaire. The researcher will discuss the results according to each personal characteristic.

1. Gender:

Table (4.2): Respondents Personal Characteristics – Gender, (n=246)

Gender	Frequency	Percent (%)
Male	233	94.7%
Female	13	5.3%
Total	246	100%

Table (4.2) shows the respondents personal characteristics according to sex characteristics. The majority of the respondents are males, and they represent (94.7%) of the study sample compared to (5.3%) of the respondents are females. This results indicate that females are more willing to choose remote work than field work, so the questionnaire only reached females who already work in offices and fields.

2. Age

Table (4.3): Respondents Personal Characteristics – Age, (n=246)

Age	Frequency	Percent (%)
Less than 30 years	105	42.7%
30-40 years	126	51.2%
40-50 years	15	6.1%
Total	246	100%

Table (4.3) shows the respondents personal characteristics according to age characteristics. The distribution of respondents over the age groups shows that the majority of respondents (93.9%) was in the young category, less than 40 years, while the rest (6.1%) of respondents' ages are 40 or more. This result indicates that the the ICT enterprises are interested in employing young employees because the presence of a young energies capable of keeping up with technological development.

3. Qualification

Table (4.4): Respondents Personal Characteristics – Qualification, (n=246)

Qualification	Frequency	Percentage
Diploma	35	14.2%
Bachelor	199	80.9%
Master	8	3.3%
PhD	4	1.6%
Total	246	100%

Table (4.4) shows the respondents personal characteristics according to qualification characteristics. The majority of respondents hold “Bachelor degree” and “Diploma”, and they represent (95.1%) of the study. Respondents with postgraduate degree (Master & PhD) represent (4.9%). This result reveals that the ICT enterprises prefer to employ educated employees to guarantee a good level of work performance based on the job's requirements where the ICT sector is growing and developing rapidly and continuously and it needs people who have the ability to learn, analyse and share their experiences in a good and efficient way. In addition, the high percentage of respondents who hold Bachelor degree indicates that the most of employees in the ICT sector in Gaza have a good level of education.

4. Occupation Type

Table (4.5): Respondents Personal Characteristics – Occupation Type, (n=246)

Occupation Type	Number of Employees	Percent (%)
Local position	169	68.7%
International position	16	6.5%
Both	61	24.8%
Total	246	100%

Table (4.5) shows that 68.7% of the study's sample equip local position, and 24.8% were an occupation type of both (international position and local position), the researcher attributed the presence of 6.5% international position. This result reveals that the majority of the targeted SMEs are working for the local society and this comes in line with the nature of the work of these enterprises. Some of them have international positions due to the trend of outsourcing and distance working.

5. Type of Organization

Table (4.6): Respondents Personal Characteristics –Type of Organization, (n=246)

Type of Organization	Frequency	Percent (%)
Small (5-19 employee)	194	78.9
Medium (20 – 49 employee)	52	21.1
Total	246	100%

Table (4.6) shows (78.9%) of the study sample were of small (5-19 employees) type of organization, and 21.1% were medium type of organization (20-49 employees).

6. Occupation

Table (4.7): Respondents Personal Characteristics –Occupation, (n=246)

Occupation	Frequency	Percent (%)
Director	5	2%
Deputy Director	18	7.3%
Administrative	87	35.4%
Technician	38	15.4%
Engineer	72	29.3%
Designer	11	4.5%
other	15	6.1%
Total	246	100%

Table (4.7) shows the respondents personal characteristics according to occupational characteristics. As the study targeted the ICT enterprises, more than three fourth of respondents (80.1%) are working as administratives, engineers and technicians respectively, (35.4%), (29.3%) and (15,4%). And these three areas represent the core of ICT working environment, also; engineers and technicians in general have the required skills and ability to cover many specialized areas at this field. The rest of respondents are (2%) Director, (7.3%) Deputy Director, (4.5%) designers and 6.1% other.

7. Years of Service

Table (4.8): Respondents Personal Characteristics – Years of Service, (n=246)

Experience	Frequency	Percent (%)
Between 1-3 years	82	33.3%
Between 3-5 years	80	32.5%
Between 5-10 years	69	28%
More than 10 years	15	6.1%
Total	246	100.0

Results shown in table (4.8) presents the respondents personal characteristics according to years of service characteristics. The majority of respondents which represents (65.8%) have less than 5 years of service. This result matches the previous result that the majority of respondents (93.9%) are less than 40 years since the ICT sector requires energetic employees. Also, this result indicates that ICT enterprises seek to employ fresh graduates who are seeking to prove their skills and abilities. The rest of the sample (36.2%) of respondents with more than 5 years of service are almost occupying the administrative positions which requires accumulative experience in managing such kind of enterprises.

8. Field of Work

Table (4.9): Respondents Personal Characteristics – Field of work, (n=246)

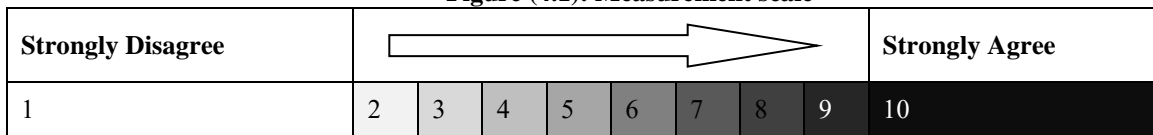
work field	Frequency	Percent (%)
Programming	103	41.9%
Information Security	50	20.3%
Networking	104	42.3%
Maintenance	93	37.8%
Internet Service Provider	100	40.7%
Design	37	15%
Other	16	6.5%

Table (4.9) shows the respondents personal characteristics according to field of work characteristics. As the study targeted the ICT enterprises, it is clear that the high proportions go in favor of networking, programming, internet service providers and maintenance. Also, the above results indicate that the targeted ICT enterprises work in more than one field at the same time which represents an added value for many of them.

Data Measurement

To choose the most appropriate method of statistical analysis, the level of measurement must be defined and understood. In this research, Likert scale 1-10 is used. The respondents have the choice to evaluate the degree of satisfaction of item from one to ten, where (1) shows the weakest level of agreement and (10) shows the strongest level of agreement.

Figure (4.1): Measurement scale



The researcher depends on the following criterion in order to determine the degree of agreement for each item of the questionnaire based on the proportional mean for the responses of study sample on the questionnaire of the research as shown in Table (20).

Table (4.10): Criterion of Determining the Degree of Agreement

Scale	Very Low (V.L)	Low (L)	Medium (M)	High (H)	Very High (V.H)
Proportional Mean	Less than 40	40 – 59.9	60 – 69.9	70 – 79.9	80 - 100

Pilot Study

A pilot study was performed before distribute the prepared questionnaire to a sample of (50) employees from the potential respondents to examine the validity and reliability of the questionnaire. Some minor amendments and paraphrasing were introduced to produce the final version of the questionnaire.

Questionnaire Validity

Validity refers to the degree to which a questionnaire measures what it is supposed to be measuring. High validity is the absence of systematic errors in the evaluating questionnaire. When a questionnaire is valid, it truly reflects the concept it is supposed to measure, (George & Mallery 2006).

1. **External (Content) Validity:** External validity of the questionnaire was evaluated by a group of academic experts of the Faculty of Commerce, , the Scientific Research Deanship, from the Islamic University, Al-Aqsa University, Al-Azhar University and Al-Quds Open University. The suggestions around the questionnaire and its appropriateness to achieve the study objective had been issued by arbitrators. In addition, the questionnaire was evaluated by a statistical analysis expert to test its statistical validity and if it is designed well enough to provide the relations and tests between the study variables. The arbitrators' names and titles are shown in Appendix (A). The experts did agree that the questionnaire was valid and suitable enough to be used with some amendments. The arbitrators' suggestions and amendments were taken into consideration in order to set the appropriate questionnaire as shown in Appendix (B).
2. **Internal Validity:** Internal validity of the questionnaire was evaluated after conducting a pilot study, where questionnaire to a sample of (50) employees from the potential respondents were distributed. The correlation coefficients between each item in one field and the whole field were measured to ensure the questionnaire validity.
 - a. **Knowledge Creation, KC**
Measuring the Correlation between the KC and the total of the field. Table (21) clarifies the correlation coefficient for each paragraph of the KC and the total of the field.

Table (4.11): Correlation Coefficient of each Paragraph of KC and the Total of this Domain, (n=246)

First Domain			
Item No	Paragraph	Pearson correlation coefficient	Sign
1	There is a continues interaction among our organization's employees	0.867	**0.000
2	Our organization enhance the collaborative team work practices	0.881	**0.000
3	Focus groups and getting involved in solving problems help at creating new organizational knowledge	0.774	**0.000
4	Training courses and educational activities plays an important role in creating new knowledge	0.802	**0.000
5	Our organization provides relevant data and information to create a valuable knowledge may help for decision making	0.939	**0.000

6	Using new technologies and employing IT practices lead our organization to develop new knowledge	0.862	**0.000
7	Our organization facilitate the transformation of collective practices	0.784	**0.000
8	Our organization encourage knowledge creation practices and support its employees in this way	0.828	**0.000
9	There is free flow of relevant information in the organization	0.856	**0.000
10	Management of the Organization encourages people to reflect on information and data, and reframe them at the strategic level	0.570	**0.006
11	In the day-to-day work, it is easy to find the right information	0.734	**0.000
12	When a team completes a task, it distils and documents what it has learned	0.741	**0.000

** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level

Results in table (4.11) show that the paragraphs of the questionnaire have a strong correlation coefficients and statistically significant at the level less than (0.05), which confirms the internal consistency of sub-dimensions and indicates that the questionnaire is enjoying by high validity.

b. Knowledge Sharing, KS

Measuring the Correlation between the KS and the total of the field. Table (22) clarifies the correlation coefficient for each paragraph of the KS and the total of the field.

Table (4.12): Correlation Coefficient of each Paragraph of KS and the Total of this Domain, (n=246)

Second Domain			
Item No	Paragraph	Pearson correlation coefficient	Sign
1	All employees are co-operative and helpful when asked for some information or advice	0.478	*0.024
2	Knowledge sharing is seen as strength and knowledge hoarding as a weakness	0.817	**0.000
3	Good knowledge management behaviour like sharing and reusing knowledge is actively promoted on a day to day basis	0.832	**0.000
4	Individuals are visibly rewarded for sharing their knowledge and experience.	0.892	**0.000
5	Formal networks exist to facilitate dissemination of knowledge	0.944	**0.000
6	Internal staff rotation is actively encouraged to spread best practices and ideas	0.935	**0.000
7	Technology is a key enabler in ensuring that the right information is available to the right people at the right time	0.955	**0.000
8	There is a good team intra-communication and sharing of knowledge	0.898	**0.000
9	You like sharing knowledge with peers.	0.592	**0.004
10	Employees exchange information for solving problems are encouraged in the organization.	0.837	**0.000

** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level

Results in table (4.12) show that the paragraphs of the questionnaire have a strong correlation coefficients and statistically significant at the level less than (0.05), which

confirms the internal consistency of sub-dimensions and indicates that the questionnaire is enjoying by high validity.

c. Knowledge Acquisition, KA

Measuring the Correlation between the KA and the total of the field. Table (23) clarifies the correlation coefficient for each paragraph of the KA and the total of the field.

Table (4.13): Correlation Coefficient of each Paragraph of KA and the Total of this Domain, (n=246)

Third Domain			
Item No	Paragraph	Pearson correlation coefficient	Sign
1	Intellectual assets are recognized and valued.	0.838	**0.000
2	Our organization has a good level of social interaction with customers and stakeholders.	0.806	**0.000
3	Intellectual assets are legally protected	0.873	**0.000
4	Technology is shared with clients and suppliers where appropriate to enhance relationships	0.918	**0.000
5	Our organization do a regular assessment for the level of employees' knowledge.	0.854	**0.000
6	The organization facilitates the employees' access to essential sources of information.	0.806	**0.000
7	The organization consider new knowledge as an added value.	0.829	**0.000
8	The organization consider the value of the productive connection between employees.	0.828	**0.000
9	The organization consider the value of the productive connection between employees and the external environment.	0.880	**0.000
10	The organization keeps on the acquainted knowledge that support its strategic goals.	0.812	**0.000

** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level

Results in table (4.13) show that the paragraphs of the questionnaire have a strong correlation coefficients and statistically significant at the level less than (0.05), which confirms the internal consistency of sub-dimensions and indicates that the questionnaire is enjoying by high validity.

d. Knowledge Implementation, KI

Measuring the Correlation between the KI and the total of the field. Table (24) clarifies the correlation coefficient for each paragraph of the KI and the total of the field.

Table (4.14): Correlation Coefficient of each Paragraph of KI and the Total of this domain, (n=246)

Fourth Domain			
Item No	Paragraph	Pearson correlation coefficient	Sign
1	There are defined responsibilities for KM initiatives	0.924	**0.000
2	There are clear organizational roles and responsibilities for effective Knowledge Management implementation.	0.893	**0.000
3	There are defined budget for KM initiatives	0.877	**0.000
4	Your organization concerns with evaluating, piloting, designing, improving and implementing improved knowledge driven work practices, processes, methods, tools and techniques.	0.879	**0.000
5	Your organization has clear Knowledge Management Program Objectives	0.862	**0.000
6	Your organization involves cultural changes in the way employees perceive and share knowledge they develop or possess	0.878	**0.000
7	There are a periodic assessment of the current state of knowledge management within your organization.	0.670	**0.000
8	Assessment of KM in your organization includes all five core knowledge management components: people, processes, technology, structure, and culture	0.845	**0.000
9	There is a roadmap for your KM implementation	0.778	**0.000
10	Your organization measures improve its Knowledge Management Program continuously	0.770	**0.000
11	The organizational structure allows and facilitates its people to accomplish their task according to the knowledge management services.	0.858	**0.000
12	Your organization use IT in KM implementation	0.908	**0.000

** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level

Results in table (4.14) show that the paragraphs of the questionnaire have a strong correlation coefficients and statistically significant at the level less than (0.05), which confirms the internal consistency of sub-dimensions and indicates that the questionnaire is enjoying by high validity.

- e. The level of innovation at SMEs in the Gaza strip
Measuring the Correlation between the level of innovation at SMEs in the Gaza Strip and the total of the field. Table (4.15) clarifies the correlation coefficient for each paragraph and the total of the field.

Table (4.15): Correlation Coefficient of each Paragraph of the Level of Innovation at SMEs and the Total of this Domain, (n=246)

Fourth Domain			
Item No	Paragraph	Pearson correlation coefficient	Sign
1	Knowledge management service helps your organization to improve its performance	0.932	**0.000
2	Your organization responds quickly to the very latest developments affecting their sectors	0.945	**0.000
3	Your organization involves creating or re-engineering products or services to meet new market demand	0.931	**0.000

4	Your organization develops or applies new marketing techniques to expand sales opportunities	0.890	**0.000
5	Your organization incorporates new forms of management systems and techniques to improve operational efficiency	0.899	**0.000
6	There is a good interest and application for R&D practices	0.696	**0.000
7	Employees and firm in general benefit from the results of their research efforts.	0.949	**0.000
8	Your organization aware of the importance of promoting greater co-operation and exchanges between business and universities	0.903	**0.000
9	Your organization improves information networks on technological knowhow	0.933	**0.000
10	Your organization seeks toward an organizational learning theme and knowledge management practices	0.841	**0.000
11	Your organization has a good level between competitors	0.961	**0.000
12	The organization's rules are flexible for the employees.	0.941	**0.000
13	There is a clear strategic plan for the organizational innovation.	0.913	**0.000
14	The organization work gradually towards development to ensure the knowledge acquisition.	0.827	**0.000
15	The organization pay attention to the employee's suggestion and consider them in the development process and decision-making.	0.910	**0.000
16	The organization pay attention to the customers' opinions and consider them in developing products and services.	0.968	**0.000
17	The growth and financial prosperity of the organization is positively reflected in the level of innovation and creativity on the services and products the organization offers.	0.912	**0.000
18	There is a clear diversity in the thinking patterns of the employees working in the organization, which increases the opportunities for creativity and innovation in products and services.	0.910	**0.000

** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level

Results in table (4.15) show that the paragraphs of the questionnaire have a strong correlation coefficients and statistically significant at the level less than (0.05), which confirms the internal consistency of sub-dimensions and indicates that the questionnaire is enjoying by high validity.

Questionnaire Reliability

The questionnaire reliability represents the degree of consistency, where it measures the level of consistency of the questionnaire results if it will be distributed several times under the same conditions. That means, the questionnaire is reliable if it gives the same results when it is distributed several times under the same conditions. For the most purposes, reliability coefficient above 0.7 is considered satisfactory (George & Mallery 2006).

The researcher used two techniques to examine the reliability of the questionnaire, the Cronbach's Alpha Coefficient and Half Split Method through the SPSS software.

1. Cronach's Alpha Coefficient: This method is used to measure the reliability of the questionnaire between each field and the mean of the whole fields of the questionnaire. The normal range of Cranach's coefficient alpha value between (0.0) and (+ 1.0), and the higher values reflects a higher degree of internal consistency, (George & Mallery 2006).

Table (4.16): Cronbach's Alpha

All Domains	No. of Items	Cron. Alpha	Reliability
	62	0.988	Excellent
First Domain: Knowledge creation	12	0.928	Excellent
Second Domain : Knowledge sharing, dissemination and enrichment	10	0.951	Excellent
Third Domain : Knowledge acquisition (information storage)	10	0.973	Excellent
Fourth Domain: Knowledge implementation	12	0.957	Excellent
Fifth Domain : The level of innovation at SMEs in the Gaza strip	18	0.976	Excellent

As shown in Table (4.16) the Cronbach's coefficient alpha was calculated and the results were in the range from 0.928 and 0.985, and the general reliability for all items equal 0.988, this range is high; the result ensures the high reliability of the questionnaire.

2. The Split-Half Method: This method relies on finding Pearson correlation coefficient between the means of odd rank questions and even rank questions of each domain of the questionnaire. Then, correcting the Pearson correlation coefficients can be done by using Spearman Brown correlation coefficient of correction. The corrected correlation coefficient (consistency coefficient) is computed based on the following equation:

Consistency coefficient = $2r/(r+1)$, where r is the Pearson correlation coefficient. The normal range of corrected correlation coefficient $2r/(r+1)$ is between 0.0 and + 1.0.

Table (4.17): Split-Half Coefficient Method

Questionnaire	person-correlation	Spearman-Coefficient
	0.729	0.843
First Domain: Knowledge creation	0.825	0.904
Second Domain : Knowledge sharing, dissemination and enrichment	0.884	0.939
Third Domain : Knowledge acquisition (information storage)	0.892	0.943
Fourth Domain: Knowledge implementation	0.753	0.860
Fifth Domain : The level of innovation at SMEs in the Gaza strip	0.948	0.973

As shown in Table (4.17), all the corrected correlation coefficients values are between 0.86 and 0.986 and the general reliability for all items equal 0.843, this result ensures the high reliability of the questionnaire.

Based on the previous discussion on validity and reliability of the questionnaire, the researcher concludes that the questionnaire is a valid and reliable tool to study the impact of KM as a key driver of the innovativeness process at SMEs of the ICT sector in the Gaza Strip.

Normality Distributing Test

Kolmogorov-Smirnov test was used to identify if the study questionnaire data follows the normal distribution or not, this test is considered necessary in the case of testing hypotheses as most Parametric Tests stipulate data to be normally distributed (Henry, C. and Thode, Jr., 2002).

Table (4.18): One Sample Kolmogorov-Smirnov Test

Domain	Z-value	sig.
First Domain: Knowledge creation	0.147	0.200
Second Domain : Knowledge sharing, dissemination and enrichment	0.140	0.252
Third Domain : Knowledge acquisition (information storage)	0.151	0.190
Fourth Domain: Knowledge implementation	0.163	0.183
Fifth Domain : The level of innovation at SMEs in the Gaza strip	0.138	0.199
Total	0.153	0.198

Through table (4.18) it is clear that the level of significance greater than 0.05 for each domain, and this shows that the data follow a normal distribution and must use parametric tests.

Statistical Analysis Tools

To attain the objectives of research, the researcher utilized the application of statistical package for the Social Science (SPSS) for controlling and analysing the data collected. Following are the statistical tests that were used to analyse the data and investigate the study hypothesis:

1. Frequencies, means and percentages to define the characteristics of the sample and to reflect on the collected data in expressive figures.
2. Pearson Correlation Coefficient was utilised to measure the correlation between two variables, where it was applied to test the validity of questionnaire.
3. Cronbach's Alpha coefficient was applied to examine the questionnaire reliability.
4. Kolmogorov-Smirnov test was applied to detect if the study questionnaire data follows the normal distribution or not, this test is considered necessary in the case of testing hypotheses as most Parametric Tests require data to be normally distributed.
5. T-test is applied to identify if the mean of a paragraph is significantly diverse from a hypothesized value 6. If the P-value (Sig.) is smaller than or equal to the level of significance, then the mean of a paragraph is significantly different from a hypothesized value 6.
6. The Pearson Correlation Coefficient test was used to examine the correlation significance in testing the first main hypothesis.
7. The Two-independent samples T Test was used to determine if there are differences indicating statistical significance between the means of two groups of data like the respondents 'gender (male and female).

8. The One-Way ANOVA test was used to determine if there are differences indicating statistical significance between the means in the case of three groups of data and more like the respondents' qualification (diploma, bachelor, master and PhD).

Chapter Five

Data Analysis and Hypothesis Testing

Chapter Five Data Analysis and Hypothesis Testing

Introduction

This chapter aimed to analyze the collected data and to test the research hypothesis in order to achieve the objectives of the study. This chapter includes descriptive analysis of the sample. It shows the data analysis of study tool and examination in order to get the finding of research. The researcher used different statistical techniques using the statistics software package (SPSS) to analyze the collected data.

Data Analysis

1. First domain: Knowledge creation (KC):

Table (5.1) presents the summary statistics and the rank of each item of KC.

Table (5.1): The respondents' opinions towards the items of the first domain – KC, (n=246)

#	Question	mean	standard deviation	Weight mean%	Value (t)	Rank	Level
1	There is a continues interaction among our organization's employees	6.472	2.290	64.715	3.23	5	M
2	Our organization enhance the collaborative team work practices	6.122	2.465	61.220	2.78	10	M
3	Focus groups and getting involved in solving problems help at creating new organizational knowledge	6.191	2.342	61.911	3.28	8	M
4	Training courses and educational activities plays an important role in creating new knowledge	6.293	2.469	62.927	3.86	6	M
5	Our organization provides relevant data and information to create a valuable knowledge may help for decision making	6.220	2.514	62.195	3.37	7	M
6	Using new technologies and employing IT practices lead our organization to develop new knowledge	7.443	2.216	74.431	10.22	1	H
7	Our organization facilitate the transformation of collective practices	6.106	2.170	61.057	3.76	11	M
8	Our organization encourage knowledge creation practices and support its employees in this way	6.150	2.162	61.504	2.09	9	M
9	There is free flow of relevant information in the organization	6.622	2.010	66.220	4.85	3	M
10	Management of the Organization encourages people to reflect on information and data, and reframe them at the strategic level	5.955	2.327	59.553	-3.30	12	L
11	In the day-to-day work, it is easy to find the right information	6.955	1.796	69.553	8.34	2	M
12	When a team completes a task, it distils and documents what it has learned	6.520	2.376	65.203	3.43	4	M
Mean		6.421	2.261	64.21	3.83		

The results show that the opinion of respondents toward all questions are moderate except two questions; the first one where the respondents considered the most significant practice that their enterprise have to create a new knowledge is (Using new technologies and

employing IT practices lead our organization to develop new knowledge) with proportional mean 74.4%.

While the least practice followed to create a new knowledge is (Management of the Organization encourages people to reflect on information and data, and reframe them at the strategic level) with proportional mean 59.5%.

The respondents show a moderate level of agreement equals 64.21% about the KC domain. This result refers that these enterprises make efforts to create new knowledge through multiple and different tactics, such as using new technologies and employing IT practices to develop new knowledge. The study attributes this result that the ICT sector needs to focus more in the role of IT infrastructure and new technologies in facilitating KC process. However to ensure a good quality of KC, organizations should support and encourage employees toward KC practices.

The study is consistent with the Maldonado-Guzmán et al. (2016) study, which indicated that the creation of intellectual property (tacit knowledge) has a positive effect with KM practices in SMEs. Also, this study is consistent with Vukšić et al. (2015), Lin (2014) and Ali (2012), which indicated that using IT infrastructure and applying new technologies help SMEs have the strongest effect at the adaption stage of KM; which means knowledge creation.

The above-mentioned result proves that SMEs are thriving to create knowledge in order to be innovative and grow their shares in the market. In addition, the level of knowledge created could be measured through the employees who mostly work with both SMEs' management and clients; this is clear through the result retrieved after analysing the surveys. Similarly, the results reflect the employees' belief in the innovation of the organization they are working for; this could be through their daily observation of organization's techniques when providing products and services as well as dealing with new/current customers. The practices that employees were questioned about prove that knowledge creation exist in the target organizations.

2. Second domain: Knowledge sharing (KS), dissemination and enrichment:
Table (5.2) presents the summary statistics and the rank of each item of KS.

Table (5.2): The respondents' opinions towards the items of the second domain – KS, (n=246)

#	Question	mean	standard deviation	Weight mean%	Value (t)	Rank	Level
1	All employees are co-operative and helpful when asked for some information or advice	6.764	2.344	67.64	5.11	3	M
2	Knowledge sharing is seen as strength and knowledge hoarding as a weakness	6.537	2.183	65.37	3.86	5	M
3	Good knowledge management behaviour like sharing and reusing knowledge is actively promoted on a day to day basis	6.675	2.220	66.75	4.77	4	M
4	Individuals are visibly rewarded for sharing their knowledge and experience.	6.057	2.281	60.57	0.39	8	M
5	Formal networks exist to facilitate dissemination of knowledge	6.305	2.419	63.05	1.98	7	M
6	Internal staff rotation is actively encouraged to spread best practices and ideas	5.650	2.603	56.50	-2.11	9	L
7	Technology is a key enabler in ensuring that the right information is available to the right people at the right time	7.240	2.308	72.40	8.43	1	H
8	There is a good team intra-communication and sharing of knowledge	6.488	2.610	64.88	2.93	6	M
9	You like sharing knowledge with peers.	6.992	2.494	69.92	6.24	2	M
10	Employees exchange information for solving problems are encouraged in the organization.	5.610	2.671	56.10	-2.29	10	L
All items		6.432	2.413	64.32	2.93		

The results show that there are different opinions toward all questions. The majority are medium levels of agreements except two questions lie in the low level and one question lies in high level. The respondents considered the most significant practice that their enterprise have to share their knowledge is (Technology is a key enabler in ensuring that the right information is available to the right people at the right time) with proportional mean 72.4%. While the least practice followed to share their knowledge is (Employees exchange information for solving problems are encouraged in the organization) with proportional mean 56.1%.

The respondents show medium level of agreement equals 64.32% about the KS domain. This result refers that these enterprises make efforts to share their knowledge and experiences between each other through different strategies and tactics, such as using technologies and their cooperative culture toward sharing knowledge. However to ensure a good quality of KS, organizations should motivate and encourage employees toward KS practices such as applying a well-designed internal program for job rotation.

The study is consistent with the Nowacki and Bachnik (2015) study, which indicated that a half of the surveyed companies believe in KS practices and implement these practices to reach to the desired innovation level. Also, this study is consistent with Gharakhani and Mousakhani (2012) study, thus the results showed that the surveyed SMEs applied KS practices and they noticed a positive difference in their work.

Harris (2009), reveals the E-learning and using new technology facilitate social interaction, internally or externally with clients and stakeholders, which helps at sharing tacit knowledge.

Due to the nature of work in the target SMEs (IT/Internet/Clouding products and services), which necessitates cooperation with customers and amongst employees, it is important to share information and to answer inquiries whenever raised. Accordingly, through sharing information/experience when facing problems on the personal or the organizational level, employees are contributing to the innovation process in the organization directly or indirectly.

3. Third domain: Knowledge acquisition, (KA) (information storage):

Table (5.3) presents the summary statistics and the rank of each item of KA.

Table (5.3): The respondents' opinions towards the items of the third domain

#	Question	mean	standard deviation	Weight mean %	Value (t)	Rank	Level
1	Intellectual assets are recognized and valued.	6.463	2.429	64.63	2.99	4	M
2	Our organization has a good level of social interaction with customers and stakeholders.	7.207	2.210	72.07	8.57	2	H
3	Intellectual assets are legally protected	6.232	2.625	62.32	1.38	6	M
4	Technology is shared with clients and suppliers where appropriate to enhance relationships	7.301	2.082	73.01	9.80	1	H
5	Our organization do a regular assessment for the level of employees' knowledge.	6.179	2.375	61.79	1.18	8	M
6	The organization facilitates the employees' access to essential sources of information.	6.337	2.340	63.37	2.26	5	M
7	The organization consider new knowledge as an added value.	5.939	2.189	59.39	-0.44	10	L
8	The organization consider the value of the productive connection between employees.	6.195	2.221	61.95	1.38	7	M
9	The organization consider the value of the productive connection between employees and the external environment.	6.057	2.236	60.57	0.40	9	M
10	The organization keeps on the acquainted knowledge that support its strategic goals.	6.533	2.308	65.33	3.62	3	M
All items		6.444	2.301	64.44	3.11		

The results show that the majority of the respondents' opinion toward all questions are medium levels of agreements except two questions lie in the high level and one question

lie in the low level. The respondents considered the most significant practice that their enterprise have to acquire the appropriate knowledge is (Technology is shared with clients and suppliers where appropriate to enhance relationships) with proportional mean 73.01%. While the least practice followed to share their knowledge is (The organization consider new knowledge as an added value.) with proportional mean 59.39%.

The respondents show medium level of agreement equals 64.44% about the KA domain. These results refers that these enterprises make efforts to acquire the valuable and fruitful knowledge through different strategies and tactics, such as using technology to enhance the relationship between their teams, clients and stakeholders. However to ensure a good level of knowledge acquisition, organizations should deal with a new knowledge positively and encourage employees to value the new knowledge and experience at work.

The study is consistent with the Nowacki and Bachnik (2015) study, which indicated that a half of the surveyed companies believe in KA practices and implement these practices to reach to the desired innovation level. Also, this study is consistent with Liao and Barnes (2015) study, thus the results showed that for SMEs, KA exists and plays a positive role in organization's information capability.

Schiuma et al. (2012), indicate that the members of the targeted SMEs are aware of the danger of knowledge loss, which means the KA practices are valued and supported by the employees themselves and their enterprises.

The result has shown the SMEs concern about the knowledge especially when it comes to acquisition. Utilizing appropriate strategies to deal with information – that represent a key element of knowledge – help the organization to analyse, store, retrieve and redirect it to the right person in the right time in order to take the right decision. Additionally, this process helps the employees to grow and develop their knowledge in a way that finally leads the organization to innovation.

4. Fourth domain: Knowledge implementation, (KI):

Table (5.4) presents the summary statistics and the rank of each item of KI.

Table (5.4): The respondents' opinions towards the items of the fourth domain

#	Question	mean	standard deviation	Weight mean%	Value (t)	Rank	Level
1	There are defined responsibilities for KM initiatives	5.614	2.200	56.14	-2.75	7	L
2	There are clear organizational roles and responsibilities for effective Knowledge Management implementation.	5.398	2.269	53.98	-4.16	11	L
3	There are defined budget for KM initiatives	5.350	2.264	53.50	-4.51	12	L
4	Your organization concerns with evaluating, piloting, designing, improving and implementing improved knowledge driven work practices, processes, methods, tools and techniques.	5.524	2.028	55.24	-3.68	8	L
5	Your organization has clear Knowledge Management Program Objectives	5.512	2.236	55.12	-3.42	9	L
6	Your organization involves cultural changes in the way employees perceive and share knowledge they develop or possess	6.317	2.310	63.17	2.15	3	M
7	There are a periodic assessment of the current state of knowledge management within your organization.	5.459	2.240	54.59	-3.79	10	L
8	Assessment of KM in your organization includes all five core knowledge management components: people, processes, technology, structure, and culture	5.870	2.344	58.70	-0.87	6	L
9	There is a roadmap for your KM implementation	6.028	2.306	60.28	0.19	5	M
10	Your organization measures improve its Knowledge Management Program continuously	6.313	2.131	63.13	2.30	4	M
11	The organizational structure allows and facilitates its people to accomplish their task according to the knowledge management services.	6.386	1.874	63.86	3.23	2	M
12	Your organization use IT in KM implementation	6.411	2.229	64.11	2.89	1	M
All items		5.849	2.203	58.49	-2.03		

The results show that the opinion of respondents to the more half of the whole questions of KI domain are low level of agreements. The respondents considered the most significant practice that their enterprise have to implement and apply a new knowledge is (Your organization use IT in KM implementation) with proportional mean 64.1%. While the least practice followed to share their knowledge is (There are defined budget for KM initiatives) with proportional mean 53.5%.

The respondents show low level of agreement equals 58.49% about the KI domain. This means that the KI tactics are not applied widely in the ICT SMEs in the Gaza Strip, but at the same time the results indicate that the targeted SMEs use many of KI practices spontaneously. However to ensure a good level of knowledge implementation, organizations should have a roadmap for their KM implementation programs and allocate

a sufficient budget for this purpose. Also, they should make a periodic assessment of the state of their knowledge management practices in general and KI in particular.

The study is consistent with the Lin (2014) study and Ali (2012), which indicated that the technological factor and applying ICT practices in day to day interaction play a significant role in the implementation stage of new knowledge. Also, this study is consistent with Lin's study (2014) where the results showed that the existence of culture sharing represents a solid foundation for KI stage.

Ali's study (2012), indicates that the leadership characteristics in an enterprise play a significant role in inspiring employees and encouraging them to take the initiative and to be more active in KI practices.

The result has shown that SMEs in the Gaza Strip spare no effort to develop and improve their knowledge in terms of the internal management, customer care, service quality and so on. This is due to the fierce competition being agitated between working SMEs in the Gaza Strip; they are working so hard to achieve the largest number of loyal customers in order to grow earnings after all. This, consequently, leads to innovation. The low percentage of this result is attributed to the immaturity of the SMEs in KM practices.

5. Fifth domain: level of innovation process in SMEs:

Table (5.5) presents the summary statistics and the rank of each item of innovation process.

Table (5.5): The respondents' opinions towards the items of the fifth domain

#	Question	mean	standard deviation	Weight mean%	Value (t)	Rank	Level
1	Knowledge management service helps your organization to improve its performance	7.362	2.021	73.62	10.57	5	H
2	Your organization responds quickly to the very latest developments affecting their sectors	7.130	2.046	71.30	8.66	7	H
3	Your organization involves creating or re-engineering products or services to meet new market demand	7.524	2.042	75.24	11.71	2	H
4	Your organization develops or applies new marketing techniques to expand sales opportunities	7.427	2.012	74.27	11.12	3	H
5	Your organization incorporates new forms of management systems and techniques to improve operational efficiency	7.049	2.405	70.49	6.84	11	H
6	There is a good interest and application for R&D practices	7.057	2.017	70.57	8.22	10	H
7	Employees and firm in general benefit from the results of their research efforts.	6.687	2.150	66.87	5.01	17	M
8	Your organization aware of the importance of promoting greater co-operation and exchanges between business and universities	6.992	2.048	69.92	7.59	13	M

9	Your organization improves information networks on technological knowhow	7.382	1.634	73.82	13.27	4	H
10	Your organization seeks toward an organizational learning theme and knowledge management practices	6.707	1.920	67.07	5.78	16	M
11	Your organization has a good level between competitors	7.776	1.659	77.76	16.79	1	H
12	The organization's rules are flexible for the employees.	7.187	1.897	71.87	9.82	6	H
13	There is a clear strategic plan for the organizational innovation.	7.045	1.607	70.45	10.20	12	H
14	The organization work gradually towards development to ensure the knowledge acquisition.	6.524	1.875	65.24	4.39	18	M
15	The organization pay attention to the employee's suggestion and consider them in the development process and decision-making.	6.711	2.025	67.11	5.51	15	M
16	The organization pay attention to the customers' opinions and consider them in developing products and services.	7.077	1.723	70.77	9.80	8	H
17	The growth and financial prosperity of the organization is positively reflected in the level of innovation and creativity on the services and products the organization offers.	6.797	1.961	67.97	6.37	14	M
18	There is a clear diversity in the thinking patterns of the employees working in the organization, which increases the opportunities for creativity and innovation in products and services.	7.065	1.879	70.65	8.89	9	H
All items		7.083	1.940	70.83	8.92		

The results show that the majority of the respondents' opinion toward the items are high level of agreements equals 70.83%. The respondents considered the most frequent item that their enterprises have as an innovative enterprise is (Your organization has a good level between competitors) with proportional mean 77.76%. While the least item followed to enhance innovativeness is (The organization work gradually towards development to ensure the knowledge acquisition) with proportional mean 65.24%, and it is noticeable that this ratio is largely consistent with the whole level of KA domain which was 64.44%.

The study is consistent with the Vukšić et al. (2015) study, which provides an empirical evidence on how various KM practices influence innovation performance. Also, this study is consistent with María Ruiz-Jiménez and del Mar Fuentes-Fuentes (2013) study, which shows that product and process innovation and knowledge stimulate the performance of technology based firms (TBFs).

Nada et al. (2012), indicates that the leadership and culture of the participated SMEs helps create a "climate for creativity", also, it reveals that the lacking of innovation strategic plan and assessment of innovation progress have a direct impact on the innovation level and the overall success of the SMEs.

The results of this domain has shown that SMEs in the Gaza Strip are running various managerial, promotional, marketing and developmental practices. These practices are needed for any business to flourish and achieve its milestones especially those working in

the ICT sector. The results of the surveyed SMEs prove that they are seeking innovation and working to occupy a good position amongst the peer SMEs locally and internationally.

6. Over all view of domains:

For more illustration, table (5.6) the summary statistics and level of agreement of each domain, (n=246).

Table (5.6): Summary Statistics and Level of Agreement of Each Domain, (n=246)

SN	Domain	Mean	Standard deviation	Proportional mean	Rank	Level
1	Knowledge Creation, KC	6.421	2.261	64.21	3	Medium
2	Knowledge Sharing, KS	6.432	2.413	64.32	2	Medium
3	Knowledge Acquisition, KA	6.444	2.301	64.44	1	Medium
4	Knowledge Implementation, KI	5.849	2.203	58.49	4	Low
5	Innovativeness Process	7.083	1.940	70.83	-	High

Table (5.6) shows that the opinion of respondents toward KM domains are high levels of agreement except the last domain (KI), is at the low level. Among the five domains of the KM, results show that KA is the first ranked with proportional mean 64.44%, followed by KS with proportional mean 64.32%, then KC with proportional mean 64.21%, and then KI, is the last ranked with proportional mean 58.49%. The results in the summary table are consistent with the Schiuma et al. (2012) study in which the study's findings clearly showed that the organization members are aware of the danger of knowledge loss, that is mean there is a priority for KA practices to avoid knowledge shortage or losses.

It is clear that all KM practices are around the same range, moderate, which represent a logical result, where the concept of KM is still considered new and a little bit additional to tasks currently being carried out by SMEs in the ICT sector in the context of the Gaza Strip. In the same time, the moderate range of KM practices at SMEs indicates that they are appreciate human capital and they have an inclination toward improving a strong tool for achieving innovation and thus a competitive advantage. However, it is noticed that the level of innovation is higher than all KM practices' levels and this often due to the existence of other factors or practices that play a role in enhancing the innovation level. Also, that may be due to the fierce competition between enterprises work in ICT sector.

Testing of Hypotheses

In the following, the researcher conducts the relevant inferential statistical tests to judge the three main research hypothesis were stated in Chapter One.

The researcher obtained the Pearson's correlation coefficients to measure the correlation between KM practices and the level of innovation process in SMEs. The results are given in the following tables to test the first main hypothesis and its four sub-hypothesis.

1. There is a significant statistical correlation at level $\alpha \leq 0.05$ between KM and the level of innovation process in SMEs in Gaza.

This hypothesis was tested by applying "Pearson correlation coefficient test" to figure out the relationship between the two variables, KM and the level of innovation process in SMEs.

Table (5.7): Correlation between KM and the level of innovation, (n=246)

Variables	NO	Pearson's correlation coefficient (r)	Significance
KM	246	0.703	**0.000
level of innovation process in SMEs	246		

** Significant at 0.01 * Significant at 0.05 // not Significant.

The results of Pearson's correlation coefficients in Table (5.7) indicate that there is a positive relationship between KM & the level of innovation in SMEs. ($r=0.703$, p -value= 0.000) at 0.05 level of significance. This implies the more the KM the greater the level of innovation in SMEs in the Gaza strip. This result is consistent with C.-J. Chen and Huang (2009) study, which indicates that there are positive effects between KM practices and the level of innovation. Also, Vukšić et al. (2015) study provides an empirical evidence on how KM practices play a significant role in enhancing the innovativeness performance.

There are four sub-hypothesis are derived from the previous main hypotheses as follows:

- a. There is a relationship between knowledge creation and the level of innovation in SMEs in the Gaza strip.

This hypothesis was tested by applying "Pearson's correlation coefficient test" to figure out the relationship between KC and level of innovation in SMEs.

Table (5.8): Correlation between KC and the level of innovation, (n=246)

Variables	NO	Pearson's correlation coefficient (r)	Significance
knowledge creation, KC	246	0.643	**0.000
level of innovation in SMEs	246		

** Significant at 0.01 * Significant at 0.05 // not Significant

Through the table (5.8) it is clear that there is a positive correlation statistically significant at the 0.05 level between knowledge creation and the level of innovation in SMEs in the Gaza strip, where ($r=0.643$, $p\text{-value}=0.000$). It therefore means that, KC strategies like facilitating day to day interaction, the existence of free flow of relevant information and using new technologies and employing IT practices will contribute immeasurably to enhancing the level of innovativeness in SMEs. This implies the more knowledge creation the greater the level of innovation in SMEs in the Gaza strip.

b. There is a relationship between knowledge sharing and the level of innovation in SMEs in the Gaza strip

This hypothesis was tested by applying “Pearson’s correlation coefficient test” to figure out the relationship between KS and the level of the innovation process in SMEs.

Table (5.9): Correlation between KS and the level of innovation, (n=246)

Variables	NO	Pearson’s correlation coefficient (r)	Significance
knowledge sharing, KS	246	0.600	**0.000
level of innovation in SMEs	246		

** Significant at 0.01 * Significant at 0.05 // not Significant

Through the table (5.9) it is clear that there is a positive correlation statistically significant at the 0.05 level between knowledge sharing and the level of innovation in SMEs in the Gaza strip, where ($r=0.600$, $p\text{-value}=0.000$). It therefore means that, KS strategies like providing a good level of intra-communication between employees and the cooperative spirit between them, using IT infrastructure as an essential tool for knowledge dissemination and the view toward KS as a strength point for employees and for the organization in general will contribute immeasurably to enhancing the level of innovativeness in SMEs. This implies the more knowledge sharing the greater the level of innovation in SMEs in the Gaza strip.

c. There is a relationship between knowledge acquisition and the level of innovation in SMEs in the Gaza strip

This hypothesis was tested by applying “Pearson correlation coefficient test” to figure out the relationship between the two variables.

Table (5.10): Correlation between KA and the level of innovation, (n=246)

Variables	NO	Pearson’s correlation coefficient (r)	Significance
knowledge acquisition, KA	246	0.558	**0.000
level of innovation in SMEs	246		

** Significant at 0.01 * Significant at 0.05 // not Significant

Through the table (5.10) it is clear that there is a positive correlation statistically significant at the 0.05 level between knowledge acquisition and the level of innovation in SMEs in the Gaza strip, where ($r=0.558$, $p\text{-value}=0.000$). It therefore means that, KA strategies like enhancing the relationship between employees, clients and stakeholders through using IT

infrastructure and paying attention toward keeping and maintaining the acquired knowledge that support the strategic goals will contribute to enhancing the level of innovativeness in SMEs. This result is consistent with Gharakhani and Mousakhani (2012) study, where it demonstrates a positive relationship between KA practices and SMEs performance which leads to innovation. This implies the more knowledge acquisition the greater the level of innovation in SMEs in the Gaza strip.

d. There is a relationship between knowledge implementation and the level of innovation in SMEs in the Gaza strip.

This hypothesis was tested by applying “Pearson correlation coefficient test” to figure out the relationship between the two variables.

Table (5.11): Correlation between KI and the level of innovation, (n=246)

Variables	NO	Pearson’s correlation coefficient (r)	Significance
knowledge implementation, KI	246	0.684	**0.000
level of innovation in SMEs	246		

** Significant at 0.01 * Significant at 0.05 // not Significant

Through the table (5.11) it is clear that there is a positive correlation statistically significant at the 0.05 level between knowledge implementation and the level of innovation in SMEs in the Gaza strip, where (r=0.684, p-value=0.000). It therefore means that, KI strategies like through using IT infrastructure in KI practices and involving cultural changes in the way employees perceive and share knowledge they develop and possess. This implies the more knowledge implementation the greater the level of innovation in SMEs in the Gaza strip which consistent with the respondents’ answers where their organizations use IT in KM implementation and facilitate the accomplishment of tasks according to the implementation of a knowledge management services. This result is agreed with Bixler’s study (2002) which refers a successful implementation of knowledge to the use of new technology which provides proper environment and tools to ensure a good and smooth KM implementation. It also consistent with Kebede’s study (2016) which represents the dealing with the operational aspects of the knowledge assets, including functions, processes, and organizational structures as main factors support knowledge implementation.

2. There is a significant impact of KM at the level of innovation process in SMEs in Gaza.

For the purpose of evaluating the impact of KM practices, namely KC, KA, KS and KI on the innovation level in SMEs in Gaza and for testing the second main hypothesis. The multiple regression analysis was applied on the collected data from the employees of the ICT enterprises which are classified as SMEs in the Gaza Strip. Calculating a multiple regression coefficient and regression equation using two or more independent variables is termed multiple regression analysis (Saunders, et al 2009). This analysis used to assess the strength of a cause-and-effect relationship between variables.

Table (5.12): The multiple regression analysis of the KM practices on the level of innovation

Dependent Variable: level of innovation process in SMEs			
Variables	Coefficient "β"	t-test	(p-value) Sig.
Constant	3.199	13.443	0.000
D1	0.218	2.809	0.005
D2	0.071	1.075	0.283
D3	0.002	0.031	0.975
D4	0.349	8.353	0.000
Adj. R²	0.544		
DW	2.108		
F-test	74.055		
Sig. (P-value)	0.000		

Table (5.12) presents the results of building the multiple regression model include the parameters' estimate and relevant significance test, as well as some measures of model adequacy.

The regression equation is:

$$Y = 3.199 + 0.218 * D1 + 0.071 * D2 - 0.002 * D3 + 0.349 * D4$$

Y= level of innovation process in SMEs

D1 = Knowledge creation

D2= Knowledge sharing, dissemination and enrichment

D3 = Knowledge acquisition (information storage).

D4= Knowledge implementation

The results of the multiple regression analysis in Table (5.12) show that there are two variables significantly contribute in enhancing the innovativeness process in the SMEs in the Gaza Strip. The significant predictors are D1 ($\beta = 0.218$, P-value = 0.005) and D4 ($\beta = 0.349$, P-value = 0.000), while other two predictors, namely D2 and D3 are considered as insignificant variables where their associated P-values are greater than 0.05. The multiple regression model explains 54.4% of the variability in the level of innovativeness process with (F=74.055, P-value =0.000).

The above results reveal that the two practices of KM process, knowledge creation (D1) and Knowledge implementation (D4) together have significant impact on the level of innovativeness process, while knowledge sharing (D2) provides some benefits to the process of enhancing the level of innovativeness process but does not have a significant impact.

EL-Ghorra's study (2011) indicated that there is a positive impact for both knowledge applicability which refers to the implementation of knowledge and knowledge availability which consists KC at the level of innovation in SMEs in the Gaza Strip. Also, Alaarj et al. study (2016) shows that there is a direct significant effect of knowledge process capabilities on organizational performance; which represents an important factor of innovation.

The multiple regressions Table (5.12) reveals that the knowledge implementation is the most influential factor affecting the level of innovativeness process (Y), where the increase of the KI by 10% will increase the level of innovativeness by 3.49% by controlling other factors. The KC is the second influential factor, where 10% increase in the KC will increase the level of innovativeness process (Y) by 2.18% by controlling other factors.

Previous table shows the following:

- a. The p-value for F-test less than 0.05, so the model are overall fit, and the independent variables impact on the dependent variable.
- b. the Adj. $R^2 = 0.544$ which means that 54% of the variation in the dependent variable are explained by the independent variables, and there are 46% other independent variables impact on the dependent variable.
- c. P-value for T-test for independent variables are greater than 0.05 except the last variable is less than 0.05, so there are other variables that affect the model more than these variables.
- d. The value of the DW- test is equal to 2.108 that means: the independent variables do not affect each other, that causing strength in the model.

The researcher considers this result is logical, and the model expresses the fact that the success of each practice KM impact on the level of innovation process in SMEs in Gaza. However, the effect of each independent variable separately on the target was positive and it produced a suitable simple model, and this is agreed with the literatures of this study.

3. There is a significant difference in the responses of the research sample due to the following personal characteristics (gender, age, qualification, occupation type, type of organization, occupation, and years of service).

In order to study the effect of personal characteristics on the level of innovation, the researcher conducted statistical tests to test if there is a significant difference in the responses of the research sample due to the personal characteristics.

a. Gender

Gender is very important when talking about knowledge management because some of the research was dedicated to discuss and examine the effect of gender on KM practices, and how gender affects the environment of knowledge sharing at SMEs. Table (5.13) shows the classification of respondents according to their gender. As depicted in the table around (95%) of the inclined respondents were males, while 5% were females.

To determine if there were statistically significant differences in the responses between respondents according to their sex, an independent samples t-test was conducted.

Table (5.13): Independent Sample T-test for Difference in Responses According to Gender

	Gender	No	mean	standard deviation	T value	P-value "Significance"
Knowledge creation	Male	233	6.472	1.691	2.052	0.041*
	Female	13	5.494	1.297		
Knowledge sharing, dissemination and enrichment	Male	233	6.492	1.829	2.209	0.028*
	Female	13	5.354	1.310		
Knowledge acquisition (information storage)	Male	233	6.478	1.843	2.187	0.043*
	Female	13	5.846	0.946		
Knowledge implementation	Male	233	5.917	1.680	2.663	0.008**
	Female	13	4.628	2.016		
Mean knowledge management process	Male	233	6.340	1.559	2.301	0.022*
	Female	13	5.330	1.096		
The level of innovation at SMEs	Male	233	7.119	1.317	2.310	0.036*
	Female	13	6.449	0.999		

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.13) presents the results of independent sample t-test. Generally, male means of responses are greater than female means. The significance is less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to gender. It was in favour of the male. The result is in agreement with Dahleez, K. A.'s study (2009) which indicated that men tend to be more motivated by wealth creation, whereas women have family-oriented motivation and desire more flexibility through work from their homes.

b. Age

One-way ANOVA's test (F test) was conducted to study the differences between responses with respect of different age groups.

Table (5.14): One-way ANOVA's Test Comparing Age Groups by their P-values, (n=246)

Domain		Sum of Squares	Df	Mean Square	F value	Significance
Knowledge creation	Between Groups	102.672	2	51.336	21.051	0.000**
	Within Groups	592.602	243	2.439		
	Total	695.274	245			
Knowledge sharing, dissemination and enrichment	Between Groups	132.369	2	66.185	23.630	0.000**
	Within Groups	680.624	243	2.801		
	Total	812.993	245			
Knowledge acquisition (information storage)	Between Groups	124.323	2	62.162	22.223	0.000**
	Within Groups	679.724	243	2.797		
	Total	804.047	245			

Knowledge implementation	Between Groups	141.697	2	70.848	29.577	0.000**
	Within Groups	582.072	243	2.395		
	Total	723.769	245			
Mean knowledge management process	Between Groups	123.579	2	61.790	32.150	0.000**
	Within Groups	467.030	243	1.922		
	Total	590.609	245			
The level of innovation at SMEs	Between Groups	60.903	2	30.452	20.596	0.000**
	Within Groups	359.274	243	1.478		
	Total	420.177	245			

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.14) presents the results of the one way – ANOVA test, the results show that P-value for all considered domains are less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are significant differences between the means of responses due to age. The researcher attributes this result to the high ambitious of people who work at ICT sector to develop themselves and seek for new opportunities.

The Scheffe test was used to find the differences shown in the following table:

Table (5.15): Scheffe Test

		Less than 30 years	30-40 years	40-50 years
Knowledge creation	Less than 30 years	-	0.127	2.757*
	30-40 years	-0.127	-	2.630*
	40-50 years	-2.757*	-2.630*	-
Knowledge sharing, dissemination and enrichment	Less than 30 years	-	0.129	3.125*
	30-40 years	-0.129	-	2.996*
	40-50 years	-3.125*	-2.996*	-
Knowledge acquisition (information storage)	Less than 30 years	-	0.451	3.074*
	30-40 years	-0.451	-	2.623*
	40-50 years	-3.074*	-2.623*	-
Knowledge implementation	Less than 30 years	-	0.413	3.286*
	30-40 years	-0.413	-	2.872*
	40-50 years	-3.286*	-2.872*	-
Mean knowledge management process	Less than 30 years	-	0.280	3.060*
	30-40 years	-0.280	-	2.780*
	40-50 years	-3.060*	-2.780*	-
The level of innovation at SMEs	Less than 30 years	-	0.495*	2.094*
	30-40 years	-0.495*	-	1.599*
	40-50 years	-2.094*	-1.599*	-

Table (5.15) shows that the significance is less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are differences among the respondents in their age. It was in favor of the (40-50 years). This result is rational due to the inclination of the people at this age period to move from enterprise to another because they are usually either experts or at senior levels.

c. Qualification

One-way ANOVA's test (F test) was conducted to study the differences between responses with respect of different qualification groups.

Table (5.16): One-way ANOVA's Test Comparing Qualification Groups by their P-values, (n=246)

Domain		Sum of Squares	Df	Mean Square	F value	Significance
Knowledge creation	Between Groups	59.530	3	19.843	7.553	0.000**
	Within Groups	635.744	242	2.627		
	Total	695.274	245			
Knowledge sharing, dissemination and enrichment	Between Groups	77.415	3	25.805	8.490	0.000**
	Within Groups	735.578	242	3.040		
	Total	812.993	245			
Knowledge acquisition (information storage)	Between Groups	41.509	3	13.836	4.391	0.005**
	Within Groups	762.538	242	3.151		
	Total	804.047	245			
Knowledge implementation	Between Groups	6.901	3	2.300	0.777	0.508//
	Within Groups	716.868	242	2.962		
	Total	723.769	245			
Mean knowledge management process	Between Groups	37.414	3	12.471	5.456	0.001**
	Within Groups	553.195	242	2.286		
	Total	590.609	245			
The level of innovation at SMEs	Between Groups	34.193	3	11.398	7.146	0.000**
	Within Groups	385.985	242	1.595		
	Total	420.177	245			

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.16) presents the results of the one way – ANOVA test, the results show that P-value for the most of the considered domains are less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are significant differences between the means of

responses due to educational qualification. Then there are insignificant differences between the means of responses due to educational qualification.

The Scheffe test was used to find the differences as shown in the following table:

Table (5.17): the Scheffe test

Domain		diploma	Master	Bachelor	PhD
Knowledge creation	diploma	-	2.734*	0.376	-1.214
	Bachelor	-0.376	2.358*	-	-1.590
	Master	-2.734*	-	-2.358*	-3.948*
	PhD	1.214	3.948*	1.590	-
Knowledge sharing, dissemination and enrichment	diploma	-	2.595*	0.180	-2.543
	Bachelor	-0.180	2.414*	-	-2.723*
	Master	-2.595*	-	-2.414*	-5.138*
	PhD	2.543	5.138*	2.723*	-
Knowledge acquisition (information storage)	diploma	-	1.805	-0.177	-1.757
	Bachelor	0.1767	1.982*	-	-1.580
	Master	-1.805	-	-1.982*	-3.563*
	PhD	1.758	3.563*	1.580	-
Mean knowledge management process	diploma	-	1.895*	0.021	-1.524
	Bachelor	-0.021	1.875*	-	-1.545
	Master	-1.895*	-	-1.875*	-3.420*
	PhD	1.524	3.420*	1.545	-
The level of innovation at SMEs	diploma	-	2.112*	0.21	0.341
	Bachelor	-0.021	2.091*	-	0.320
	Master	-2.112*	-	-2.091*	-1.771
	PhD	-0.341	1.771	-0.320	-

Table (5.17) shows that the significance is less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are differences among the respondents in their qualification. It was in favour of the master's degree. The researcher attributes this result to the inclination of a lot of graduates to complete their studies after Bachelor's degree in order to improve the quality of their life and expand their job opportunities. This results is agreed with Dahleez, K. A.'s study (2009) which reflects a logical response based on the perception that bachelor and higher academic degrees strengthening the knowledge base of the entrepreneurs and employees at SMEs who are the leaders of the most SMEs and present role models of successful leaders.

d. Occupation Type

One-way ANOVA's test (F test) was conducted to study the differences between responses with respect of different qualification groups.

Table (5.18): One-way ANOVA's Test Comparing Occupation Type Groups by their P-values, (n=246)

		Sum of Squares	Df	Mean Square	F value	Significance
Knowledge creation	Between Groups	147.358	2	73.679	32.677	0.000**
	Within Groups	547.916	243	2.255		
	Total	695.274	245			
Knowledge sharing, dissemination and enrichment	Between Groups	197.625	2	98.813	39.020	0.000**
	Within Groups	615.367	243	2.532		
	Total	812.993	245			
Knowledge acquisition (information storage)	Between Groups	141.007	2	70.504	25.839	0.000**
	Within Groups	663.040	243	2.729		
	Total	804.047	245			
Knowledge implementation	Between Groups	94.946	2	47.473	18.345	0.000**
	Within Groups	628.824	243	2.588		
	Total	723.769	245			
Mean knowledge management process	Between Groups	135.147	2	67.574	36.052	0.000**
	Within Groups	455.462	243	1.874		
	Total	590.609	245			
The level of innovation at SMEs	Between Groups	23.851	2	11.925	7.312	0.001**
	Within Groups	396.327	243	1.631		
	Total	420.177	245			

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.18) shows that the significance is less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to Occupation Type.

The Scheffe test was used to find the differences shown in the following table:

Table (5.19): The Scheffe test

		International position	Local position	Both
Knowledge creation	International position	-	0.797	1.804*
	Local position	-0.797	-	1.007
	Both	-1.804*	-1.007	-
Knowledge sharing, dissemination and enrichment	International position	-	0.315	2.095*
	Local position	-0.315	-	1.781*
	Both	-2.095*	-1.781*	-
Knowledge acquisition (information storage)	International position	-	1.950*	1.533*
	Local position	-1.950*	-	-0.417
	Both	-1.533*	0.417	-
Knowledge implementation	International position	-	1.263*	1.359*
	Local position	-1.263*	-	0.096
	Both	-1.359*	-0.096	-
Mean knowledge management process	International position	-	1.081*	1.698*
	Local position	-1.081*	-	0.616
	Both	-1.698*	-0.616	-
The level of innovation at SMEs	International position	-	0.070	0.726*
	Local position	-0.070	-	0.656
	Both	-0.726*	-0.656	-

Table (5.19) shows that the significance is less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are differences among the respondents in their Occupation Type. It was in favour of both; international and local positions.

e. Type of Organization

To determine if there were statistically significant differences in the responses between respondents according to the type of their organizations, Two Independent sample T-test was conducted.

Table (5.20): Independent Sample T-test for Difference in Responses According to the Type of Organization

Domain	Type of Organization	No	mean	standard deviation	T value	Significance
Knowledge creation	Small (5-19 employee)	194	6.507	1.761	1.554	0.122//
	Medium (20 – 49 employee)	52	6.099	1.329		
Knowledge sharing, dissemination and enrichment	Small (5-19 employee)	194	6.504	1.851	1.197	0.233//
	Medium (20 – 49 employee)	52	6.163	1.697		
Knowledge acquisition (information storage)	Small (5-19 employee)	194	6.359	1.815	-1.434	0.153//
	Medium (20 – 49 employee)	52	6.763	1.780		
Knowledge implementation	Small (5-19 employee)	194	5.908	1.822	1.294	0.198//
	Medium (20 – 49 employee)	52	5.627	1.253		
Mean knowledge management process	Small (5-19 employee)	194	6.319	1.636	0.767	0.445//
	Medium (20 – 49 employee)	52	6.163	1.198		
The level of innovation at SMEs	Small (5-19 employee)	194	7.113	1.413	0.916	0.361//
	Medium (20 – 49 employee)	52	6.973	0.819		

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.20) shows that the significance is greater than the significance level at ($\alpha \leq 0.05$), this result shows that there are no differences between the respondents in their opinions over impact of KM practices at the level of innovation process in SMEs in Gaza attributed to type of Organization. This result indicates that the type of organization according to its size does not effect on the level of the innovation like other characteristics such as age and qualification. This result is consistent with Bixler’s study (2002) which indicates that KM works in every organization regardless of its size if it has a good application for change management strategies and if the top management level support the KM practices.

f. Occupation

One-way ANOVA's test (F test) was conducted to study the differences between responses of the research sample attributed to their Occupation.

Table (5.21): One-way ANOVA's Test Comparing Occupation Groups by their P-values, (n=246)

Domain		Sum of Squares	Df	Mean Square	F value	Significance
Knowledge creation	Between Groups	203.828	6	33.971	16.521	0.000**
	Within Groups	491.446	239	2.056		
	Total	695.274	245			
Knowledge sharing, dissemination and enrichment	Between Groups	118.289	6	19.715	6.783	0.000**
	Within Groups	694.704	239	2.907		
	Total	812.993	245			
Knowledge acquisition (information storage)	Between Groups	167.278	6	27.880	10.464	0.000**
	Within Groups	636.769	239	2.664		
	Total	804.047	245			
Knowledge implementation	Between Groups	137.994	6	22.999	9.384	0.000**
	Within Groups	585.776	239	2.451		
	Total	723.769	245			
Mean knowledge management process	Between Groups	135.410	6	22.568	11.849	0.000**
	Within Groups	455.199	239	1.905		
	Total	590.609	245			
The level of innovation at SMEs	Between Groups	67.933	6	11.322	7.682	0.000**
	Within Groups	352.244	239	1.474		
	Total	420.177	245			

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.21) presents the results of the one way – ANOVA test, the results show that P-value for all considered domains are less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are significant differences between the means of responses due to occupation. The researcher attributes this result to the fruitful knowledge exists within an environment with employees who occupy different occupations.

The Scheffe test was used to find the differences shown in the following table:

Table (5.22): the Scheffe test

		Director	Deputy Director	Head of Department	Deputy H.o.D	Senior Officer	Officer	other
Knowledge creation	Director	-	-3.518*	-3.782 ^{-*}	-4.195 ^{-*}	-2.741 ^{-*}	-4.182 ^{-*}	-5.694 ^{-*}
	Deputy Director	3.518 ⁺	-	-0.263	-0.676	0.778	-0.660	-2.176 ^{-*}
	Administrative	3.781 ⁺	0.263	-	-0.413	1.041 ⁺	-0.400	-1.913 ^{-*}
	Technician	4.195 ⁺	0.676	0.414	-	1.454 ⁺	0.013	-1.499
	Engineer	2.740 ⁺	-0.777	-1.041 ^{-*}	-1.454 ^{-*}	-	-1.441	-2.954 ^{-*}
	Designer	4.181 ⁺	0.663	0.400	-0.013	1.441	-	-1.513
	other	5.694 ⁺	2.176 ⁺	1.913 ⁺	1.499	2.954 ⁺	1.513	-
Knowledge sharing, dissemination and enrichment	Director	-	-3.317*	-3.826*	-3.939	-3.157*	-3.110*	-4.933*
	Deputy Director	3.317*	-	-0.510	-0.623	0.159	0.207	-1.617
	Administrative	3.826*	0.510	-	-0.113	0.669	0.717	-1.107
	Technician	3.939*	0.623	0.113	-	0.782	0.830	-0.994
	Engineer	3.157*	-0.159	-0.669	-0.782	-	0.048	-1.777*
	Designer	3.109*	-0.207	-0.717	-0.830	-0.048	-	-1.824
	other	4.933*	1.617	1.107	0.994	1.776*	1.824*	-
Knowledge acquisition (information storage)	Director	-	-3.078*	-3.559*	-3.626 ^{-*}	-2.374	-2.600	-4.933 ^{-*}
	Deputy Director	3.0778 ⁺	-	-0.481	-0.549	0.704	0.478	-1.856
	Administrative	3.55862 ⁺	0.481	-	-0.068	1.185 ⁺	0.959	-1.375
	Technician	3.626 ⁺	0.549	0.068	-	1.253 ⁺	1.026	-1.307
	Engineer	2.373	-0.704	-1.185 ^{-*}	-1.253 ^{-*}	-	-0.226	-2.560 ^{-*}
	Designer	2.600	-0.478	-0.959	-1.026	0.226	-	-2.333 ^{-*}
	other	4.933 ⁺	1.856	1.375	1.307	2.560 ⁺	2.333*	-
Knowledge implementation	Director	-	-3.352*	-3.500 ^{-*}	-3.570 ^{-*}	-2.934 ^{-*}	-5.568 ^{-*}	-4.250 ^{-*}
	Deputy Director	3.352 ⁺	-	-0.148	-0.218	0.418	-2.216 ^{-*}	-0.898
	Administrative	3.500 ⁺	0.148	-	-0.070	0.566	-2.068 ^{-*}	-0.750
	Technician	3.570 ⁺	0.218	0.070	-	0.636	-1.998 ^{-*}	-0.680
	Engineer	2.934 ⁺	-0.418	-0.566	-0.636	-	-2.634 ^{-*}	-1.316
	Designer	5.568 ⁺	2.216 ⁺	2.068 ⁺	1.998 ⁺	2.634 ⁺	-	1.318
	other	4.250 ⁺	0.898	0.750	0.680	1.316	-1.318	-
Mean knowledge management process	Director	-	-3.316*	-3.667 ^{-*}	-3.833 ^{-*}	-2.801 ^{-*}	-3.865 ^{-*}	-4.953 ^{-*}
	Deputy Director	3.316 ⁺	-	-0.350	-0.517	0.515	-0.549	-1.637
	Administrative	3.667 ⁺	0.350	-	-0.166	.865 ⁺	-0.198	-1.286
	Technician	3.833 ⁺	0.517	0.166	-	1.031 ⁺	-0.032	-1.120
	Engineer	2.801 ⁺	-0.515	-.865 ^{-*}	-1.031 ^{-*}	-	-1.063	-2.151 ^{-*}
	Designer	3.865 ⁺	0.549	0.198	0.032	1.063	-	-1.088
	other	4.953 ⁺	1.637	1.286	1.120	2.151 ⁺	1.088	-
The level of innovation at SMEs	Director	-	-2.093	-2.867 ^{-*}	-3.345 ^{-*}	-2.993 ^{-*}	-3.414 ^{-*}	-3.352 ^{-*}
	Deputy Director	2.093	-	-0.774	-1.252 ^{-*}	-0.900	-1.322	-1.259
	Administrative	2.867 ⁺	0.774	-	-0.479	-0.127	-0.548	-0.485
	Technician	3.345 ⁺	1.252 ⁺	0.479	-	0.352	-0.069	-0.007
	Engineer	2.993 ⁺	0.900	0.127	-0.352	-	-0.421	-0.359
	Designer	3.414 ⁺	1.322	0.548	0.069	0.421	-	0.062
	other	3.352 ⁺	1.259	0.485	0.007	0.359	-0.062	-

Table (5.22) shows the Scheffe test which is used to identify the source of differences between job titles, the results show that there are significant differences between the respondents in their occupation in favour of the Director.

g. Years of Service

One-way ANOVA's test (F test) was conducted to study the differences between responses of the research sample attributed to their years of service.

Table (5.23): One-way ANOVA's Test Comparing Years of Service Groups by their P-values, (n=246)

Domain		Sum of Squares	Df	Mean Square	F value	Significance
Knowledge creation	Between Groups	119.864	3	39.955	16.804	0.000**
	Within Groups	575.410	242	2.378		
	Total	695.274	245			
Knowledge sharing, dissemination and enrichment	Between Groups	157.222	3	52.407	19.340	0.000**
	Within Groups	655.770	242	2.710		
	Total	812.993	245			
Knowledge acquisition (information storage)	Between Groups	148.246	3	49.415	18.235	0.000**
	Within Groups	655.801	242	2.710		
	Total	804.047	245			
Knowledge implementation	Between Groups	125.949	3	41.983	16.995	0.000**
	Within Groups	597.820	242	2.470		
	Total	723.769	245			
Mean knowledge management process	Between Groups	128.716	3	42.905	22.479	0.000**
	Within Groups	461.893	242	1.909		
	Total	590.609	245			
The level of innovation at SMEs	Between Groups	98.941	3	32.980	24.845	0.000**
	Within Groups	321.237	242	1.327		
	Total	420.177	245			

** Significant at 0.01 * Significant at 0.05 // not Significant

Table (5.23) presents the results of the one way – ANOVA test, the results show that P-value for all considered domains are less than the significance level at ($\alpha \leq 0.05$), this result indicates that there are significant differences between the means of responses due to years of service.

The Scheffe test was used to find the differences shown in the following table:

Table (5.24): The Scheffe test

Domain		Between 1-3 years	Between 3-5 years	Between 5-10 years	More than 10 years
Knowledge creation	Between 1-3 years	-	-0.093	1.369*	1.645*
	Between 3-5 years	0.093	-	1.462*	1.737*
	Between 5-10 years	-1.369*	-1.462*	-	0.275
	More than 10 years	-1.645*	-1.737*	-0.275	-
Knowledge sharing, dissemination and enrichment	Between 1-3 years	-	-0.798	1.112*	1.300
	Between 3-5 years	0.798	-	1.909*	2.098*
	Between 5-10 years	-1.112*	-1.909*	-	0.188
	More than 10 years	-1.300	-2.098*	-0.188	-
Knowledge acquisition (information storage)	Between 1-3 years	-	-0.432	1.283*	1.748*
	Between 3-5 years	0.432	-	1.715*	2.180*
	Between 5-10 years	-1.283*	-1.715*	-	0.465
	More than 10 years	-1.748*	-2.180*	-0.465	-
Knowledge implementation	Between 1-3 years	-	-0.264	0.771*	2.578*
	Between 3-5 years	0.264	-	1.035*	2.842*
	Between 5-10 years	-0.771*	-1.035*	-	1.807*
	More than 10 years	-2.578*	-2.842*	-1.807*	-
Mean knowledge management process	Between 1-3 years	-	-0.396	1.134*	1.818*
	Between 3-5 years	0.396	-	1.530*	2.214*
	Between 5-10 years	-1.134*	-1.530*	-	0.684
	More than 10 years	-1.818*	-2.214*	-0.684	-
The level of innovation at SMEs	Between 1-3 years	-	-0.213	1.061*	1.732*
	Between 3-5 years	0.213	-	1.275*	1.945*
	Between 5-10 years	-1.061*	-1.275*	-	0.671
	More than 10 years	-1.732*	-1.945*	-0.671	-

Table (5.24) shows that the significance is less than the significance level at ($\alpha \leq 0.05$), this result shows that there are differences between the respondents in their Years of Service. It was in favour of the (between 5-10 years or more than 10 years).

The researcher attributes the above result to the engagement level in SMEs, where when the number of years of service increases, the integration and interaction levels of employees in the institution increase.

Chapter Six

Conclusions and Recommendations

Chapter Six

Conclusions and Recommendations

Introduction

This chapter gives a conclusion and shed lights on all the important points. The conclusion will be illustrated according to the results obtained in previous chapters, recommendations will be presented in the light of the conclusion, and topics for future researches will be proposed at the end of this chapter.

Conclusions

The research aims at investigating the effect of applying KM strategies on the level of the innovation process in the SMEs in the Gaza Strip and how these strategies represent a bedrock of the organization's competitive advantage. The study targets the employees of small and medium enterprises in the ICT sector in the Gaza Strip. The results are, to big extent, consistent with results of previous studies in literature.

In the main, the results have shown that there is a positive correlation between KM and innovation in the SMEs in the Gaza Strip; however, there is a need to implement a radical infrastructural reform in the target enterprises in order to achieve the desired outcome of KM. Also, the study concluded that there are differences among the respondents in their opinions over the impact of KM at the level of innovation process in SMEs in Gaza attributed to their (gender, age, qualification, occupation type, occupation, and years of service). Finally the study suggests recommendations for the SMEs working in the ICT sector that contributes on enhancing the innovativeness process.

The followings are the detailed conclusions that are obtained during the research divided into seven paragraphs: KC, KA, KS, KI, the level of innovation process in SMEs in the Gaza Strip, sample characteristics and the hypotheses.

1. Knowledge creation, KC
 - a. There is a positive correlation statistically significant between KC and the level of innovation in SMEs in the Gaza strip. Also, KC has a significant impact on the level of innovation due to the availability of KC strategies like facilitating day to day interaction, the existence of free flow of relevant information and using new technologies and employing IT practices.
 - b. The results show that using new technologies and employing IT practices lead the enterprises to develop and create new knowledge. Using new technologies makes the interaction with clients, suppliers and consumers easier where the creation of new knowledge based on that interaction is enhanced.
 - c. The availability and easiness of sharing information contribute to the creation of knowledge and help the enterprises to be innovative. But the cultural level of sharing information between the employees of the targeted SMEs is not matured

- enough to enhance the KC practice and still needs to be raised among the employees to reach to the desired level.
- d. Employees at the SMEs working in the Gaza Strip are not given a proper space to reflect on information. They are not goodly involved in the strategic planning in the organizations. That may refers to the nature of these enterprises where many enterprises are considered as family businesses which means a centralized decision mostly. Also, the turbulence situation in the Gaza Strip raises an obvious concern for the employers and leads most enterprises to pay a little attention to the strategic planning process and pay more attention to plan for short periods according to the state. Where strategic planning requires a state of stability, internally and externally.
2. Knowledge sharing, KS
 - a. There is a positive correlation statistically significant between KS and the level of innovation in SMEs in the Gaza strip, while there is no significant impact on the level of innovation by KS. This may be due to the fact that the employees in the SMEs avoid sharing their own valuable knowledge with others in order to maintain their competitive advantage as very important knowledgeable employees.
 - b. The results show that the enterprises make efforts to share their knowledge and experiences between their employees through different strategies and tactics, such as using technologies and enhancing their cooperative culture toward sharing knowledge, while employees believe that they should be rewarded for their cooperation and sharing of experience.
 - c. Moreover, the results show that a half employees believe that rotation contributes in sharing and spreading of knowledge in the enterprises. That may refers to their previous experience in rotation either in the same or other enterprises. And for those who do not see the importance of rotation; that may refers to the lack of understanding of the rotation concept.
 3. Knowledge acquisition, KA
 - a. There is a positive correlation statistically significant between KA and the level of innovation in SMEs in the Gaza strip, which shows that these enterprises to make efforts to acquire the valuable and fruitful knowledge through different strategies and tactics. While there is no significant impact on the level of innovation by KA. This may refer to the lacking of the R&D practices or external KA strategies such as creating collaboration and alliances with other entities, experts or hiring staff with high experiences and distinguished skills.
 - b. The results show the importance of social interaction with customers and stakeholders at contributing to knowledge acquisition and innovation. That may refers to the enterprises' desire to get feedback and recommendations from their

- customers and stakeholders to create their own competitive advantage by satisfying their needs and aspirations.
- c. Many of the targeted enterprises in this study keep on the acquainted knowledge that support its strategic goals. That may refers to the competition state between enterprises, where acquainted knowledge helps at creating a good reference for the future steps and strategic choices. Also, keep on with acquainted knowledge helps at solving the future problems that may be encountered, in an efficient and rapid way.
 - d. Many of the targeted enterprises in this study do not carry out a regular assessment for the level of employees' knowledge.
 - e. Also, many of the targeted enterprises do not consider new knowledge as an added value.
4. Knowledge implementation, KI
- a. There is a positive correlation statistically significant between KI and the level of innovation in SMEs in the Gaza strip, also, KI has a significant impact on the level of innovation. This may be due to utilizing the new technology techniques and employing IT practices in knowledge implementation, where technology represent a key pillar for the success of KI.
 - b. The results show that the organizational structure allows and supports its employees to accomplish their tasks according to the knowledge management services. That may refers to the technological advancements which simplify communication, the way of doing things and improve the learning environment.
 - c. Also, the study reveals that the targeted enterprises involve cultural changes in the way employees perceive and share knowledge they develop or possess.
 - d. There are not enough clear organizational roles and responsibilities for effective Knowledge Management implementation in many of the target enterprises. That may refers to the immaturity of KM concepts in these enterprises
 - e. Finally, the study reveals that there is a lacking for most of the targeted enterprises to define a budget for KI initiatives. That may refers to the enterprises priorities, where the turbulence situation in Gaza leads many enterprises to see KM as a luxury not a priority.
5. The level of innovation process in SMEs.
- a. There is a positive correlation statistically significant between KM and the level of innovation process in SMEs in the Gaza strip, but there are two variables have significant impact on the level of innovation (KC & KI). This may be due to the importance of KC in making the enterprise more distinguished. Also, practicing KI in a good way ensures a good level of KM in general.

- b. The results reveal that, the respondents working in the targeted enterprises believe that their enterprises occupy a good level amongst competitors.
 - c. Also, the results reveal that many of the targeted enterprises involve creating or re-engineering products or services to meet new market demand within their innovative efforts to excel in the market. That may refer to the seeking of enterprises to follow the cutting-edge products and services and stay in the competitive environment.
 - d. Many of the targeted enterprises are developing/applying new marketing techniques to expand sales opportunities and achieve a bigger market share.
 - e. The targeted enterprises are not exerting enough effort to get transformed to an organizational learning theme and are not applying proper knowledge management practices.
 - f. The research studies implemented by the target enterprises are not sufficiently contributing to the employees therein. That may refer to the poor practices of R&D and weak coordination with universities and research institutes.
6. Personal characteristics
- a. There are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to their gender in favor of the males.
 - b. There are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to age in favour of the (40-50 years).
 - c. There are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to qualification in favour of the (master).
 - d. There are differences among the respondents in their opinions over Impact of KM at the level of innovation process in SMEs in Gaza attributed to occupation type on favour of both international and local positions.
 - e. There are differences among the respondents in their occupation in favor of the Director.
 - f. There are differences among the respondents in their years of service in favor of the (between 6-10 years or more than 10 years).
7. Testing of hypotheses
- a. The study approved the first hypothesis of the research and its sub-hypotheses, as there is a positive correlation between KM & the level of innovation process in SMEs, where, there is a positive correlation between (KC, KS, KA, KI) & the level of innovation in the targeted SMEs.

- b. The Study approved the second hypothesis partially, where there are two KM practices (KC and KI) significantly contribute in enhancing the innovation level in SMEs, while other KM practices, namely KA and KS are considered as insignificant variables. Thus, the researcher sees that companies should focus more on those two strategies to increase the innovation level within the SMEs.
- c. The Study largely approved the third hypothesis, where it indicated that there are significant differences among the respondents in their opinions over the impact of KM at the level of innovation process in SMEs in Gaza attributed to (gender, age, qualification, occupation type, occupation, and years of service). While, there is no significant differences among the respondents attributed to type of organization.

Recommendations

Based on the results of this research and of other researchers, the following paragraphs present the most viable and important recommendations as seen by the researcher. The recommendations are divided into five paragraphs: KC, KA, KS, KI and level of innovation process in SMEs.

1. Knowledge creation, KC

- a. Tailored training programs should be designed and implemented for employees working in SMEs in the Gaza Strip to improve their knowledge creation practices, where this phase plays an essential role in developing the situation of the current knowledge level to the desired level.
- b. SMEs are supposed to enhance and keep on development of IT practices within their structure, where the current study and the previous studies reveal that technology provides proper environment and tools to ensure a good level of KC, while the absence of suitable tools or technology can lead to knowledge shortage.
- c. Employees working at SMEs in the Gaza Strip should be given a wider space to reflect on information and involved in the organizational strategic planning. Where the more the employees' aspirations are met with the strategic plans of their enterprises; these plans will be strongly related to them which ensures the better performance.

2. Knowledge sharing, KS

- a. SMEs should keep on developing, sharing and disseminating information amongst all employees within their structure which is important to share knowledge that has been created or captured throughout the enterprises with each other, so that they will be able to perform their job better and eventually lead to higher organizational performance. Also, sharing knowledge increases the productivity of enterprises' team, increases the opportunity to work faster and smarter and gets easier access to the internal resources and expertise within the enterprises.

- b. SMEs should reward their employees who cooperate and share their knowledge and experience. This step helps enterprises to overcome obstacles due to the culture of employees who are reluctant to share their special knowledge freely with their colleagues.
 - c. SMEs should organize training programs/ sessions in order to raise the employees' awareness of job rotation. The importance of these programs comes from the lacking of understanding of the rotation concept and how this approach could benefit the enterprise and its employees, where this approach helps at spreading the best practices and ideas between employees and facilitate the KS process.
 - d. SMEs should encourage employees to exchange information for solving problems in the organization, where these practices increase staff engagement in the organization and make them more loyal. Also, the cooperative work during problem solving guarantees a good level of KS by practice with real work situation.
3. Knowledge acquisition, KA
- a. SMEs should promote sharing information with customers and suppliers to keep on relationships with them and contributes to the innovation in the organization. Since, customers have experience-based knowledge of products and services, therefore it would be important to have better KA techniques with them to integrate customer related information to the development process.
 - b. SMEs should strengthen the linkage between their valuable and special knowledge and their strategic plans. Thus, the enterprises guarantee that they have knowledge based decisions and plans.
 - c. SMEs should carry out a regular assessment for the level of employees' knowledge. Such kind of assessment helps at investigating the knowledge gap and identify the best KA practices to bridge this gap.
 - d. SMEs should consider the new knowledge as an added value, where the appreciation of new knowledge would reflect the enterprise's appreciation of its employees and thus further stimulate them to enrich the knowledge and information storage with fruitful ideas and experiences.
4. Knowledge implementation, KI
- a. SMEs should invest more in knowledge implementation since it contributes to the innovation of the organization. Since it is evident that, in practice, there is a shortcoming in knowledge implementation investment which means losing lots of opportunities that may lead for innovation and thus competitiveness.
 - b. SMEs should conduct a periodic assessment of the current state of knowledge management within the organization. Such kind of assessment helps at investigating the knowledge gap and identify the best practices to bridge this gap.

- c. SMEs should set clear organizational roles and responsibilities for effective Knowledge Management implementation. Since KM practices are integrated with each other, so assigning roles and responsibilities are essential to ensure a high level of coordination. Also, to enhance the progress in KM field and ensure that the working on each practice fits with the enterprise's purpose.
 - d. SMEs should set a defined budget for KM initiatives, where allocating budget for KM helps the enterprise to figure out its long-term goals in this area. Also, it forces the enterprise to figure out the most KM practices which need to be developed and tracked.
5. The level of innovation process in SMEs.
- a. SMEs should exert more efforts to get transformed to an organizational learning theme and apply proper knowledge management practices, where the four KM stages are linked, expanded and improved by the learning process which plays a vital role in tying them together. Also, the learning pillar leads individuals to be interactive and that helps visibly in sharing the tacit knowledge.
 - b. SMEs should promote the research studies implemented to better contribute to the employees therein, since the using of tested practical models for similar enterprises helps at finding the best practices within a short period and fewer efforts.

Proposed Future Studies

Following are some of the suggested related topics that can be useful for other researchers:

1. The nature and practices of KM that best fit the working theme of SMEs.
2. The relationship between KM and employees' resistance to change.
3. Evaluation of KM practices in the IT companies in the Gaza Strip.
4. Effect of KM on innovation in other organizations.

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Appendix

Appendix (A): List of Referees

No.	Referee Name	Job Title
1.	Dr. Jalal Shabat	Associate Professor at the Faculty of Administrative and Economic Sciences – AlQuds Open University
2.	Dr. Rushdi Wadi	Associate Professor at the Faculty of Commerce – The Islamic University of Gaza
3.	Dr. Wasim El-Habeel	Associate Professor at the Faculty of Commerce – The Islamic University of Gaza
4.	Dr. Akram Sammour	Assistant Professor at the Faculty of Commerce – The Islamic University of Gaza
5.	Dr. Alaedin Alsayed	Assistant Professor of Management (HRM) - Dean of Faculty of Administration and Finance -Al-Aqsa University - Gaza - Palestine
6.	Dr. Khalid El Dahliz	Assistant Professor at the Faculty of Commerce – The Islamic University of Gaza
7.	Dr. Ramez A. Bedair	Assistant Professor at the Faculty Economic and Administrative Science - Al Azhar University - Gaza
8.	Mr. Abdullah El-Hayek	Statistical Analysis Specialist

Appendix (B): Study Questionnaire

Part one: Respondent Information

1. Gender:

Male

Female

2. Age:

Less than 30 years

30 to 40 years

40 to 50 years

Above 50 years

3. Qualification:

Diploma

Master

Bachelor

PhD

4. Occupation Type:

International position

Local position

International & Local

5. Type of Organization

Small (5-19 employee)

Medium (20-49 employee)

6. Occupation:

Founder/director

Deputy Director

Administrative

Technician

Engineer

Designer

Other

7. Years of Service:

Between 1-3 years

Between 3-5 years

Between 5-10 years

More than 10 years

8. Field of Work (You can choose more than one)

Programming

Information Security

Networking

Maintenance

Internet Service Provider

Other _____

Design

A brief introduction

Knowledge management is the systematic process of finding, selecting, organizing, distilling and presenting information. Tacit knowledge is the knowledge we each carry in our heads about how to do things, who to call and the lessons learned through experience. Making it explicit is recording in some media that allows another person to use it.

Part Two: Evaluate the awareness level toward KM Concept

1. Please put a mark in the appropriate box wherever required.

• What do you know of Knowledge Management (KM)?

a) Never heard of it.

b) Something they are already doing but not under the same name.

c) It is just a management fad.

d) It is a strategic part of today's business management.

e) Something that could be beneficial for the organization.

2. Which one is the biggest cultural barrier in knowledge management in your organization?

(Rank the factors given below from 1 – 7 on your choice of preference)

- a) Functional silos.
- b) Lack of participation.
- c) Not willing to share knowledge.
- d) Lack of trust.
- a) Knowledge sharing not a part of daily work.
- b) Lack of training.
- c) Lack of rewards/ recognition for knowledge sharing.

Part Three: Evaluate KM practices and components

1. How do you evaluate the knowledge creation practices in your organization:

#	Item	1-10
1.	There is a continues interaction among our organization’s employees	
2.	Our organization enhance the collaborative team work practices	
3.	Focus groups and getting involved in solving problems help at creating new organizational knowledge	
4.	Training courses and educational activities plays an important role in creating new knowledge	
5.	Our organization provides relevant data and information to create a valuable knowledge may help for decision making	
6.	Using new technologies and employing IT practices lead our organization to develop new knowledge	
7.	Our organization facilitate the transformation of collective practices	
8.	Our organization encourage knowledge creation practices and support its employees in this way	
9.	There is free flow of relevant information in the organization	
10.	Management of the Organization encourages people to reflect on information and data, and reframe them at the strategic level	
11.	In the day-to-day work, it is easy to find the right information	
12.	When a team completes a task, it distils and documents what it has learned	

2. How do you evaluate the knowledge sharing component in your organization:

#	Item	1-10
1.	All employees are co-operative and helpful when asked for some information or advice	
2.	Knowledge sharing is seen as strength and knowledge hoarding as a weakness	
3.	Good knowledge management behaviour like sharing and reusing knowledge is actively promoted on a day to day basis	
4.	Individuals are visibly rewarded for sharing their knowledge and experience.	
5.	Formal networks exist to facilitate dissemination of knowledge	
6.	Internal staff rotation is actively encouraged to spread best practices and ideas	
7.	Technology is a key enabler in ensuring that the right information is available to the right people at the right time	
8.	There is a good team intra-communication and sharing of knowledge	
9.	You like sharing knowledge with peers.	
10.	Employees exchange information for solving problems are encouraged in the organization.	

3. How do you evaluate the knowledge acquisition component in your organization:

#	Item	1-10
1.	Intellectual assets are recognized and valued.	
2.	Our organization has a good level of social interaction with customers and stakeholders.	
3.	Intellectual assets are legally protected	
4.	Technology is shared with clients and suppliers where appropriate to enhance relationships	
5.	Our organization do a regular assessment for the level of employees' knowledge.	
6.	The organization facilitates the employees' access to essential sources of information.	
7.	The organization consider new knowledge as an added value.	
8.	The organization consider the value of the productive connection between employees.	
9.	The organization consider the value of the productive connection between employees and the external environment.	

10.	The organization keeps on the acquainted knowledge that support its strategic goals.	
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4. How do you evaluate the knowledge implementation component in your organization:

#	Item	1-10
1.	There are defined responsibilities for KM initiatives	
2.	There are clear organizational roles and responsibilities for effective Knowledge Management implementation.	
3.	There are defined budget for KM initiatives	
4.	Your organization concerns with evaluating, piloting, designing, improving and implementing improved knowledge driven work practices, processes, methods, tools and techniques.	
5.	Your organization has clear Knowledge Management Program Objectives	
6.	Your organization involves cultural changes in the way employees perceive and share knowledge they develop or possess	
7.	There are a periodic assessment of the current state of knowledge management within your organization.	
8.	Assessment of KM in your organization includes all five core knowledge management components: people, processes, technology, structure, and culture	
9.	There is a roadmap for your KM implementation	
10.	Your organization measures improve its Knowledge Management Program continuously	
11.	The organizational structure allows and facilitates its people to accomplish their task according to the knowledge management services.	
12.	Your organization use IT in KM implementation	

Part Four: Evaluate the level of innovation in your organization

#	Item	1-10
1.	Knowledge management service helps your organization to improve its performance	
2.	Your organization responds quickly to the very latest developments affecting their sectors	
3.	Your organization involves creating or re-engineering products or services to meet new market demand	

4.	Your organization develops or applies new marketing techniques to expand sales opportunities	
5.	Your organization incorporates new forms of management systems and techniques to improve operational efficiency	
6.	There is a good interest and application for R&D practices	
7.	Employees and firm in general benefit from the results of their research efforts.	
8.	Your organization aware about the importance of promoting greater co-operation and exchanges between business and universities	
9.	Your organization improves information networks on technological knowhow	
10.	Your organization seeks toward an organizational learning theme and knowledge management practices	
11.	Your organization has a good level between competitors	
12.	The organization's rules are flexible for the employees.	
13.	There is a clear strategic plan for the organizational innovation.	
14.	The organization work gradually towards development to ensure the knowledge acquisition.	
15.	The organization pay attention to the employee's suggestion and consider them in the development process and decision-making.	
16.	The organization pay attention to the customers' opinions and consider them in developing products and services.	
17.	The growth and financial prosperity of the organization is positively reflected in the level of innovation and creativity on the services and products the organization offers.	
18.	There is a clear diversity in the thinking patterns of the employees working in the organization, which increases the opportunities for creativity and innovation in products and services.	

Appendix (C): Study Questionnaire (Arabic Version)

أولاً: البيانات الشخصية

1. الجنس ذكر أنثى
2. العمر أقل من 30 سنة من 30 إلى أقل من 40
 من 40 إلى أقل من 50 50 سنة فأكثر
3. المؤهل العلمي دبلوم ماجستير
 بكالوريوس دكتوراه
4. نطاق العمل محلي خارجي
 محلي وخارجي
5. تصنيف المؤسسة متوسطة (عدد الموظفين: 20 - 49)
 صغيرة (عدد الموظفين: 5 - 19)
6. الموقع الوظيفي مالك المشروع ومديره المدير
 موظف إداري فني
 مهندس مصمم
 أخرى _____
7. عدد سنوات الخدمة من سنة إلى أقل من 3 سنوات من 3 إلى أقل من 5 سنوات
 من 5 إلى أقل من 10 سنوات عشر سنوات فأكثر
8. مجال عمل المؤسسة (بالإمكان اختيار أكثر من مجال)
 البرمجة التصميم
 الشبكات أمن المعلومات
 مزودي الانترنت صيانة
 أخرى _____

مقدمة عن الموضوع

إدارة المعرفة، هي عملية ديناميكية منتظمة ومستمرة تضم مجموعة من الممارسات وتهدف إلى تحديد المعرفة، خلقها، الاستحواذ عليها، تطويرها وتسهيل استرجاعها وتطويرها بهدف رفع أداء المؤسسة وتحسين قدراتها من خلال تعزيز مقدراتها على اتخاذ القرار المناسب في الوقت المناسب. وتهدف عملية إدارة المعرفة أيضاً إلى تحويل المعارف الضمنية المتوفرة في أذهان الموظفين والتي تعتبر وليدة الخبرات والتجارب إلى معرفة صريحة يمكن الاستفادة منها وتوظيفها في تحقيق ميزة تنافسية للمؤسسة من خلال موظفيها.

ثانياً: تقييم مستوى الوعي بمفهوم إدارة المؤسسة

1. ضع علامة ☒ أمام العبارة التي تعتقد أنها تتفق مع السؤال التالي:

ما تصورك عن مفهوم إدارة المعرفة:

- لم أسمع عنه مطلقاً عنه.
- عملية نمارسها بشكل لا إرادي بدون أن نعرفها
- مجرد موضة إدارية
- جزء استراتيجي في عالم إدارة الأعمال اليوم
- مفهوم قد يكون تطبيقه مفيداً للمنظمات

2. أي من النقاط التالية تشكل العائق الأكبر أمام إدارة المعرفة في المؤسسة التي تعمل بها (قم بترتيب النقاط من

1 إلى 7 حسب قوة العائق):

- العزلة الوظيفية (تفضيل العمل بشكل منفرد)
- قلة المشاركة والاحتكاك بالزملاء في بيئة العمل
- لا توجد رغبة في مشاركة المعرفة وتبادل الخبرات
- قلة الثقة بين الموظفين في بيئة العمل
- مشاركة المعرفة ليست جزء من العمل اليومي في المؤسسة
- قلة فرص التدريب وتطوير الذات في المؤسسة
- قلة التحفيز والمكافأة للموظف الذي يقوم بمشاركة المعارف وتبادل الخبرات

ثالثاً: تقييم ممارسات إدارة المعرفة وعناصرها

يرجى تقييم كل بند بوضع رقم من 1 إلى 10، إذ كلما اقترب التقييم من الرقم 10، دل ذلك على موافقة أعلى على البند المطروح.

1. تقييم ممارسات خلق وإنتاج المعرفة في المؤسسة التي تعمل بها

#	البند	1 ← 10
1	يتم التواصل بشكل مستمر بين الموظفين في المؤسسة بغرض تبادل المعارف والخبرات	
2	يتم تعزيز العمل التعاوني في المؤسسة من خلال فرق العمل، وذلك للمساهمة في إنتاج معرفة جديدة	
3	تساعد المجموعات البؤرية (Focus Groups) في حل المشاكل وخلق وإنتاج المعرفة في المؤسسة	
4	تلعب الدورات التدريبية والأنشطة التعليمية دوراً هاماً في خلق وإنتاج المعرفة في المؤسسة	
5	تقوم المؤسسة بتوفير البيانات والمعلومات اللازمة لخلق معرفة ذات قيمة وأثر	
6	توظيف تكنولوجيا المعلومات واستخدام التقنية الحديثة يقود المؤسسة إلى تطوير معارف ومهارات جديدة	
7	تقوم المؤسسة بتسهيل عملية تحويل الممارسات الجماعية إلى معارف ذات أثر ملموس	
8	يتم تشجيع ممارسات خلق وإنتاج المعرفة في المؤسسة كما ويتم دعم الموظفين نحو ذلك	
9	يوجد انسياب وسلاسة في انتقال المعلومات في داخل المؤسسة	
10	تشجع إدارة المؤسسة موظفيها على التفكير في البيانات الأولية والمعلومات المتوفرة وتقوم بصياغتها على المستوى الاستراتيجي للمؤسسة	
11	يسهل توفير البيانات والمعلومات اللازمة لانجاز العمل خلال ممارسات العمل اليومي في المؤسسة	
12	تقوم فرق العمل بتوثيق الملاحظات الهامة والمعلومات الجديدة خلال انجازها للمهام المختلفة	

2. تقييم ممارسات مشاركة المعرفة في المؤسسة التي تعمل بها

#	البند	1 ← 10
1	يسود التعاون بين الموظفين كالمساعدة في تقديم المعلومات أو اسداء النصح لزملائهم	
2	يُنظر في المؤسسة إلى مشاركة المعرفة على أنها عنصر قوة وأن التحفظ على المعارف والخبرات على أنه عنصر ضعف	
3	توجد ممارسات ملحوظة لإدارة المعرفة في المؤسسة، كمشاركة المعرفة وإعادة استخدامها	
4	يتم تحفيز الأفراد العاملين في المؤسسة مقابل مشاركتهم معارفهم وخبراتهم	
5	تقيس المؤسسة مدى فعالية قنوات التواصل في نشر وتبادل المعرفة	

6	يتم تشجيع وتعزيز التدوير الداخلي في المؤسسة بهدف نقل الخبرات ونشر الأفكار والمعارف المختلفة
7	تعد التكنولوجيا عاملاً أساسياً لضمان وصول المعلومات المناسبة للأشخاص المنسبين في الوقت المناسب
8	يوجد فريق عمل جيد وملتزم لأهمية التواصل الداخلي والمساهمة في نشر المعرفة بين العاملين في المؤسسة
9	توجد رغبة في مشاركة المعرفة مع الزملاء في بيئة العمل
10	تقوم المؤسسة بتشجيع الموظفين الذين يقومون بمشاركة المعرفة والخبرات للمساهمة في حل مشكلات المؤسسة

3. تقييم ممارسة الاستحواذ على المعرفة المؤسسة التي تعمل بها

#	البند	1 ← 10
1	تحتزم المؤسسة الأصول الفكرية التي لديها وتعمل على تعظيمها	
2	تحافظ المؤسسة على مستوى جيد من التواصل الاجتماعي مع المستخدمين وأصحاب المصالح	
3	تقدر المؤسسة مهارات وقدرات العاملين لديها وتوليه أهمية كبيرة	
4	تعمل المؤسسة على تعزيز العلاقات والتواصل مع العملاء والموردين عبر قنوات تكنولوجية حديثة	
5	تقوم المؤسسة بعملية تقييم دوري لمستوى معرفة وخبرات الموظفين	
6	تسهل المؤسسة وصول الموظفين إلى مصادر المعرفة الضرورية لطبيعة عملهم من البيئات الخارجية	
7	تحول المؤسسة المعارف الجديدة إلى قيمة مضافة	
8	تقدر المؤسسة القيمة المضافة الناتجة عن التواصل الفعال بين موظفيها	
9	تقدر المؤسسة القيمة المضافة الناتجة عن التواصل الفعال بين الموظفين والبيئة الخارجية	
10	تحافظ المؤسسة على المعارف المكتسبة بما يخدمها لتحقيق أهدافها الاستراتيجية	

4. تقييم ممارسات تطبيق إدارة المعرفة في المؤسسة التي تعمل بها.

#	البند	1 ← 10
1	توجد قواعد تنظيمية ومسؤوليات واضحة لتطبيق فعال لممارسات إدارة المعرفة في المؤسسة	
2	توجد مسؤوليات محددة وواضحة لتطبيق ممارسات إدارة المعرفة في المؤسسة	
3	توجد موازنة محددة لتطبيق ممارسات إدارة المعرفة في المؤسسة	
4	تتضمن أهداف المؤسسة بوضوح اهتماماً لبرنامج إدارة المعرفة	

5	يوجد أهداف واضحة لبرنامج إدارة المعرفة في المؤسسة
6	تعمل المؤسسة على تضمين التغييرات الثقافية في الطريقة التي ينظر بها الموظفون إلى المعرفة التي يشاركونها ويعملون على تطويرها
7	يتم تقييم عملية إدارة المعرفة بشكل دوري
8	تقيم إدارة المعرفة في المؤسسة التي أعمل بها يتضمن مكوناته الرئيسية مثل الموظفون، العمليات، التكنولوجيا، الهيكلية، والثقافة التنظيمية.
9	توجد خطة طريق واضحة لتطبيق إدارة المعرفة في المؤسسة
10	تعمل المؤسسة على قياس التطور في منظومة إدارة المعرفة بشكل مستمر
11	يسمح الهيكل التنظيمي في المؤسسة للعاملين بانجاز مهامهم بسهولة بناءً على خدمات منظومة إدارة المعرفة
12	تستخدم المؤسسة تطبيقات تكنولوجيا المعلومات في تطبيق ممارسات إدارة المعرفة

رابعاً: تقييم مستوى الابتكار في المؤسسة التي تعمل بها

#	البند	1 ← 10
1	تلعب إدارة المعرفة دوراً بارزاً في تعزيز وتطوير أداء المؤسسة	
2	تستجيب المؤسسة بشكل سريع للتطور الحديث الذي يحصل والذي قد يؤثر على عملها في القطاعات المختلفة	
3	تقوم المؤسسة بتوظيف وإنشاء وإعادة هندسة المنتجات والخدمات التي تقدمها لملاءمة وتلبية احتياجات السوق وطلب العملاء	
4	تقوم المؤسسة بتطوير وتطبيق تقنيات تسويقية جديدة لزيادة فرص مبيعاتها واختراق أسواق جديدة	
5	تتضمن المؤسسة أشكالاً جديدة من أنظمة وتقنيات الإدارة لتحسين الكفاءة التشغيلية	
6	تهتم المؤسسة بتطبيق ممارسات البحث والتطوير	
7	تستفيد المؤسسة والموظفون من الجهد المبذول في عملية البحث والتطوير	
8	تعي المؤسسة أهمية تعزيز التعاون والتبادل المعرفي بين المؤسسات والشركات والجامعات المختلفة	
9	تعمل المؤسسة على تطوير شبكات المعلومات وتحديثها بشكل دوري	
10	تسعى المؤسسة لتكون مؤسسة متعلمة "تتبع نموذج التعلم التنظيمي وممارسات إدارة المعرفة	
11	تتمتع المؤسسة بمستوى جيد بين المنافسين الآخرين	
12	توجد أنظمة مرنة تراعي الظروف الخاصة بالموظفين	
13	توجد استراتيجية واضحة لأفاق الابتكار التي تسعى المؤسسة إلى تحقيقها	
14	تسعى المؤسسة ضمن ثقافتها إلى التطوير التدريجي لفرق العمل لضمان رسوخ المعرفة	
15	تهتم المؤسسة بأداء الموظفين وتوظيفها في عمليات التطوير واتخاذ القرار	

16	تهتم المؤسسة بأراء العملاء وتأخذها بعين الاعتبار في مراحل تطوير الخدمات والمنتجات التي تقدمها
17	ينعكس النمو والازدهار المالي للمؤسسة إيجاباً على مستوى الابتكار والابداع في الخدمات والمنتجات التي تقدمها
18	هنالك تنوع واضح في أنماط تفكير الموظفين العاملين في المؤسسة بما يزيد من فرص الابداع والابتكار في المنتجات والخدمات.