The Integration between Knowledge Management and Total Quality Management and its Impact on Educational Performance

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Ph. D. Thesis **2016**

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Submitted in Partial Fulfillment of the Requirements
of the Degree of Doctor of Philosophy, Feb 2016

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ACKNOWLEDGEMENTS

This research is the culmination of the efforts and contributions of the many people who made this thesis possible and who gave me their continuous, untiring, and unconditional devotion, time, support, and love to achieve this important goal.

I sincerely thank my supervisor Professor Les Ruddock for his continuous support, encouragement, and follow up. I also would like to express the deepest appreciation to my volunteer advisor Dr Jassem G. Mahdi (Cardiff University, UK), who gave me valuable ideas, superb support and encouragement to pursue this journey and to strengthen my thesis. I also would like to express the deepest appreciation to Dr Abdulbaset Khashkosha who helped me to complete this work.

I would also like to express my thanks and appreciation to the academic staff and administrative employees in the Salford School of the Built Environment for their help and encouragement, especially Mrs Moira Mort (Research Officer) for her help.

This acknowledgement would be incomplete without thanking my father, mother, wife, brothers, sisters, sons, daughters and my friends, peer learners, and colleagues for their interest in my pursuit of this degree and for their continuous support and encouragement.

GLOSSARY OF TERMS AND ABBREVIATIONS

CI	Continuous Improvement
CQI	Continuous Quality Improvement
CSF	Critical Success Factor
EFQM	European Foundation for Quality Management
EP	Educational Performance
HEGS	Higher Education General Secretary
HEI	Higher Education Institution
ISO	International Organisation for Standardizations
JHE	Jordanian Higher Education
KM	Knowledge Management
OSD	Organisation and Systems Development
PI	Performance Indicators
QAA	Quality Assurance Agency
QM	Quality Management
QMS	Quality Management System
SOBE	School of the Built Environment
SPC	Statistical Process Control
TQM	Total Quality Management
UK	United Kingdom
UN	United Nations
UNESCO	United Nations for Education, Science, and Culture Organisation

ABSTRACT

Resulting from the development of management theory in the past few years, knowledge management (KM) has emerged, which is identifying information of value and how to use it well, as well as understanding cognitive assets of an organisation and how to exploit them. KM is important and necessary for the survival of an organisation and its superiority. It can be integrated into the philosophy of total quality management (TQM) to play a role in the development of the basis of performance of modern organisations. It can be strengthened to achieve its strategic objectives.

This study aims to identify the integration between KM and TQM and to highlight its role in improving and strengthening educational performance (EP).The approach adopted is a descriptive analytical method research style applied to ten public and private Jordanian universities as a sample for the study. The data collection technique used is an online questionnaire, where data was first manipulated and pre-processed. The responses were statistically analysed and insists and patterns were identified so that overall conclusions and recommendations were reached. The framework conceptualised is built upon formulating a number of variables namely: KM, TQM, and EP in academia. Three elements for each variable were identified and justified, in addition to the academic culture element, which formed the context investigated.

The study found the presence of integrity and a strong correlation between KM and TQM. The significant effect of this integration on the EP of the universities in the study sample included a number of recommendations that will help lead universities to eliminate ambiguity regarding KM and TQM. It also included the importance of complementarity and avoiding the shortcomings that accompany its application. Other recommendations seek to draw the attention of competent authorities to take advantage of such modern philosophies in all sectors of society.

The theoretical contribution of the research has moved consideration of KM and TQM in an educational context from the purely anecdotal to an evidence-based study. In terms of practical contribution, the investigation is one of the first to examine KM and TQM in the context of universities in Jordan and the positive integration of KM with TQM and its significant impact on EP.

CHAPTER ONE

INTRODUCTION

1. 1 Introduction

This research is related to knowledge management (KM) and total quality management (TQM) in higher educational institutions (HEIs) in Jordan. These two issues have attracted the attention of many researchers and writers in higher education (HE). The significance of these issues is that they are both associated with the effectiveness of the academic process. Therefore, the growing worldwide interest in KM among organisations has increased because it is related to the quality of education and learning as an alternative managerial action (Harvey, 1995). This is due to the competiveness among innovative firms in their fields of interest. When TQM became more defined, it was successfully applied by many organisations in HE. However, as KM was more defined, it was extensively applied in developed countries, and good results were obtained. At the same time, some organisations still lack the proper use and benefits of KM in achieving distinction through the use of TQM. This is especially evident from the inefficient integration of KM and TQM.

The quality of education is vital for promoting society and contributes to the enduring wealth and security of a country (Babbar, 1995). Therefore, this research project focuses on the integration of KM and TQM and its impact on educational performance (EP) in HE in Jordan. The purpose of this research is to learn about KM and TQM and to identify the integration that affects the use of it. Thus, this chapter gives an overview of the concept in the research problem and its rationale that underlines the main issues, including the research aim, objectives, and hypotheses.

The next section of this chapter aims to provide the reader with an overview of the country in which this study was conducted. It consists of two parts; the first one is a brief review of Jordan consisting of the following sections. The first part is about the educational system while the second part is related to a brief review of the population of the study, the two types of universities in Jordan, public and private, were chosen as two parts of case study. A summary of the chapter is presented as a conclusion.

1. 2 Jordan: General Overview

1.2. 1 The Education System in Jordan

The development of the educational system in Jordan can only be described as dramatic. Starting from almost nothing in the early 1920s, Jordan has forged a comprehensive, high-quality system in order to develop the human capital of its population. All villages and communities with ten or more school children are provided with a school so that the population who live in poor and remote areas have access to education. For all Jordanian primary and secondary school students up to the age of fifteen, education is free and compulsory. Jordan has achieved over 95% enrolment for its school-age children. Jordan's policy of prioritising spending on basic education over HE has enabled the country's aim to increase universal enrolment and has boosted literacy levels throughout the general population. Jordan's education record has proven remarkable by international standards and results from the foresight of the country's leadership who saw and continue to see the need to focus on building the country's human capital to meet the challenges of the future (A Higher Education Cooperation Scheme between EU Member States Partner Countries, 2007).

The educational system in Jordan encompasses a 12-year comprehensive programme divided into four parts: nursery, kindergarten, basic, and secondary.

The basic portion extends from grades one to ten. At the end of grade ten, the grades of each student for the previous three years (eighth, ninth, and tenth) are calculated to determine which secondary stream (academic or vocational) that students can enter. Often, the student's wishes are taken into consideration, but the Ministry of Education makes the final decision. The two-year secondary portion is divided into two main streams. The first stream is the comprehensive secondary educational stream that ends with a general secondary education examination, the Tawjihi, and consists of a common principal curriculum and optional specialised academic or vocational courses. The second stream is the applied secondary educational stream, which consists of specialised vocational courses; skilled labour is prepared through apprenticeship programmes run by the Vocational Training Corporation or the Ministry of Education (Department of Statistics, 2006).

1.2. 2 Higher Education

Holders of the general secondary education certificate have access to HE and can choose between community colleges (private or public) or universities (private or public). Higher education in Jordan started in the second half of the twentieth century (1960s) when many teachers' colleges were established throughout the country. Their establishment provided the important teaching work force needed to meet the high demand on school education characterising that period (A Higher Education Cooperation Scheme between EU Member States Partner Countries, 2007).

Jordan's community colleges offer specialised two or three-year programmes in various areas of study. All students who attend community colleges must pass a comprehensive government exam at the end of their study. Community colleges tend to offer practical education targeted at professions such as education, commerce, computer studies, medicine, pharmacology, hotel management, interior design, social work, nursing, and midwifery (A Higher Education Cooperation Scheme between EU Member States Partner Countries, 2007).

1.2. 3 Universities in Jordan

Higher education in Jordan has expanded dramatically since 1951. It started with a one-year postsecondary teacher training college. Later, in 1962 the first public university was established, the University of Jordan. Fourteen years later, the University of Yarmouk was established, which was followed by the establishment of six universities (Abu-El-Haija, 2014). Table 1.1 demonstrates the progress of the establishment of public and private universities in Jordan since 1962. Nine universities, or approximately 43%, were established between 1990 and 1992.

The progress of the establishment of private universities was due the government policy to ease the pressure in providing HE to the increased number of students who wanted to continue their HE. Because Jordan's resources are limited, the government struggled to subsidise the increased number of enrolled students. Therefore, many private universities were set up to ease the pressure on public universities (Kanaan et al., 2009). The Ministry of Higher Education and Scientific Research (MoHESR) has emphasised quality education as one of the important public sectors that can benefit society. Therefore, the establishment of the Higher

Education Council in 1982 aimed to maintain the quality and efficiency of education in Jordan (MoHESR, 2014).

Table 1. 1 Progress of the establishment of public and private universities by year

Year	Number of public universities	Number of private universities
1962	1	0
1976	1	0
1981	1	0
1986	1	0
1990	0	2
1991	0	5
1992	1	2
1993	1	1
1994	0	1
1995	0	1
1997	1	1
Total	7	13

The establishment of the Jordanian Council of Higher Education was in response to the need for the regulation and planning of HE policies and coordination among Jordanian public policies at the post-secondary level and the need for legislating up-to-date laws on HE.

1.2. 4 Background of the Study

The last few decades have witnessed a widespread acceptance of KM and TQM as a means of acquiring and maintaining competitiveness in the global marketplace. Globalisation issues have triggered the move to improve performance, and HE institutions have been quick to adopt quality and knowledge models in order to survive in the increasingly globalized market. Indeed, worldwide HE institutions have made steady progress in adopting KM and TQM models and institutional self-assessment approaches. The Malcolm Baldrige National Quality Award (MBNQA) in the United States and the European Foundation for Quality Management Excellence Model (EFQM) in the United Kingdom have been adapted for the HE sector, and institutions within the sector are recognising their benefits. The HE sector in Jordan has tried to adapt the model as well, and Jordan is as susceptible to globalisation as any other country.

According to Borhan and Ziarati (2002), a strong relationship exists between a country's competitiveness and the quality of HE. Hence, countries need to assure themselves of the quality of their HE institutions. In Jordan, where the number of HE institutions has expanded substantially, this has become an important issue. The growth in Jordan's HE sector began with a large investment in state universities, which correspondingly attracted a large number of students. With an increase in the student market and the resulting pressure on the public budget to continually provide more HE locations, Jordan's HE policy allowed the local public administration and private sector to establish universities, colleges, and technical HE institutions. Now, with the increasing number of private universities, the need to establish and maintain a competitive advantage is becoming increasingly significant. In this respect, the University of Jordan has adopted TQM and information technology systems (Abu-El-Haija, 2014). However, research has reported poor implementation of TQM principles in Jordanian colleges of physical education (Altahayneh, 2014). In addition, in view of the increased demand on Jordanian universities, the King of Jordan and his prime minister encourage adopting a clear plan for improving quality in HE that enables universities to compete with the global market (Schwab, 2012).

Knowledge Management and TQM play vital roles in the modern management progress where KM contributes to innovation by creating, storing, transferring, and applying knowledge. The implementation of TQM practices is considered one of the important factors that influenced innovation in a positive way (Honarpour et al., 2012). Despite the vast growth in the implementation of TQM in HE institutions worldwide, there is no universal model for adopting TQM within a higher education context (Sarvan & Anafarta, 2005, p. 12). Indeed, it is documented (Hides et al., 2004) that the implementation of TQM in the public sector, particularly the HE sector, has lagged behind that of the private sector, essentially because the private sector is under pressure to respond to customer calls for continual improvement.

1.2. 5 The Quality of Higher Education in Jordan

The HE institutions in Jordan have witnessed an increase in demand for enrolment in educational programmes in universities and colleges. The Jordanian government has stressed that it is important to have a clear plan for HE quality improvement as well as improved quality for the coming years to ensure the right of young people

at universities to have a high quality education and to enable both students and universities to compete in the global market.

The graduates of the Jordanian educational system in all disciplines are not sufficiently knowledgeable or trained to be productive, and graduates usually need extensive retraining. As such, the quality of HE in Jordan is illustrated in Table 1.2

Table 1.2. Higher education and training quality in Jordan (Schwab, 2012)

	Country Ranking/144
Quality of the educational system	31
University/industry research collaboration in research and development	93
Quality of math and science education	28
Quality of scientific research institutions	77
Quality of primary education	43
Availability of scientists and engineers	11
Quality of management schools	55
Internet access in schools	44
Availability of specialised research and training services	47
Extent staff training	88

The global rank of the quality of HE in Jordan was highest in the availability of scientists and engineers (11 out of 144). However, the rank for university/industry research collaboration in research and development, extent of staff training, and quality of scientific research institutions were, respectively, 93, 88, and 77 out of 144 (Schwab, 2012). Furthermore, the quality of the educational system was ranked 31 out of 144. The overall assessment of HE in Jordan is more likely to indicate that the quality of the educational process supports business in Jordan.

1.2. 6 The Dearth of Research on KM and TQM in Jordan

The primary motive for conducting this study is the lack of empirical research on the implementation of KM and TQM within Jordanian HE institutions. While there has been much attention devoted to the integration between KM and TQM and its impact on EP, the vast majority of literature has been focused on its association with economies (McAdam & McCreed, 1999; Thiagarajan et al., 2001; Aboyassin et al., 2011). The growing awareness of the importance of KM and

TQM in developing the economy has attracted the interest of many researchers. This has encouraged empirical research to study TQM for improving the quality system of an organisation (Soltani & Lai, 2007). They found that the major discrepancy between the rhetoric of these systems and the reality of their practice is where organisations tend to develop a more strategic approach to managing soft aspects of quality management. However, literature indicated that the number of organisations that implemented TQM successfully is comparatively small (Huq, 2005; Gibbs, 2009). In particular, the number of studies on quality in HE is relatively few (Lagrosen et al., 2004). Furthermore, KM processes including diagnosing, acquiring, generating, sharing, storing, and applying have been found to influence TQM (Aboyassin et al., 2011). Therefore, KM could be considered a key tool to higher educational long-term success. Thus, change initiatives in organisations, including educational institutions, can improve shareholder value (i.e., economic value theory) and develop organisational capabilities (i.e., organisational capability theory) (Soltani et al., 2007). Like any organisation, educational institutions (mainly private ones) are confronted by competition due to the presence of many universities and colleges in Jordan and other countries in the region. In addition, globalisation, the advancements in communications and information technologies, economic recession, and a simultaneous search for excellence are also encouraging competition; therefore, the desire to take up change initiatives has interested the majority of leading organisations (Soltani et al., 2007). The current study will explore the correlation between public and private universities in Jordan in terms of KM and TQM.

1. 3 The Research Problem

Many organisations seek to keep abreast of modern administrative developments and implement them in their various activities—not only to thrive and survive but also to achieve and maintain high levels of leadership. In addition, due to the development of Quality Management (QM), many educational organisations moved to implement this concept in many countries. In this respect, the development of KM contributes to better achievement in the global competitive market. There is a close relationship between KM and TQM in achieving a competitive edge through distinctive EP. Therefore, the emergence of KM has helped many educational institutions achieve a high educational standard and increase their rank. Therefore, research stands as a vital tool for investigating what

is required to develop the effectiveness of the educational process in terms of QM and TQM. Initially, research in QM and TQM attracted the interest of many universities in Jordan. Nonetheless, it is still necessary to continue the research to gain an insight into the real nature of what is required to achieve high standards using KM and implementing TQM. Therefore, it is possible to summarise the main issues that are related to KM and TQM in the following questions:

- How deficient is the lack of personal knowledge of KM and TQM in Jordanian universities?
- What benefits are gained from KM in the development of quality in Jordanian universities?
- How clear is the vision with regard to the integration of KM and TQM?
- What impact is caused by this integration in EP to achieve excellence and leadership in universities?

Yet, the main question is *what distinguishes the current study from previous studies?* By reviewing past studies, it appears that some have examined the attitudes of managers towards the application of KM and other studies have examined the performance of KM, creativity, and decision-making as well as discovering the competitive advantage. The current study is distinguished from past studies and research by focusing on a vital aspect, which is the integration of KM and TQM and its impact on EP in institutions of HE in Jordan and its role in achieving TQM in these institutions, where most efforts and research have been directed towards KM. In addition, the researcher has benefited from previous studies, and the benefit is reflected in two points. The first is the formulation of the theoretical framework for the study, and the second is the formulation of hypotheses.

1. 4 Importance of the Study

The significance of adopting KM and the proper implementation of TQM are increasing globally in educational organisations. The main reasons behind the focus on KM and TKM are to secure the market share amongst competitors and to maintain a competitive advantage. Therefore, the importance of the current study is to investigate the integration between KM and TQM and to what extent the

universities in Jordan are adopting KM, implementing TQM, and measuring EP. Thus, the main objectives of the current study are to:

- Investigate what is required to develop the effectiveness of the educational process in terms of QM and TQM, and

- develop a deep understanding into the real nature of the requirements to achieve high standards using KM and implementing TQM.

On the surface, there are a growing number of anecdotal accounts of the "*successes*" of TQM and KM in education. Nevertheless, there has been almost no theory-building and methodologically rigorous research to validate these evidences (Chen & Burstein, 2006; Venkatraman, 2007). In addition, the researches which linked TQM and KM were conducted in the manufacturing industry and do not reflect the service sector (such as Daud & Yusoff, 2011; Ju et al., 2006; Ooi, 2009; Ooi et l., 2012), particularly the educational sector, which is of interest in this study. Thus, methodologically rigorous empirical studies that examine the link between institutional outcomes and institutional management initiatives are needed to fill these gaps.

1. 5 Study Aim and Objectives

The study aim is to establish a framework that represents the integration of KM and TQM to measure the performance of HE based on improvement of teaching and learning. Therefore, the research was set up according to the following objectives:

- To review relevant literature on the concepts of KM and TQM and their significance for educational organisations and to contribute to the conceptual framing of them.
- To contextualise a framework for the integration of KM and TQM.
- To identify integration and correlation between KM and TQM and its impact on EP.
- To identify the impact of the integration of KM and TQM in the EP of organisations.
- To refine the framework scientific methods and techniques to be followed in order to take advantage of the integration of KM and TQM in enhancing the competitive advantage through improved EP.

1. 6 Research Conceptual Framework

A research conceptual framework is a useful set-up tool for organising social research (Rodman, 1980). According to Labaree (2013), the theoretical assumption connects the researcher to existing knowledge and gives a basis for hypotheses and research methods. In other words, the concept of the research framework can be extended to involve the integration of concepts and methods. In this respect, the description of background information and research driving KM and TQM are associated with literature and the design of the current research. Literature helps develop research focus and its approach for deriving the required data for analysis and discussion (Labaree, 2013).

1.6. 1 Research Framework

Figure 1.2 shows the research framework in the sequence in which the current research was developed. This starts from an idea, which is supported theoretically by the literature before setting up the main research elements, including objectives, hypotheses, and methodology.

The details of the current study encompass variables related to KM, TQM, and EP. The concept related to these different variables is governed by two main hypotheses (see the next section). The sequence for the development of the current framework is illustrated in Figure 1.2.

The components of the three main variables (KM, TQM and EP) were used to investigate the integration between KM and TQM (Figure 1.2). These three issues were used in the literature as variables (Zwain, 2012).

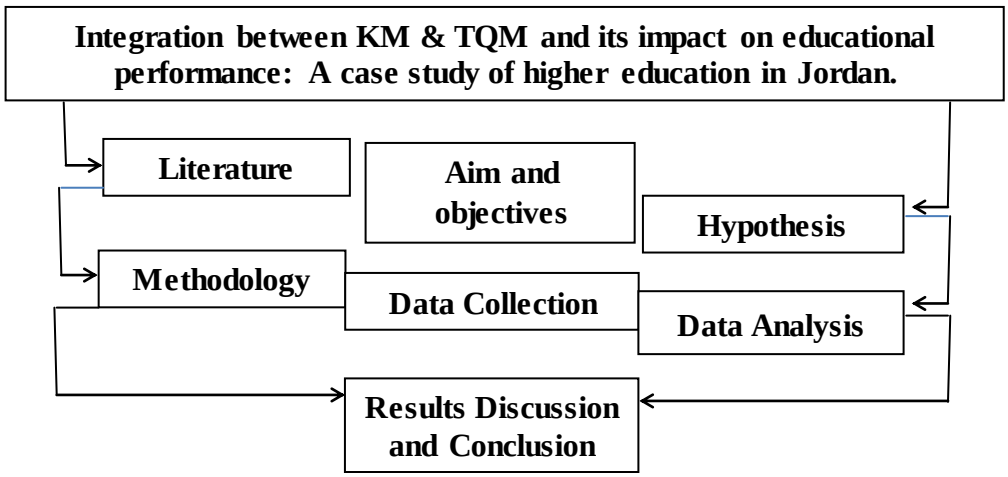

Figure 1. 1 The Research Framework for the Current Study

1.6. 2 Theoretical Framework

This section proposes a theoretical framework along with a set of hypotheses. The theoretical framework demonstrates the relationship between the variables in this study (Cavana, Delahaye, & Sekaran, 2001; Sekaran & Bougie, 2010). Based on the theoretical foundations, which are reviewed in the literature, a framework has been developed to investigate the relationship and integration among the study's variables: TQM, KM, and its impact on EP for the Jordanian HE context. Figure (1.3) illustrates these relationships.

1. 7 Research Variables

The first main independent variable is KM, which is subdivided into the following variables (Ali Zwain 2012)**:**

A. KM processes.

B. KM technology.

C. Team of knowledge.

The second main independent variable is the TQM, which is subdivided into the following variables (Lee et al., 2010):

A. Effective leadership.

B. Continuous improvement.

C. Employee involvement

The main approved variable is educational performance and is subdivided into the following variables (perspectives) (Ali Zwain 2012A. A., & Alkhafaji, H. J. 2009):

A. Perspective of internal processes.

B. Customer (stakeholder) perspective.

C. Learning and growth perspective.

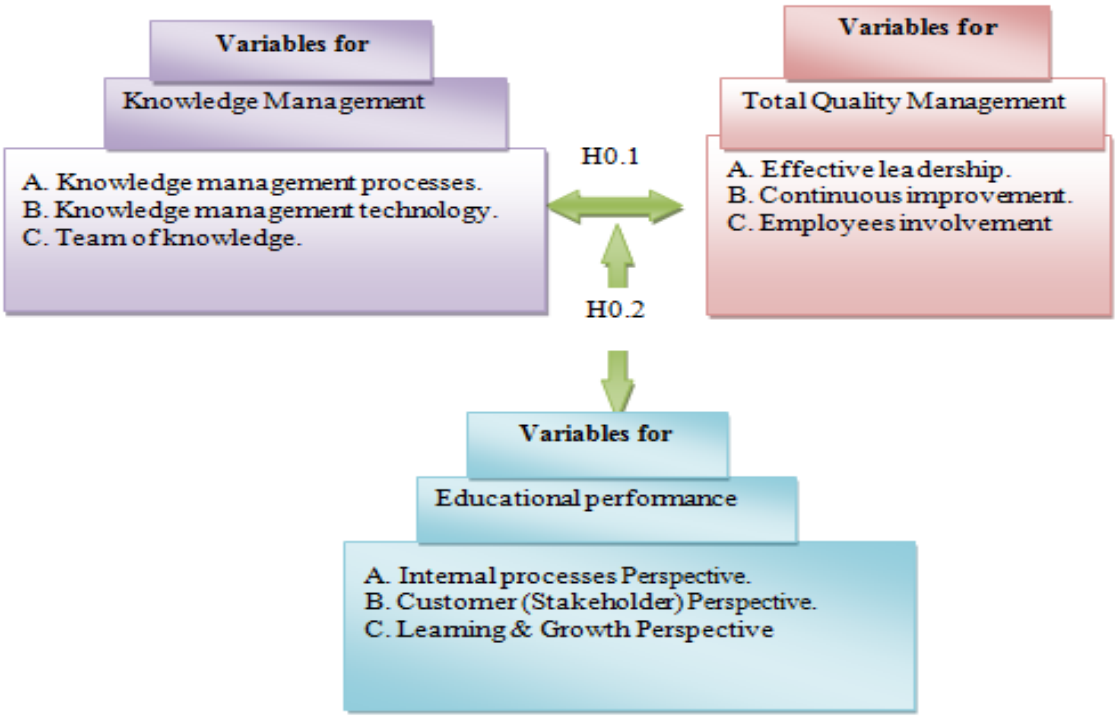

Figure 1. 2 The current study research framework by showing variables

1. 8 Research Hypotheses

The current study considers two main hypotheses. Each of these hypotheses is subdivided into different sub-hypotheses. Generally, the hypothesis is an important element of research for scientific studies as it is one way to assist the researcher to focus on the main subject. It is also an alternative assumption made in order to draw out and test its logical or empirical consequences (Kenya, 2013). Therefore, the hypothesis is one of the fundamental tools for research. Merriam (2014) and others (Bogdan & Biklen, 1992) maintained that the hypothesis serves to guide the researcher in seeking answers to tentatively adopted generalisations (Punch, 2013).

Here, the focus is on KM and TQM. These two contemporary terms are vital for the educational management process and its outcomes.

Two hypotheses to be justified are proposed in this study. The structure and their connection with the main variables of the current study are depicted in Figure 1.3.

1.8.1 The First Hypothesis:

H.1 There is significant relationship between KM and TQM. This hypothesis is subdivided into the following sub-hypotheses.

H.1.1 There is significant relationship between the processes of KM and effective leadership.

H.1.2 There is significant relationship between the processes of KM and continuous improvement.

H.1.3 There is significant relationship between KM processes and employee involvement.

H.1.4 There is significant relationship between technology of KM and effective leadership.

H.1.5 There is significant relationship between technology of KM and continuous improvement.

H.1.6 There is significant relationship between technology of KM and employee involvement.

H.1.7 There is significant relationship between team knowledge and effective leadership.

H.1.8 There is significant relationship between team knowledge and continuous improvement.

H.1.9 There is significant relationship between the team and employee involvement.

1.8.2 The Second Hypothesis

H.2 There is a significant effect of the integration of KM and TQM on EP. Subdivided into the following sub-hypotheses:

H.2.1 There is a significant effect of the integration of KM and TQM on the perspective of internal processes.

H.2.2 There is a significant effect of the integration of KM and TQM on the customer (stakeholder) perspective.

H.2.3 There is a significant effect of the integration of KM and TQM on the learning and growth perspective.

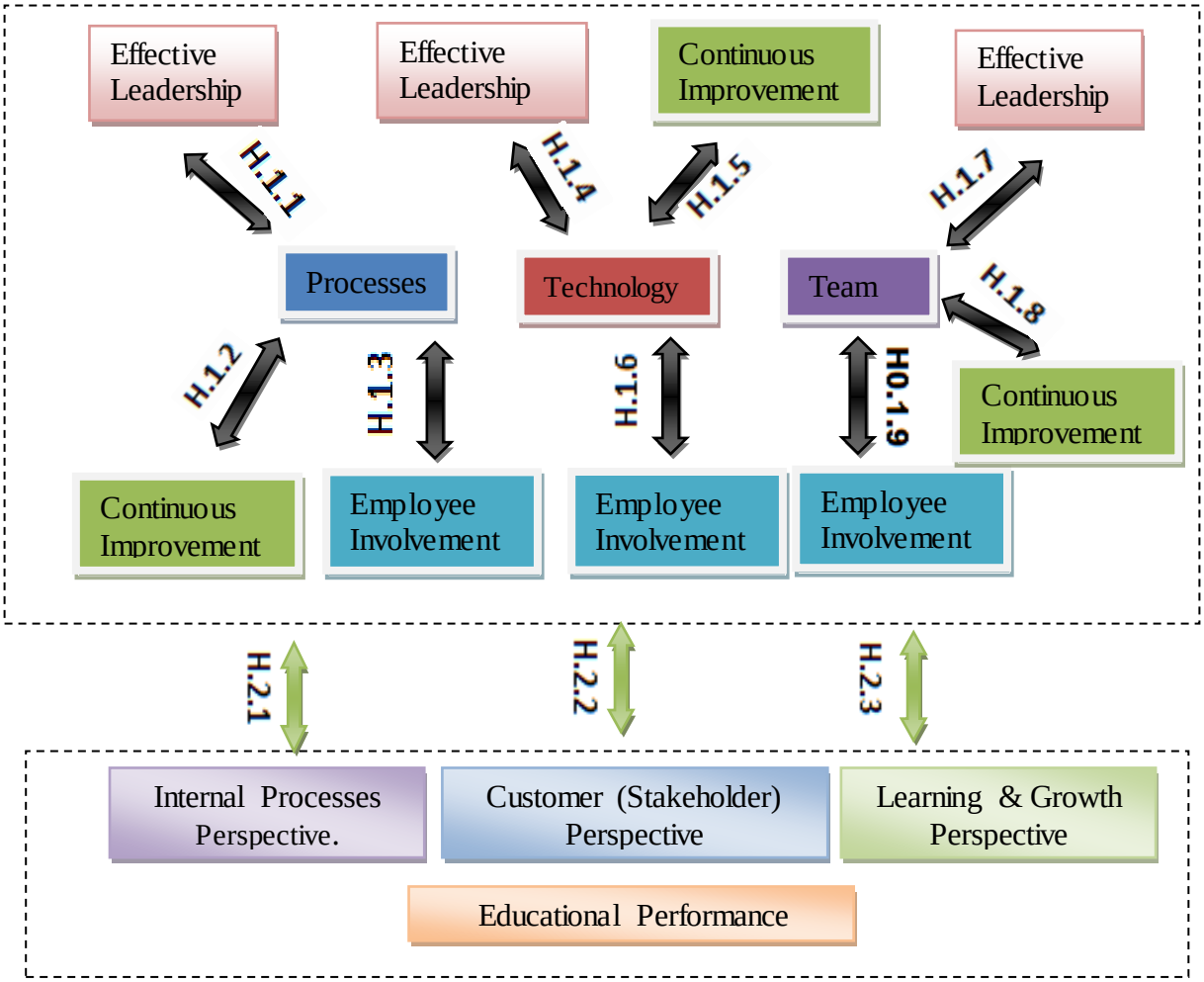

Figure 1. 3 Hypotheses on the effect of the integration between KM and TQM on EP

1. 9 Thesis Structure.

This thesis contains seven chapters.

Chapter One is an introduction of the thesis. This chapter gives a general background of the current research topic, including the rationale and methodological approach. In addition, it gives a general description of the conceptual framework of the current research and the hypotheses involved.

Chapter Two focuses on the literature review related to KM. It introduces the concept of the main aspects related to the current study. These include KM. This

chapter focuses on the explanation of the main related issues, including resources and models.

Chapter Three focuses on the literature review related to TQM. It introduces the concept of the main aspects related to the current study. These include TQM, the perspectives of quality. In all these aspects, this chapter focuses on the explanation of the main related issues, for example leadership.

Chapter Four focuses on the literature review related to EP. It introduces the concept of the main aspects related to the current study. These include EP elements. This chapter focuses on the explanation of the main related issues, including BSC.

Chapter Five focuses on methodology and its concept. This includes the philosophical assumption of social research, its methodology, and design. In addition, this chapter discusses the rationale of the current research and its methodological approach to collecting data, including the design, structure, and development of the questionnaire and the statistical analysis of the obtained data.

Chapter Six focuses on the demographic characteristics of respondents in both public and private universities in Jordan. It also describes the overall data analysis using other tests.

Chapter Seven deals with the first part of the study, which is related to the analysis of data that reflect the perceptions of respondents in Jordanian public universities towards different issues related to KM, TQM, and EP. Various statistical analyses were used to analyse the data.

Chapter Eight deals with the second part of the study, which is related to the analysis of data obtained from respondents in Jordanian private universities. The same format and statistical analysis as in the previous chapter was used in the current chapter. Chapters seven and eight also focus on testing the hypotheses.

Chapter Nine deals with the general discussion on the data related to both parts of case study. It summarises and discusses the current research findings related to how respondents in public and private universities perceived KM and TQM in their academic institutions. In addition, this chapter discusses achieving the aim and objectives in the current study. It also gives some suggestions and recommendations related to KM and TQM.

1. 10 Summary

This chapter focused on an overview of the thesis. This included a general background regarding HE in Jordan and its relation to the current study. In addition, this chapter described the research problem, the conceptual framework of the research, its objectives, and hypotheses. The next following three chapters deal with the literature review and are related to the main three issues: KM, TQM and EP.

CHAPTER TWO

KNOWLEDGE MANAGEMENT

2.1 Introduction

This chapter focuses on the first part of the literature review related to the concept of knowledge and knowledge management (KM). It aims to discuss the main issues related to knowledge and KM. The state of knowledge represents the continuous interaction between the tacit components of knowledge, such as experiences, skills, and mental abilities in the minds of individuals as well as the information and presented acknowledged strategies to achieve value. It is one of the most important assets of an organisation and cannot be overlooked. Knowledge is endemic in an organisation with intellectual capital that seeks to retain it. In this respect, the sources of knowledge represent of all the sources of present information that individuals can convert into knowledge, in addition to the mental abilities, experience, and skills of these individuals. The term that expresses the ability of the team of knowledge in the organisation is associated with KM. The aspect of managing knowledge in modern organisations utilises KM technology to carry out knowledge generation, storage, and distribution and is applied to achieve excellence and leadership. Adding to the importance of KM is its ability to handle many of the changes and challenges that are encountered by organisations, as well as its assistance to staff to achieve value for organisations that apply KM. Furthermore, the target of KM is to allow the sharing of knowledge among employees and with customers and business partners to achieve and maximise returns. Therefore, KM ensures the work of an organisation is moving towards intellectual viability and achievement of the best value in the assets of the organisation. The structure of the current chapter involves the related issues on knowledge and KM, including definition, concept, and background.

2.2 Knowledge

Knowledge is associated with knowing something which could be gained through experience or association. Knowing something leads to a better understanding of an entity process that is used to take effective action to achieve the entity's goal(s) (Galbraith et al., 2001). In this respect, developing and exploiting knowledge helps organisation and its members to achieve a better chance of success. Thus, this

section focuses on the historical background of knowledge, its concept, and its types and resources.

2.2.1 The Historical Background of Knowledge

While seeking to acquire knowledge is ancient, interest in it becomes rejuvenated and more complicated with the complexity of life and with the development that occurs in educational methods. Hammurabi from Iraq is considered the first ruler in history to have grasped the importance of education, establishing the first school in the country two thousand years BCE. The Chinese philosopher Confucius (479-551 B.C.E.) renewed the call to spread knowledge when he said, "Knowledge is the only way to improvement and success on earth." The Greek philosopher Plato (347-427 B.C.E.) gave a new and strong push to the importance of knowledge throughout his call to establish Utopia, as he is the one who said, "Without knowledge the human being will not be able to understand his identity, only he who carries the knowledge will be able to understand his surroundings represented by the existence itself" (Hassan, 2003).

It is only natural for the interest in knowledge to continue in our present time after informatics and communication revolutions have paved the way and reduced distances, making it easier to exchange and rejuvenate knowledge. It is not strange that in light of these evolutions for the volume and quantity of knowledge to multiply every few years after it took a century to achieve (Kubaisi, 2004, p. 46).

Therefore, understanding the term knowledge and its organisation and application helps the development of an effective educational organisation and strengthens its reputation

2.2.2 The Concept of Knowledge

Different types of contemporary organisations are facing a surge of transitions and accelerating changes sweeping today's world, on top of informatics and technical evolution. This evolution relies on advanced scientific knowledge and the best use of information flow resulting from big developments in computer technology and world communication (Internet). As a result of those transitions, knowledge has become the most significant strategic source; moreover, it has become the strongest, most influential, and dominating factor in an organisation's success or failure (Schwandt & Marqurdt, 2000).

By looking at this subject in literature, it has been demonstrated that trend researchers classified the concept of knowledge as following two main streams: looking at a partial perspective of knowledge constructed only through implicit acquired knowledge of information and the causal links that assist in making sense of this information (Sarvary, 1999, p. 96). Knowledge is described by Daft (2001, p. 258) as "the basis for the sense to measure the personal experience of intuition (intuition) or special view." Knowledge, according to this definition, is the fundamental basis of the experience of an individual in judging things. Hislop et al. (2000, p. 1) add that the status of knowledge is defined as "a continuous process for the restructuring of ideas during exercise or ongoing experience." While to Drucker (1999) knowledge is "the ability to translate information into the performance to achieve a specific task, and this ability can only be done in humans with brains and intellectual skills" (Ibrahim, 1998, p. 4). This definition refers to performance as the director of knowledge to achieve specific targets, which was not mentioned in any of the above definitions.

Knowledge, in accordance with this route, reflects a changing state of mind. Its interactive and connected processes are considered natural in the human mind and in individual experiences, and this knowledge can be defined as the brain's thoughts, which can be converted into performance and thus reach set goals. However, this definition is restricted to the implied aspect of knowledge, whereas there is another aspect that is focused on by many researchers.

The other concept of knowledge is a holistic view. Through the components underlying the phenomenon, this context is defined by Sowa as "the possession and inventory determinants implicit and tacit (explicit) on the subject or specific operations, and the relationships to their own procedures for positions that are dealt with" (Turban & Aronson, 1998, p. 202). With any knowledge that reflects the experience and underlying expertise (implicit) of ideas, selves, values, and estimates associated with people, the dynamics can be achieved by the completion of interdependence and communication systems and relationships with the explicit. In Probst et al.'s view (Probst et al., 2001, p. 7), the concept of knowledge "includes in addition to the reports and memoranda the experiences of workers, their skills and the result outcomes from assembled in groups and teams integrated" and that knowledge, according to this concept, is a mix of tangible objects, such as reports and memos, and other intangibles that lie in the

individual's skills and experiences; and perhaps the most important characteristic of this concept is referring to the added value that represents knowledge, which produces a compilation of individuals in groups and integrated teams. More comprehensively, (Kubaisi, 2002, p. 48) knowledge is defined as "every piece of information, tacit or explicit, that can be recalled by individuals to accomplish their tasks perfectly or make right decisions". However, there are many other objectives that seek achievement through knowledge, such as providing advisory services to others, for example.

Knowledge is now considered the real core of today's organisations, including educational organisations, and a successful contemporary administrative tool enabling them to adapt to the requirements of this era. This is because knowledge is the most important resource in creating fortune and achieving excellence and creativity in light of the intellectual facts ascending in its path, such as several intellectual concepts like globalisation and privatisation. Information evolution and the extended various types of society's most important approaches for development of KM, which manages knowledge and change in our present time, have achieved a quantum leap in the level of performance in different organisations, especially educational institutions (Hamoud, 2010, p. 54). There is a type of harmony and synergy between KM and the activities of educational institutions. There is a certain level of consistency between the operational concept of knowledge and the mechanisms, activities, and events of educational institutions as cognitive institutions (Almahgob, 2004, p. 18). Many studies, such as the study by Almalak and Alathary (2002, p. 19) and Alamry (2004, p. 12), confirm that adopting KM in organisations results in several benefits, such as enhancing efficiency and effectiveness, improving decision-making processes, enhancing performance, increasing productivity and creativity, achieving a competitive advantage, and swift response to environmental changes.

The study of Kidwell and Johnson (2000) referred to adopting KM techniques and strategies in HE organisations, which are seen to be as important and essential as organizations in the business sector and, if implemented effectively, will lead to those educational institutions excelling in their ability to make decisions. It will also lead to the shortening of the product development cycle, such as curricula, scientific research and will provide better academic and administrative and reduce cost. Intermediate vocational colleges are one type of educational institution

undertaking an important role in society due to the nature of its functions, where it provides a collection of scientific and vocational disciplines not existing in other universities. This type of institution has proven its merit in several ways, in particular regarding the way it has adapted to the periodic increase in numbers of youth who sought to register and has met their needs (Hamdan, 2004).

2.2.3 Organisational Knowledge

Currently, knowledge assets are very important in most organisations; these organisations hire brains, not hands. Knowledge is seen as one of the assets of the organisation, while information technology is seen as a factor in creating and sharing knowledge, and linking knowledge contributes to the strategic objectives of the organisation creating a clearly defined increase in the enthusiasm of the work force.

Organisational knowledge is used to understand the relationship between internal structures, processes and procedures, laws and standards, cultures, products, systems, and the basic elements which are owned by individuals, or it can be taken advantage of to carry out activities related to work (Hislop et al., 2000, p. 15). The activities of organisational knowledge are indeed dedicated to the higher mental processes in the brains of managers and members of the organisation, who realise that education and ideas contribute to the formation of opinions, attitudes, and expectations to provide an accurate view from the periphery of the organisation, strategic enhanced survival, and durability (Al-Khafaji, 1996, p. 5). Knowledge is a crucial item that cannot be ignored by any organisation and is often called intellectual capital. After the trade name, trademark, and the physical assets of the organisation, knowledge is acquired from years of experience in the fields of different production and marketing. This accumulated knowledge in combination with information gathered from external sources is one of the most important resources of the organisation. The accumulation and utilisation of knowledge can contribute to the intellectual capital of the organisation (Davenpart and Prusak, 1998). Intellectual capital refers to the knowledge that can be converted into profit which enables an organisation to achieve its goal and compete with other organisations. Indeed, knowledge is a main source of competitive advantage and intellectual capital of an organisation and is the sum of human capital, structural capital, and customer capital. (McShane and Glinow, 2000, p. 20). Furthermore,

human capital is the knowledge possessed by individuals who generate it, and includes skills, experience, and creativity. Structural capital is the knowledge that is captured and kept in the systems and organisational structures. The customer's capital represents the amount derived from satisfied customers, appointed exporters, and external resources, which provide an added value to the organisation. Building intellectual capital requires the organisation to follow the following steps (Linder & Jennifer, 1998, pp. 2-4):

1. To set high performance standards for all, while continuing to improve to arrive at the possible best method.

2. Staff development through new, difficult, and challenging assigned tasks.

3. Modification of each point of the interfaces of work (organisational culture, structure, and strategy).

4. Provide each level of the organisation new talent and recruitment of suitable individuals to solve problems.

5. Ensure the workers in the organisation are collectively involved in the process of change.

If intellectual capital disappears and its ideas and results become worthless, this affects the market value of the organisation because intellectual capital is essential for an existing organisation (Koenigi, 2000, p. 1). Intellectual capital may go to other organisations and countries because the organisation was unable to convert their experience and skills to the practice of executive functioning (Enzi, 2001, p. 17). The seriousness of this issue lies in the possibility of transferring these people, ideas, and experiences (that they personally own) as well as data and information pertaining to the previous organisation to the new organisation, thus giving the new organisation a strategic opportunity and additional advantage against the threat and vulnerability of the previous organisation.

The question that arises is how organisations can maintain intellectual capital. In order to keep and preserve the organisation's intellectual capital, it is important to maintain qualified staff with good knowledge, but arguably it is more important to convert their knowledge into a structural capital where inculcated knowledge can be organised and sorted out in a manner that can be accessible to others. Considerably, the skills and expertise of Japanese companies brought out organisational knowledge that distinguished them from American

companies. While the latter focused on generating and converting explicit knowledge, the former focused on generating and converting the implicit knowledge embedded in the minds of individuals. In this context, Saleh (2001, p. 83) has identified the most important factors that help organisations maintain intellectual capital, namely:

- Activating material and moral stimulation,
- Intercepting organisational traditionalism,
- Facing organisational frustration,
- Reducing the chances of organisational alienation, and
- Enhancing organisational discrimination.

Since capital is a term of the industrial age, and the world is moving towards the era of knowledge, it is preferable (Sveiby, 1998; Barroso & Gomes, 1998, p. 5) to use the term *intangible assets*, rather than intellectual capital; the term external construction, instead of the customer's capital; *internal construction*, rather than structural capital; and *competitive individuals* rather than human capital. The reason that knowledge, in some cases, can become reverse capital is because knowledge grows by sharing (participation) and usage, and knowledge can be used to damage capital.

The new term *knowledge capital* refers to the settlement of knowledge in organisations and has appeared in recent years in writings and research on this subject that attempted to explain and highlight it as a subject worthy of attention in the foreseeable future.

2.2.4 The Importance of Knowledge

The 1990s saw a genuine interest in the subject of knowledge in organisations, and this was largely the result of the emergence of reality, an inevitable topic deserving focus on a number of areas simultaneously.

In the present information economy, knowledge is one of the most important assets of an organisation. Production of goods and services of high quality and low cost depends heavily on strong knowledge in the design process. The success of a business in an increasingly competitive market is based on the quality of the knowledge applied by organisations in their main industries, and this fact becomes more visible when it is noted that innovation in products is a reflection perhaps of

knowing the status of the market, or the potential of a new technology, or through the participation of customers with the knowledge to guide the organisation in their work, and how their service would best benefit (Barroso & Gomes, 1998, p. 1). This is the reason organisational managers focus on knowledge for monitoring, implementation, and completeness of tasks (especially routine ones) so the manager must direct the interaction of the workers. Personal interaction arises in order to transfer knowledge (which is the basis of solving work problems). In addition, knowledge is an important and decisive lead to creativity and success in an organisation and in directing its work. This internal interaction between people can benefit the organisation by obtaining new ideas and integrating them, which is called brainstorming (Hansen & Oetinger, 2001, p. 108).

In the view of certain management theories, the most important aspects of the knowledge of physical and financial assets is when the knowledge becomes central and strategically located, then the organisation's success will depend on its ability to collect, produce, and sustain the continuation of the information that represents the anchor of knowledge.

Accordingly, the main advantage of knowledge is its ability to assist management to overcome all the difficulties they face and to overcome constraints. In addition, an advantage is its substantial role in the proper functioning of the organisation.

A number of administrative theories state that cognitive assets are more valuable than financial and material assets. It also holds to the fact that when knowledge is situated centrally and strategically, the success of the organisation depends on its ability to collect, produce, manage and the continuously improving information that represents an anchor of knowledge.

Accordingly, in terms of knowledge for management purposes, knowledge is central to allowing the proper functioning of an organisation, as well as reducing and mitigating any difficulties management may face.

2.2.5 Knowledge and Related Terminologies

For many individuals, the term *knowledge* gets confused with another two terms, data and information. An explanation is needed to understand the difference between the three terms. Primarily, the term *data* refers to the descriptions for objects, events, or activities which are kept and categorised but not organised to produce any meaningful result (Subai'i, 2008, p. 3). Almtiran (2007) defined *data*

as raw material and abstract facts unorganised and independent from each other in the form of numbers or words. In contrast, the term *information* represents the data attached to other subjects, like the target or other connections (Leesr, 2000, p. 3). In addition, Guendhilji (2005, p. 36) defined *information* as a group of organised, coordinated data collected in a suitable way in order to give a specific meaning. In this respect, the combination of homogeneous ideas and concepts can enable the individual to use the term *information* in order to reach and discover knowledge. Laudon and Laudon (2007, p. 33) described the main difference between *data* and *information* to be related to the degree of dependence on it while making decisions. Information could be very important when making a decision for a certain department, but for another department it may not be considered important and needs treatment before depending on it while making decisions.

Furthermore, knowledge and information are closely associated with each other. In this respect, knowledge can be expressed by language and graphics, while information can be part of a database and a strategic plan (Devinney, 1997). However, information does not afford a significant perspective for strategic action without the involvement of individual experience. Therefore, he considers information a commodity that can contribute to the production of knowledge. As illustrated in Figure 2.1, the association of information and knowledge play an important role for organisations to achieve success.

Devinney (1997) sees information as a commodity capable of producing knowledge, and with prolonged information, the indication is that we can learn from it, but knowledge is a belief of information productivity.

It is clear from figure 2.1 that information regarding the two-dimensional meaning can be interpreted only in the light of knowledge and with a volume of information. In knowledge, there are two types of contexts that can be independent of the existing information, or that could increase or be affected by new information, but there are no reasons based on the information except knowledge.

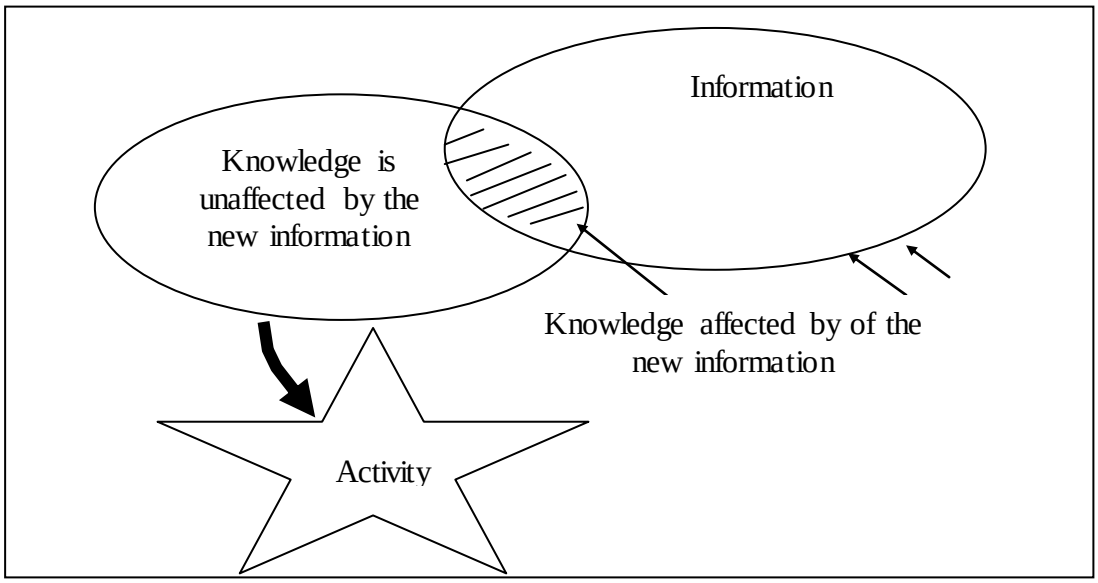

Figure 2. 1 The relationship between knowledge and information (Source: Devinney, 1997).

Knowledge leads to the formation of beliefs and commitment to principles, gives meaning to living and non-living things, and serves as the basis for each performance. It follows (Blumentritt & Johnston, 1999: 10) that knowledge is different from information in such a manner that the former needs a medium (of intelligence) where it is produced through a connection between the ongoing information to give a clear view of the fundamentals being used. Still, the difference between knowledge and information emerges through the limits made up by the existent intelligence system. Such limits may include the communication tools used in the process of knowledge acquisition. Yet the same means cannot be used because a greater capacity will be needed for managing such knowledge. Important still, Daft (2001, p. 258) has pointed out that the main difference between them is the human role in building knowledge. Accordingly, in light of the difference between knowledge and information shown (Zamel, 2003, p. 1), the difference between "knowledge management" and "information management" is that information management indicates dealing with objects (data and information) related to management information, and dealing with human beings is KM. To clarify further, the management of information concerns documentation and design drawings by computers, tables, electronic symbols, and programs, which deal exclusively with representation of data that is clear and obvious. While KM,

on the other hand, characterises value in originality, innovation, agility, adaptability, intelligence, and learning, and it seeks to activate the potential of the organisation in these aspects. Overall, we can say that knowledge comes in the advanced stage and the subsequent information comes in the data series (data, information, knowledge, wisdom). It is also knowledge, especially knowledge of explicit and useful information, which can be documented, coded, and restored. The essence of the difference between knowledge and information in the interpretation of humanitarian needs is that tacit knowledge requires high skills in management and means.

2.2.6 Knowledge Resources

Knowledge resources are known to be the objects from where knowledge emerges or where knowledge is contained or gathered. Intelligence, learning, and experience define the knowledge limits of individuals (Saffady, 2000). It can be obtained from books, movies, databases, images, maps, flow charts, novels, or even observation of behaviour. These resources could be divided into two types, documented and undocumented; the last one is thoughts in the minds of individuals. There are several methods in which knowledge is acquired, including extensive team work, phone and other communication means, e-mails, publishing legal documents, or communication through the Internet (Hislop et al., 2000, p. 6).

In general, sources of knowledge are embodied in all sources of clear information that individuals (heads and subordinates) can convert into knowledge, in addition to the capabilities of these individuals' minds in terms of latent capacity of intelligence, experience, intuition, and skill.

2.2.7 Knowledge Types

Knowledge is classified according to its human perspective into two main types: tacit knowledge and explicit knowledge. It is generally accepted that literature supports both types (Nonaka & Takeuchi, 1995; Duffy, 2000; Daft, 2001; Heisig, 2001; Alkobaissy, 2002).

Explicit knowledge is the knowledge individuals can share. It includes all the data and information that could be obtained and stored. Examples include stored data and information related to policies, procedures, programs, budgets, and documents related to the system, in addition to the basis of correction, operation, and

communication and its standards and various functional operations (Hijazi, 2005, p. 66). This type of knowledge is also known as documented and encoded information, which is often found in documents, reference books, blogs, reports, and digital storage devices. This is why this knowledge is easy to describe and identify and could be transformed from one language to another and from one form to another. It can be read and produced consistently and thus be stored and restored (Alziyadat, 2008, p. 40). Thus, explicit knowledge is an important issue, as it can be expressed in simple forms, including words, symbols, or graphics, and it is transferable. It is accessible and can be stored electronically (Alziyadat, 2008, p. 41).

The second type of knowledge, tacit knowledge, is often stored in the minds of individuals. It is obtained from accumulated past experiences; in most cases it will have a personal impression, which makes it difficult to acquire as it is stored inside the mind of the knowledge owner.

Alian (2008, p. 81) indicated that tacit knowledge is hidden knowledge indicating the skills existing in the mind of each individual, which is difficult to transfer to others or to transport. This knowledge could be artistic or perceptive. However, he indicated that it is not easy to understand tacit knowledge as a process or express it in words. Although it can be invested through some practices and some of it transformed into explicit knowledge, tacit knowledge can also be transformed into another tacit knowledge when the individual shares his artistic knowledge with others in order to transfer and exchange skills, experiences, situations, directions, capabilities, events, and practices (Alian, 2008, p. 81). Abufara and Hamad (2010, p. 5) confirm that tacit knowledge is related to artistic, perceptive, and behaviour knowledge lying within the individual, which is not easy to share with others or transfer to them. In addition, tacit knowledge is difficult to transmit to others at a workstation. It is also a very precious and unique commodity that is difficult for an organisation to copy or clone. All of that makes it a foundation for distinction and excellency. One crucial matter for an organisation is to reveal the tacit knowledge kept within its employees, thus collecting it in order to manage its intellectual capital (Economic and Social Commission for Western Asia, 2004, p. 5). This is why any organisation that wishes to manage the knowledge kept in its employees' minds has to seek transformation of tacit knowledge into declared knowledge through motivating individuals to reveal the knowledge they own and through publishing it in order for its personnel to develop and benefit from it. Despite the

apparent difference in features between the two types of knowledge (explicit and tacit), each is considered complementary to the other with a high level of importance for any organisation. This calls for finding the proper means to transfer and transform tacit knowledge to explicit knowledge. Figure 2.2 shows the most common knowledge patterns (Al-Ali, et al., 2009).

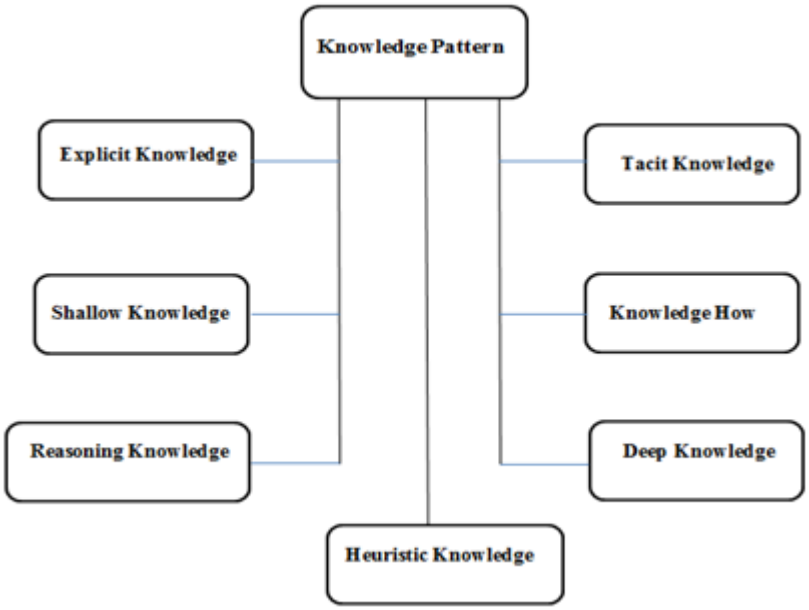

Figure 2. 3 Knowledge Pattern.

KM has played a significant role in improving management practices by setting the guiding principles of knowledge acquisition, knowledge application, and knowledge dissemination (Ooi, 2009). KM is an interesting discipline that reflects the renewable ideas inherent in the human mind. It represents the most important assets of an organisation, and it is a manageable commodity. It has only been recognised as a discipline in the past few years, when there appeared to be some serious attempts to standardise it and apply it in a number of international organisations. In addition, it has become the most important competitive advantage for organisations seeking to acquire and exploit it. This resource is an important asset for organisations in light of the developments in high technology information and communication, and the rapid changes and fluctuations in the economic, social, and political fields at a global level. In this context, this section reviews the literature related to KM.

In terms of information in a data series (data, information, knowledge, wisdom), it is apparent that knowledge comes towards the end of the range, illustrating the greater sophistication.

Information can be documented, coded and restored. The essence of the difference between knowledge and information lies in the human interpretation required by tacit knowledge and skills in management.

2.3. 1 Emergence of Knowledge Management

The field of KM is relatively new, particularly at the applied level. It has been recognised only in the past few years, and afterwards some standards as well as a growing awareness of the benefits have been realised from its application. At the end of the twentieth century, attention was drawn to this subject because at the time the components involved in the management of knowledge needed to re-adjust the value that would be utilised in the market to meet the needs of the customer in the face of rapid changes taking place. The need to manage knowledge emerged because of the increasing growth and necessity to diagnose the flexibility of organisational structures, which could not cope with rapid change in the market (Soo et al., 2001, p. 1). Perhaps the increasing use of information technology and communications that led to the evolution of available information, which impressed users, is one of the reasons that stimulated the emergence of KM. It was not a challenge limited to finding information on an order or a specific project, but how to search through the information available to find the most useful information for a particular purpose. Another method is the ability of the growing information and communications technology that have assisted additional processing and retrieval methods to obtain the information on storage, which is necessary to the user.

Don Marchand first used the term *knowledge management* (KM) at the beginning of the 1980s as the final stage of hypotheses concerning the development of information systems, but he did not refer to it as an independent process (Kubaisi, 2002, p. 57). At that time, a series of early pioneers of KM were credited with putting KM on the map. Featured organisations like Beckman Labs and the International Bank, by their creation of jobs in the field of KM, have led Japanese companies to play an important role in the emergence of KM and its applications.

The emergence of KM and its development were the collections of outcomes of a set of elements, assets, and the roots of the relationship. The most important include the following (Abu Fara, 2004, pp. 9-10):

- Philosophical theoretical thinking.
- Consideration of realism in the requirements of experience in the labour market.
- The views of educators.
- The views of entrepreneurs and business leaders.
- The role of economic forces in the formation of knowledge.
- The efforts of business organisations during the twentieth century to increase effectiveness.

In this context, the accumulation of knowledge and the rapid changes and developments that have been seen by the world during the end of the last century contributed greatly to the creation of the term KM. During that period, a series of writings and research on the development of this term determined the concept, models, and development as well as the development of applied standards. Many organisations attempted to apply KM in their work, some of which succeeded and achieved good results in performance; however others failed due to the vagueness of the term, which was in the process of evolution.

2.3. 2 The Concept of KM

The concept of KM is considered a modern concept in management science. It has gained increased interest in the last two decades that has led to the emergence of many definitions of the concept, which vary depending on the specialties of the researchers and various perspectives. To understand and define KM, there are three basic portals, as follows (Malhotra, 2000, p. 83):

The **Informational Portal** includes data processing and the management of information flow activities, database development, and documenting business activities in an organisation.

The **Technical Portal** is concerned with building and developing KM systems based on information technology systems, such as data mining, data warehousing, expert systems, analytical processing systems, instant information systems based on the Web, and others.

The **Cultural Portal** is concerned with behavioural or intellectual dimensions of KM through handling the fields of collective learning, lifelong learning, and building learning-oriented organisations.

In all these portals, KM seeks to provide administrative solutions through investing in knowledge resources, building memory for knowledge, and focusing on knowledge exchange and participation through a systematic methodological portal. Therefore, different definitions appear in literature. As such, the researcher was concerned with providing a range of definitions that serve the purpose of the study. Thus, Chou (2005, p. 26) maintains that KM is the process whereby an organisation extracts and invests intellectual capital in order to reach decisions efficiently, effectively, and innovatively, to give an it a competitive advantage, and to obtain the loyalty and commitment of customers. Delong (2004, p. 6) sees KM as an administrative system activity based on containment, collection, and formulation of all matters related to the important critical activities of an institution in order to enhance performance and ensure the continuity of the evolution of an institution in the face of the surrounding variables. In other words, it is the process aimed at institutional coordination and integration of data processing, information technology, the utilization of human resources, and the factors surrounding the institution (Delong, 2004, p. 6). Alokalpi (2008, p. 26) concluded a definition for KM as an administration that is working to identify the complete knowledge (in their minds) individuals have (whether employees, consultants, or beneficiaries), or to collect and create knowledge that appears in records and documents and organise it in a manner that facilitates its use, or the participation between employees of the institution in order to achieve higher performance and work success with the best methods at the lowest possible cost. In addition, Al-Zamel (2003) defined KM as a set of activities and processes that help the organisation generate knowledge, access it, select it, use it, organise it, and disseminate it, and work on transforming the knowledge (along with what it includes in terms of data, information, experiences, directives, and capabilities) to products (goods or services) and using KM outputs in decision-making, solving problems, drawing learning processes, and building an integrated system for strategic planning.

Based on the above, the researcher defines KM as a continuous dynamic process that includes a set of activities and practices designed to identify, find, develop,

distribute, use, conserve, and facilitate the retrieval of knowledge, resulting in increased performance, cost reduction, and capacity improvement related to the process of adapting to the requirements of rapid change in the organisation's surrounding environment.

Overall, knowledge management aims to deal with intellectual property that is based on unique sources and sensitive roles and to identify shortcomings in the production process which could disrupt the flow of knowledge and any benefit that could derived from it. It also aims to instil a culture of knowledge and develop this in the structures of the organisation, to protect intellectual property from decomposition and leakage, to work on developing the intelligence of managers and workers in the organisation, and to increase the value of this development. The aim of knowledge management is to allow the sharing of knowledge among employees and with customers and business partners to achieve and maximise revenues, improve customer service, attain achievement in the shortest possible time, and to increase cooperation within and outside the organisation.

2.3. 3 Models of KM

Many researchers have introduced several models for KM in an attempt to understand and guide the efforts of KM activities in institutions. The goal is to direct organisations to build knowledge strategies to help achieve goals and solve problems, even in line with the changes of the times. In this respect, a number of models for KM are discussed here.

The first model, the Duffy model, (Duffy, 2000, pp. 64-67) suggested a KM model, which is illustrated in Figure 2.3. This model considers the following issues:

- The starting point of the organisation obtaining the information, energy, and activity from the external environment.
- Through the involvement of strategy, personnel, and operations, technical information and energy are converted to knowledge, processes, and structures that produce goods and services and contribute to the increase of wealth in an organisation.
- KM is considered a process that includes obtaining both tacit and explicit knowledge, supporting and assigning roles, generating revenues, and emphasising

the human element as an essential aspect of and access to lessons derived through the re-use of knowledge.

Under this model the processes are as follows:

- The acquisition of knowledge, which includes capture, procurement, and generation.
- The organization process, which includes cataloguing and drawing.
- The retrieval process, which includes search and access.
- The distribution process, including participation and transportation.
- The process of sustainability, including revision, growth, and feedback.

Duffy Model: The Duffy (2000, pp. 64-67) model for KM explains that the organisation obtains information from its external environment and converts it in order to learn through the participation of people, strategies, processes, and technology. The rise of new knowledge through KM processes is as in (Figure 2.3):

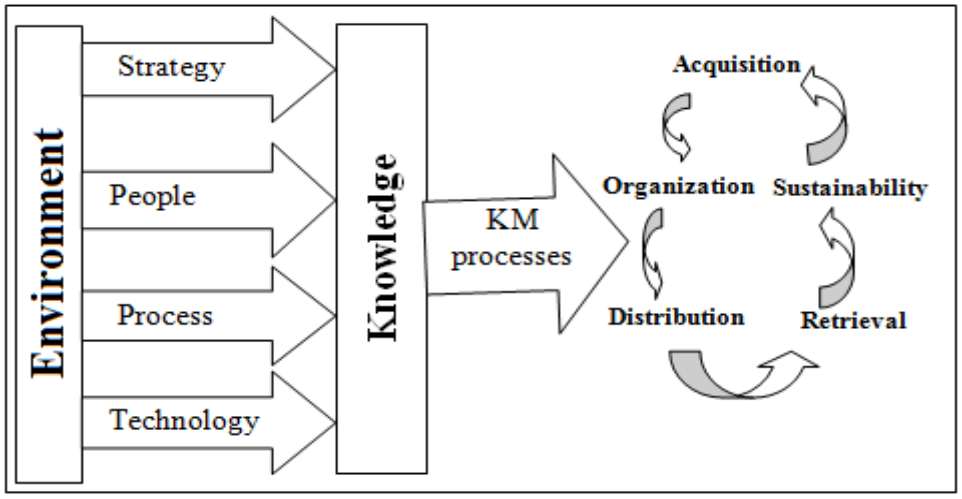

Figure 2. 4 Duffy model for KM. Source (Duffy, 2000)

The second model, Jennex and Olfman model, (Jennex & Olfman, 2004, p. 146) introduced a model based on the usage of effects of successful KM systems, and the dimensions of the model include the following:

- **Quality system**: How does the KM system perform the function of innovation, storage and retrieval, and transfer and application of knowledge?
- **The quality of knowledge**: How does the KM system ensure that the knowledge gained is available to all users?

- **User satisfaction**: Describes the level at which a KM system achieves high levels of user satisfaction.

- **Possible returns**: Measuring the benefits and impacts of a KM system for both the user and management of the institution (university or college) as a whole.

- **The collective impact**: The use of an individual's KM system to improve the quality of performance in the workplace and that, in turn, is reflected on the performance of the institution (university or college) as a whole.

The SECI model is the model developed by Nonaka and Takeuchi (1995), and it was abbreviated as SECI to shorten the four processes of KM. The full terms for this abbreviation represent, respectively, the following: socialisation, externalisation, combination, and internalisation, which are illustrated in Figure 2.4 below

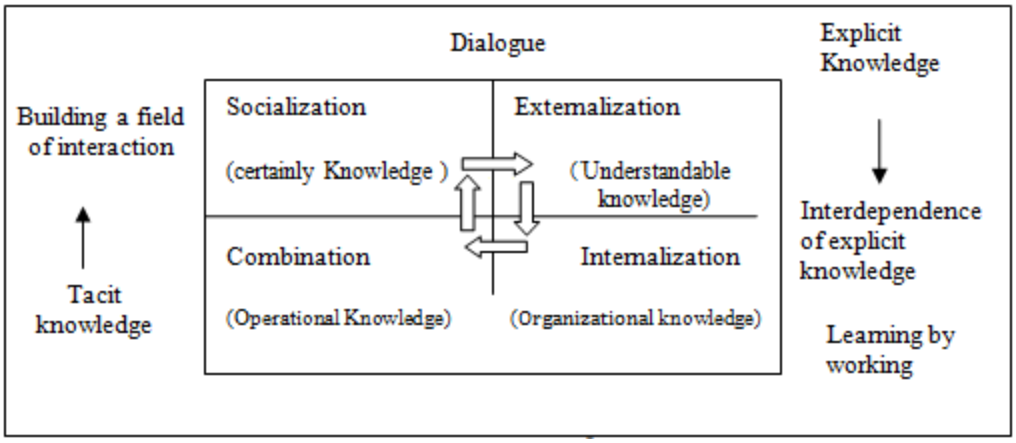

Figure 2. 5 SECI Model for KM. Source (Hussi, 2004).

As indicated in Figure 2.4, KM is aimed at creating new knowledge based on current knowledge. It is through the construction of a field of interaction between individuals and extending tacit knowledge between individuals, which is confirmed by conversation and extracted as explicit and understandable knowledge. By correlation between explicit knowledge, transition occurs towards a more standard knowledge that is more likely to be used in the organisation's work. Finally, by learning by action standard systemic knowledge is dissolved and converted into new operational (implied) knowledge in individuals' minds. Therefore, rising new knowledge expands the scope through the four SECI

processes. For example, Ferrari and Toledo (2004, p. 119) specified tacit and explicit knowledge by this model through:

- The transition from tacit to tacit (upbringing).
- The transition from tacit to explicit (extraction).
- The transition from explicit to explicit (correlation).
- The transition from explicit to tacit (internalisation).

Comptroller model: The organisation and systems development (OSD) centre has introduced the comptroller model that shows KM as a product of the interaction of three components: processes, people, and technology, as illustrated in Figure 2.5.

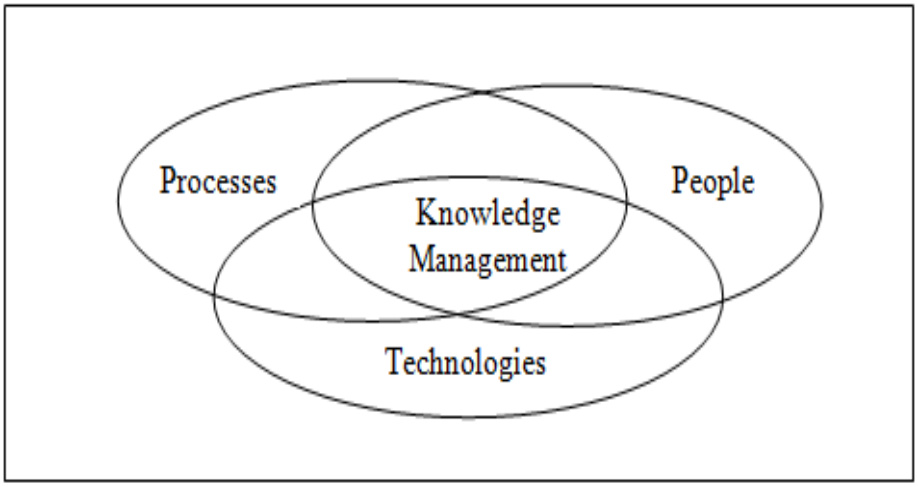

Figure 2. 6 Comptroller Model for KM By OSD.

Hope Model: Hope suggested a KM model that includes the following four key dimensions (Figure 2.6) (Yassin, 2004, pp. 47-48):

- Knowledge and cumulative experience that lead to creativity in problem solving.
- Application and integration of the tools and techniques of the new methodology to enhance the processes internally.
- Organisation experiments to build capabilities that are future oriented.
- Import activities of knowledge and experience from abroad in order to improve the core capabilities of an organisation.

Figure 2.6. Illustrates a model of KM as proposed by Hope.

2.3. 4 Elements of KM

This section focuses on the three elements related to KM, including process, technology and team. These elements are interrelated and work in partnership to

play a key supporting role during the implementation of KM. As KM process is driven by team workers physically and virtually, technology and team worker collaborations enable the organisation to learn and implement KM more efficiently and effectively. The following sub-sections provide an overview information what are related to the three elements of KM.

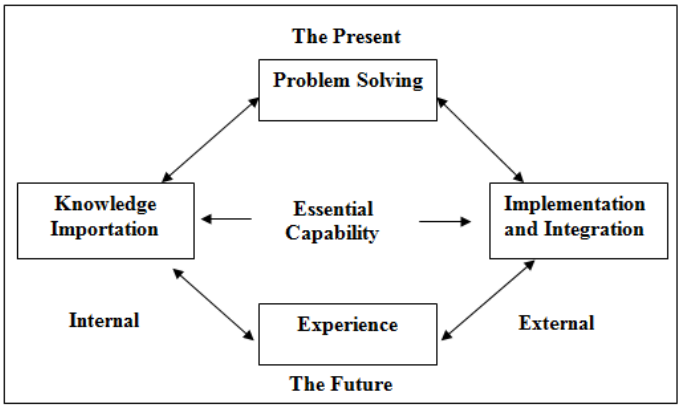

Figure 2. 7 Hope model for KM Source: (Yassin, 2004, p. 48).

2.3.4.1 KM Processes

Institutions realised that knowledge is the most important intangible asset. Most institutions have adopted the concept of knowledge in one way or another. However, some have not used it in an appropriate manner. The improper adaptation of KM could be due to the lack of employee experience. So many institutions have sought to work on the causes of the possession and management of asset elements, and KM began to occupy a priority as a sophisticated, intellectually important role in today's business world. Generally, KM is formed due to a number of processes that provide the key that leads to the understanding of KM and how best to implement it within an organisation. Various researchers indicated that KM is influenced by internal and external sources. Thus, dividing KM into its sub-elements is vital to success. Alavi (1997, p. 63) divided KM processes into the following five elements: composing and acquiring knowledge, knowledge organisation, knowledge storage, distribution and dissemination of knowledge, and the implementation of knowledge. Marquardt (2002, p. 26) suggested six stages for processing knowledge, namely: acquisition, generation, storage, extraction, and analysis of information, transportation, and publishing application, and approval. Other researchers (Badr, 2010; Awdah, 2010; Dacey, 2007) identified KM processes involving the following phases: organising knowledge, generating knowledge, sharing knowledge, and implementing

knowledge. Furthermore, Mertins et al., (2001) suggested four operations for KM processes (Figure 2.7).

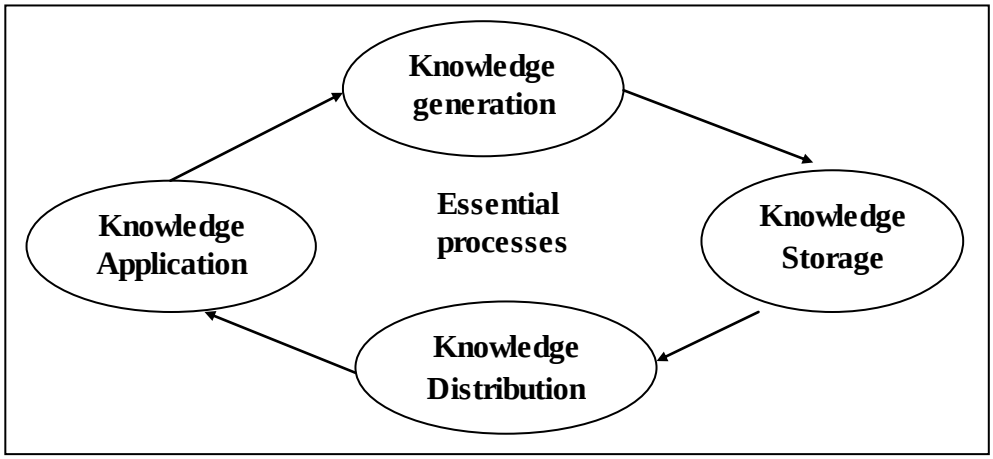

Figure 2. 8 Essential processes for KM. (Source: Mertins et al., 2001)

As these four operations are included in the current study, the researcher found further discussion essential.

Knowledge Generation: means "innovation knowledge", done through the participation of individuals or work teams for identifying the problem and its solution in an innovative continuous way. This KM process also provides an organisation with the ability to excel in achievement and accomplish a high market status in various areas. These include starting new production lines, expediting problem solving, transferring best practices, developing skills of professionals, and assisting management in recruiting and retaining talents. This reinforces the need to understand that knowledge and innovation are a two-way process: knowledge is the source of innovation and creativity and vice versa when it becomes a source of new knowledge (Alian, 2008, p. 196).

This occurs as a result of interaction between tacit knowledge and explicit knowledge, which occur in four forms called the patterns of knowledge transfer.

Patterns of knowledge transfer**:** Studies by Tawfik (2004, p. 127), Alamari (2004, p. 48), and Al-Kobaisi (2002, p. 72) pointed to patterns of knowledge transfer where knowledge is created through the interaction between tacit knowledge and explicit knowledge determined within four patterns:

- **Common knowledge (socialisation):** includes the transfer of tacit knowledge into social normalisation, which is the involvement of the process in the experience and the creation of tacit knowledge, such as mental models and

common technical skills. The individual can acquire tacit knowledge directly from others with the use of language. This is done though observation, simulation, or practice. In the context of business, practical training is applied on the same principal of job performance, as the key to acquiring tacit knowledge is experience, and without the presence of some form of shared experience, it becomes difficult for an individual to identify with the process when thinking of another individual. Indeed, the transfer of information is barely feasible if it is stripped from its emotions related to special contexts or shared experiences (Tawfik, 2004, p. 127).

- **External knowledge (externalisation):** includes the transfer of tacit knowledge to explicit knowledge called "Manifesting or Output", a process of phonetic identification of tacit knowledge from which it transforms into tacit concepts, which is a process of finding essential knowledge that takes the form of metaphors, concepts, hypotheses, or models that express the essence through language or writing; however, the changes are often inadequate and inconsistent as a result of the differences and gaps between mental images and expressions that assist in the revitalisation of reflection and interaction between individuals, which include the transfer of explicit knowledge.

- **Aggregate knowledge (combination):** includes a transfer of explicit knowledge into a specific explicit knowledge called *integration*, a process of systematisation of the concepts that turn it into a knowledge system. This pattern of knowledge transfer includes the integration of different sets of explicit knowledge, the exchange of knowledge between individuals, and merging it through media, such as documents, meetings, telephone conversations, or computer networks. This could result in the restructuring of the existing information through classification, addition, and integration of explicit knowledge to the emergence of new knowledge. Usually the creation of knowledge is undertaken through education and training (Alamari, 2004, p. 48).

- **Internal knowledge (internalisation):** includes a transfer of explicit knowledge into tacit knowledge, and this is linked closely to learning by working. When the experience related to common knowledge is being introduced, output, and integrated within the rules of tacit knowledge to individuals in the form of common mental models or technical knowledge, knowledge becomes a valuable asset.

The knowledge created by each pattern of knowledge transfer is naturally different, as shown in the former, and the continuation of the interaction between the contents of this knowledge lead to its continuation and exaggeration, which is known as *spiral knowledge*.

Spiral Knowledge: As previously mentioned, if an organisation cannot create organisational knowledge, the organisation should mobilise to establish and accumulate tacit knowledge at the individual level. The organisational tacit knowledge is amplified through four patterns of knowledge transfer and fleshed out at higher levels. Thus, the creation of organisational knowledge is a spiral process that begins with individuals and then ranges up across communities and penetrates the boundaries of sections, departments, sectors, and organisational boundaries (Tawfik, 2004, p. 146).

Nonaka and Takeuchi (2004, pp. 64-66) suggested that there are two dimensions of knowledge generation: the theoretical cognitive dimension and the existential dimension. They propose that within these two dimensions the spiral of knowledge generation takes place as a result of interaction between the four patterns of knowledge transfer that are in dynamic interaction; this helix is activated when the reaction occurs dynamically between tacit knowledge and explicit knowledge on the basis of the level of the lower existential dimension to the level of the theoretical cognitive dimension upward.

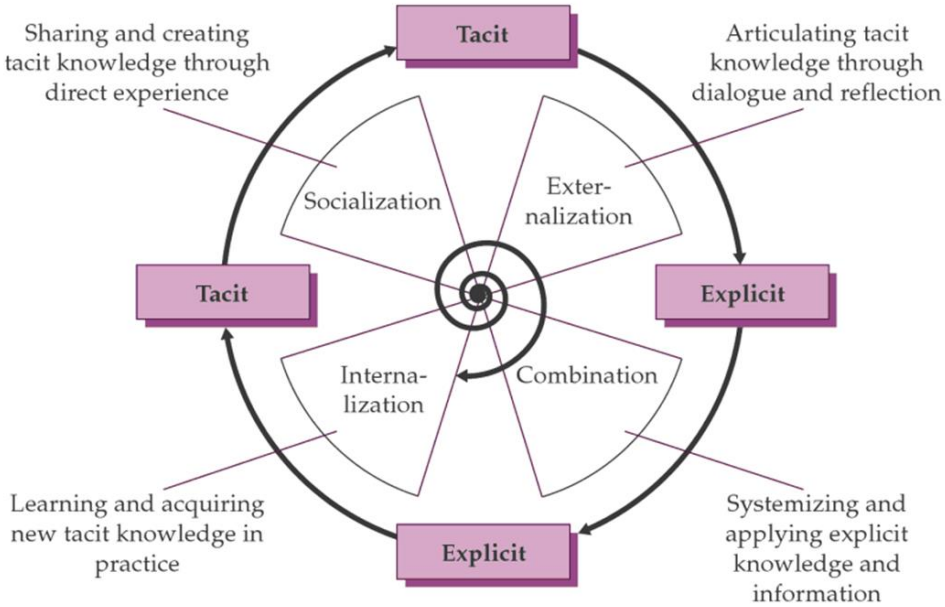

Figure 2. 9 SECI Process of knowledge spiral

Figure 2.8 illustrates that knowledge generation does not only happen within an organisation, but could also happen between a range of organisations through a network of relationships that exist between these organisations. Therefore, knowledge and the ability to be generated and used is one of the most important sources to achieve sustainable competitive advantage for an organisation (Warner &, 2004 p. 91).

In this sense, the generation of knowledge is the first and most important process of knowledge operations underlying the other operations management. It is through knowledge management that the organisation ensures the possession of knowledge, which means possessing power and melting it down in its various activities to achieve the desired goals. Knowledge is generated from internal sources, such as documents, records, personnel and various databases, or is captured from external sources, such as the internet, customers, suppliers and business partners.

Knowledge Storage: means those operations that include retention, sustainability, search, access, retrieval, and location. The process of knowledge storage refers to the importance of organisational memory as organisations are facing significant risk as a result of the loss of much knowledge held by individuals who are departing an organisation for one reason or another. Hence, knowledge storing and retention became very important, especially for organisations that suffer from high rates of labour turnover, which can result from the recruitment of temporary employees and/or consulting contracts, in order to generate knowledge because these individuals take their tacit, undocumented knowledge with them, and documented knowledge can remain stored within its databases (Alziyadat, 2008, p. 99). Alwani (2006, p. 318) has pointed out that knowledge retention shall be done on a selective basis and should be based on a same sort of organisational knowledge, which requires special KM by taking into account the availability of standards that ensure the selection of knowledge has a future value for the organisation and that knowledge retention comes after the ensured selection of knowledge in two basic forms. The first form is individuals, ~~which~~ who are the keepers of expertise and must provide the administrative procedures that ensure the preservation of their experience through encouragement, incentive systems, and procedures of an orderly transition of expertise up the career ladder. The second form is computers, which are a common means of knowledge storage

because of their efficiency, accuracy, and expandable massive storage. In addition, computers have a high capacity to deal with document storage in digital form with the ability to process it in various ways, ensure the most appropriate methods to provide answers to employees of an organisation, and respond to their queries. Within this context, Alian (2008, p. 197) confirms that knowledge storage represents a bridge between knowledge capture and its retrieval process. Thus, much of the known acquired value of KM is a result of the various elements of knowledge, its subjects, and the need to link to each other as well as be maintained and updated.

Knowledge distribution: is considered the first step in the process of knowledge use. It means the delivery of appropriate knowledge to the right person at the appropriate time and should be in the right context and cost effective (Coakes, 2003, p. 42). Within this context, Dalkir (2005) indicated that knowledge distribution is the process of knowledge interchange and transference to employees, who need it in a timely manner in order to complete significant tasks. This means the exchange of ideas, experiences, and practise among employees, necessitating the connection of workers with each other and the use of knowledge to solve problems creatively. Knowledge is an element that flourishes when it is shared and used. Therefore, knowledge distribution depends on the existence of effective mechanisms. These mechanisms could be formal, such as reports, manuals, training, planned official meetings, and learning on the job, or could be informal, such as meetings, symposia, and seminars that take a formalised codified manner and usually take place in non-working hours. These informal mechanisms could be an effective mechanism in small groups. However, informal mechanisms could lead to the partial loss of knowledge, where there is no guarantee that knowledge is transferred correctly from one person to another, as well as the ability of the receiver to operate, purify, and interpret the knowledge according to the individual's terms of reference. On the other hand, formal mechanisms could be more effective and ensure a greater transfer of knowledge; however, they may impede the process of innovation. Therefore, combining both mechanisms, formal and informal, would lead to greater proficiency in the transference and distribution of knowledge (Alwani, 2006, p. 315).

Knowledge application: The third essential KM process involves knowledge application to new circumstances in which users can learn and produce new

knowledge with effective storage and retrieval mechanisms that allow an organisation to access that knowledge easily (Lawson, 2003; Lin & Lee, 2005). The objective and purpose of KM is the application of knowledge available to an organisation, which is one of the most prominent operations. Knowledge application means to make knowledge more appropriate for consumption in the implementation of an organisation's activities and more closely associated to the tasks carried out by it. This is because an organisation should achieve the effective application of knowledge to benefit from it after capture and storage and to develop methods to retrieve and transfer it to employees. Four terms are associated with this process. These are use, reuse, utilisation, and application. According to McShane and Glinow (2000, p. 23), the successful management of knowledge is related to the use of the available knowledge in a timely manner, without losing the opportunity to achieve an objective or solve a problem.

Martensson (2002, p. 211) has identified three mechanisms for knowledge application.

- **Directives**: Directives indicate "a specific set of rules, procedures, and instructions that are placed to transfer tacit knowledge of experts to explicit knowledge of non-expert".

- **Routine**: Routines refers to the development of patterns of performance and specifications of operations that allow individuals to apply and integrate their specialised knowledge with the need to communicate with others.

- **Self-contained task teams**: Building self-contained task teams that shall be used in the event of complex tasks that are characterised by a degree of uncertainty, and directive or routine mechanisms cannot be used on them.

The application of knowledge is the ultimate purpose of KM. This means that knowledge investment, such as its capture, storage, distribution, and participation, is not enough. The important aspect is the transfer of this knowledge into implementation. The knowledge that is not reflected in implementation is just a cost, and the success of any organisation in its programs of KM depends on the amount of implemented knowledge compared to available knowledge. The gap between what is known and what is implemented is one of the most important evaluation criteria in this regard (Al-Ziyadath, 2008, p. 103).

2.3.4.2 KM Technology

The technology means, methods, and actions used to transform organisational inputs into outputs (Daft, 2001, p. 240) represent the massive amounts of ideas and information that are in constant motion. This is a contemporary challenge for managers in creating awareness and ensuring accurate beneficial usage of technology. Not all technologies provide progress or add value, but they can have an influence on how and where to perform work.

Information technology and computer systems are associated with KM developments. The process of access to knowledge, attraction, and coding as well as participation, distribution, and even creation and composition is necessary to secure its structures and the basic infrastructure of information technology (Al-Saba'a, 1997, pp. 18-19). On this basis, the use of information technology applications is considered the newest tool of KM. Technology specialists consider KM to be the analysis, design, and implementation process of systems. As such, they focus on one of the following areas: knowledge storage and access methods, use methods, information networks, customer satisfaction, organisational culture, and applied software packages that cover the cost (Baserda, 2006, p. 63).

It may also be noted here that although commonly available communication and collaboration technologies (telephones, electronic mail, message/messenger services, etc.) as well as traditional information distribution media (newspapers, printing and publishing, radio, television, audio and video records, etc.) enable sharing of knowledge, they do not qualify as KM technologies since they do not manage knowledge attributes adequately to meet the knowledge needs of large organizations (Kavi Mahesh and J. K. Suresh 2004) . It could be contended that most of these technological advances emerged in the 1980s and the first half of the 1990s, which were characterised by shared competition among organisations to accommodate all the outputs of the technology. The perception was that the most important competitive advantage that may be obtained by an organisation was new technology that the other competitive organisations did not have yet, which was reflected in the attributes of this period, such as re-engineering of business processes, size reduction, and others. Many organisations have proceeded to lay off large numbers of workers in order to reduce costs and replace their work with technological means to lower cost and increase performance, resulting in the drainage of the knowledge base of those organisations.

Perceptions have been varied in the last few years. Leaders of organisations saw that technology quickly reaches competitors and is no longer solely a feasible competitive advantage, bringing more focus on the individuals working in the organisation and the investment in the privileged among them because that is currently the most important competitive advantage for an organisation. Accordingly, the concept of KM has been crystallised, and can be applied in organisations. The focus has been on individuals, information technology, and KM processes.

Developments in information and communication technology played an important role in the sudden emergence of KM, and information technology has provided new tools for the purpose of improving the effectiveness of KM to achieve its goals. The growing ability and the increasing use of information and communications technology led to information evolution, which helped to store and retrieve information easily. An organisation was able to conduct operations based on the application of KM efforts.

Writers, researchers, and interested individuals have expressed different views about the concept of information technology. Some viewed it as "the unification (merging) of devices, objects, procedures, and systems used to store and analyse information which translated in the form of knowledge" (Schermerhorn, et al., 2000, p. 242). Alter (1999, p. 42) has described it as "hardware and software used by information systems". Hardware refers to methods and other physical objects involved in information processing in computers, workstations, physical networks, data storage devices, and methods of transport. Software refers to computer programs, which interpret user inputs, and equip devices with functions to be executed. Software includes operating systems, end-user programs such as words processing, and application programs related to specialised business tasks.

Technology is the pillar of KM that provides the basis for automation solutions, a hub for knowledge sharing, and support for the creativity process (Microsoft, 1999, p. 6). Information technology leads innovation in jobs, society, and business. Managers who understand technology and are able and use it will be also able to develop and improve personal work, relying on information systems consisting of hardware, software, personnel, procedures, and databases. These systems provide information and help managers direct the organisation, problem solve, and make decisions (Post & Anderson, 2000, p. 27). Information technology is used to

strengthen the organisation's links with customers and suppliers and can also be used to create products and services and improve the quality of operations in an organisation.

Types of Knowledge Management Technology:

The term *knowledge management technology* can refer to the most significant developments in information and communications technology, which effectively contributed to the emergence and development of KM that has made technology an important element and major component of KM. These technologies are detailed below.

Knowledge Work System (KWS): is a common set of systems for generating new information and knowledge. A KWS provides fast, low cost tools to gain and manage knowledge in a better way in various organisations and encompasses computer-aided design (CAD), virtual reality systems, and investment workstations (Laudon & Laudon, 2001, pp. 364-365).

The KWS includes different types of systems, including knowledge-based decision support systems (KBDSS) and artificial intelligence systems (AIS). The first type helps managers in better planning of project resources (Turban & Aronson, 1998, pp. 214-215). Decision support systems based on knowledge are wider and more comprehensive than decision support systems based on data or information (Turban et al., 2001, pp. 342-343). It also enables managers to make a wider range of more complex decisions (Post & Anderson, 2000, p. 27). The second system or AIS uses a computer that performs behaviour similar to a human. This system is capable of learning natural languages, can perform consistent physical tasks, and can simulate human expertise, as it mimics thinking, initiative, and other human-related attributes, but it does not have the intelligence of humans. These functions are considered very useful for organisations (Laudon & Laudon, 2001, pp. 370-371).

- **Computer-aided design (CAD)**: Computer and complex design software are being used to design products, where they can draw and test designs faster and less expensively. It also provides the ability to deliver more designs and better quality. Many organisations use such systems.

- **Virtual reality systems**: Virtual reality systems go beyond CAD systems through using computer simulation in which products are tested more realistically

through the computer. Thus, the user feels as though the simulation is actually in a realistic world. Virtual reality systems provide many advantages in education, medical science, and business administration and provide three-dimensional images to illustrate products and their uses in an interactive manner; such software is available on the Internet (Laudon & Laudon, 2001, p. 365).

- **Office Automation Systems:** These systems are used to automate administrative tasks into an integrated whole; these systems include e-mail, information retrieval, word processing, and teleconferencing (Negm, 2001, p.799).

Knowledge-Based Decision Support Systems:

There are many decision support systems (DSSs) that help managers in the better planning of project resources. Decision support systems based on knowledge are wider and more comprehensive than DSSs based on data or information. Decision support systems based on knowledge enable managers to make a wider range of more complex decisions. Areas where these systems provide support are the following:

- Support of non-mathematically defined decision-making process steps, such as selecting the appropriate data inputs that require expertise as well as assessment.
- Support of the process of building, storage, and management of the multiple models DSSs.
- Support of the process on analysis in the case of uncertainty, which is one of the qualities of the current business environment.
- Support of the users work that has a major role in the implementation of DSS.

Decision support systems depend on the activities of online analytical processing (OLAP), which include many data paragraphs (thousands of millions) with complex relationships, and one of the goals of OLAP is to analyse these relationships, for example, a sales data analysis, which is collected by region, type of product, sales channel, and time period. After reviewing the results, the analyst may adjust the data or conduct a comparison in the light of decisions made. This whole process must be accomplished immediately with a rapid response time (Turban et al., 2001, pp. 342-343). In recent years, many models of DSSs have been developed based on knowledge (Turban & Aronson, 1998, p. 215), for example:

- Effective DSSs: these systems exert a significant role in the process of interaction between man and machine and implement calculations to provide data and respond to standard commands that help in solving mysterious and complex problems.

- Self-managed DSSs: It is one of design enhancements of DSSs, since they are able to provide information on how to use these systems. Thus, it will be able to self-adjust with user status.

Artificial Intelligence Systems: Artificial intelligence (AI) is an effort to develop systems based on a computer that performs behaviour similar to a human, and such systems will be able to learn natural languages, perform consistent physical tasks, and simulate human expertise, as they mimic thinking, initiative, and other human-related attributes, but they do not have the intelligence of human. These systems are very useful for an organisation for the following reasons (Laudon & Laudon, 2001, pp. 370-371):

- They can take advantage of the expertise that can be lost by the organisation due to retirement, leaving work, or death of experts.

- They can store information effectively to generate a knowledge base can be used by many workers or employees who could learn from it.

Artificial intelligence systems use a number of tools and techniques, and the most famous are calculation machines, Intelligence Quotient (IQ) agents, and correlation analysis. These tools and techniques can be clarified briefly as follows (Turban et al., 2001, p. 344; Laudon & Laudon, 2001, p. 382):

- **Calculation Machines**: Learning machines through which historical data of patterns can be tested. The users will be equipped with these machines to engage in huge databases and to identify potential customers for a new product, or search for organisations that are on the brink of bankruptcy.

- **IQ agents**: Software that works in the backend to find specific applications and functions that a user cannot predict. This customer (agent) could be programmed to make decisions depending on a user's preference and can be linked to a PC to help the user perform applications easily.

- **Correlation Analysis**: It is an approach that uses a special series of algorithms that arise through chains of large databases reflecting the differences between paragraphs.

Artificial intelligence systems are as follows:

Expert Systems:

Expert systems are based on knowledge and are defined as computer intelligence systems that have the ability to solve difficult problems using knowledge and methods of reasoning. Knowledge or information sets are expressed by computer codes and usually bases (if/then). The codes modelled in these systems are based on facts, data, assumptions, and definitions that rely on the combined experience and knowledge of human experts (Negm, 2001, p. 794). Landon and Laudon (2001, p. 373) have pointed out that the structure of expert systems is similar to the structure of other information systems. Expert systems rely on one or more knowledge engineers similar to the analyst of a normal system, but having specialised expertise in information and knowledge.

Natural Language:

Natural language programs allow the user to connect with the computer through the user's language, and the program works as an ear for the computer. It is now in different stages of development, where the user will be able to access information from the database by entering commands in normal language (for example, English) in a simple form. It should be noted that expert systems use many symbolic languages, including the two main languages, LISP and PROLOG, detailed briefly below.

- The LIST processor language, denoted as LISP, is the oldest symbolic processing language of artificial intelligence in the US.

- Programing-in-logic language, denoted as PROLOG, was developed in Europe and had extensive use in Japan. It was chosen for the fifth generation of Japanese computers. Development has taken place in order for natural language to mediate between the system and the ordinary language user (Negm, 2001, p. 796).

Neural Networks/Machine Vision: Neural Networks are designed to work in a similar manner to the neural network of the human body, where the electrical key works as the cell in the centre and the electrical wiring resembles nerves. Thus, the

network of synthetic nerves includes computers with software that are trying to mimic the actions of neurons in the human body. Artificial neural networks can learn from errors, where if the learning process continued for thousands of cycles, the machine could learn the correct response. This network is interconnected and parallel (Laudon & Laudon, 2001, p. 377). Similarly, Negm (2001, p. 796) indicated that machine vision represents visual sensing by the cameras that improve the appearance and shape of an object, which act as the eyes of a computer. There are two basic mechanisms of vision: the first is a linear system that is sensitive to only one dimension, and the second system is the matrix system that senses objects in three dimensions (3D).

Hybrid IT Systems: Many IT systems can be integrated together to create specific applications to gain the benefits of each of the individual applications. Such as systems are called hybrid IT systems (Laudon & Laudon, 2001, pp. 381-382) and are increasingly used in many Japanese companies, as the applications of these systems have expanded to include office equipment, industrial machinery, and household appliances.

Overall, applications in the field of technology (IT in particular) have contributed significantly to the crystallisation and development of the concept of KM and have become a fundamental pillar, important component, and integral part of KM. It is what might be called "KM Technology" to distinguish it from other information technology. Knowledge management technology is the advanced means used by a knowledge team to facilitate knowledge generation, storage, distribution, and application in various systems, structures, and activities of an organisation to achieve the goal of acquiring such technologies.

2.3.4.3 Knowledge Team

In the early years of KM, many organisations lacked in the development of significant conformation of technological solutions before understanding the human factors of KM, but these organisations realised that when individual capabilities and technology are brought together effectively, KM may provide real value to an organisation (Baserda, 2006, p. 72). Knowledge management is partly a reaction and sequel to the patterns of the last decade, as downsizing and rearranging of business processes has led to the withdrawal of a lot of talented employees in organisations, after which the organisations realised the transfer of

technology-based advantages to competitive organisations meant the only remaining advantage was their work force (Baserda, 2006, p. 72). Theorists of KM realised the importance of individuals and their value to the success of an organisation; therefore, they are now trying harder to reduce the number of individuals in the organisations and to increase the value of those remaining (Zorn, 2001, p. 5).

Knowledge has become a directly competitive advantage for organisations to sell ideas and relationships (service performance, software, and technology of organisational leadership) and an indirect competitive advantage for all organisations that are trying to differentiate themselves in how they serve customers. Successful organisations are those that tend to attract the most expertise. The development and retention of the individuals who can lead the organisation to lead the market through responsiveness to customers and opportunities deployed in technology is a challenge for organisations, requiring the capacity to recruit, choose, assimilate, develop, and retain such talented individuals (Ulrich, 1998, pp. 126-127). Furthermore, knowledge makers as well as directors and managers of customer knowledge are those representing a knowledge team of an organisation, which represents tacit knowledge possessed by human resources, which, in turn, achieves a competitive advantage for organisations in the era of knowledge and technology. This resource is considered a key component, if not *the* most important element of KM. In this context, components of a knowledge team are clarified as follows (Baserda, 2006, p. 73).

Knowledge workers: are different from data makers, who are responsible for the processing that is conducted by secretaries, salespersons, and record holders, and are capable of generating information and knowledge. They are more informed and cultured than data makers, and they may be organisational consultants. Other knowledge makers include researchers, designers, writers, and judges who can generate knowledge (Laudon and Lauson, 2001, p. 359). Kubaisi (2002, p. 6) believes that knowledge makers are generally university graduates and are often members of a recognised profession, such as engineers, scientists, financial analysts, marketing partners, and production planners. They are responsible for generation, development, and integration of new knowledge into existing knowledge and should have the ability to judge. They have a thorough understanding and independence to act. Laudon and Lauson (2001, p. 363)

indicated that knowledge makers are essential for an organisation and managers. They can maintain a currency of knowledge in the organisation and communicate its development to the external environment in the fields of technology, science, social thought, and the arts. They can also serve as advisors in the field of internal knowledge and act as agents of change (i.e., perform and evaluate the process of organisational change).

In spite of the difficulty of measuring the productivity of knowledge makers due to the difficulty of defining output units, there are six major factors that determine the productivity of knowledge makers (Drucker, 1999, pp. 83-84).

- The productivity of knowledge makers requires defining the mission. A basic requirement of the process of knowledge makers is to reveal the mission or what should be the mission for the purpose of focussing on the task.
- The productivity of knowledge makers requires an imposition of the burden of their responsibility on themselves (i.e., knowledge makers themselves). Knowledge makers must manage themselves and must have independence.
- Continuous innovation and creativity must be an integral part of the task or responsibility that should be performed by knowledge makers.
- Knowledge work requires on-going learning and teaching by knowledge makers.
- The productivity of knowledge makers does not focus on the quantity of products but rather the quality.
- The productivity of knowledge makers requires their treatment to be as an asset and not a cost. This leads to increased productivity at work and the organisation's preference to all other opportunities.

Knowledge Managers*:* The introduction of the post of Chief Knowledge Officer (CKO), termed by Rastogi (2000, p. 41) as Chief Knowledge Manager (CKM), is the first step in helping organisations manage their own knowledge. The manager should have the basic task of the collection of various aspects of knowledge, especially with regards to personnel, the classification and transfer of the knowledge base to derive results, standards, and formulas necessary to improve work (Kuhn, 2001, p. 1). Organisations seeking to create the post of CKO must provide a measure of technical and regulatory infrastructures and must focus on critical initiatives to ensure the achievement of KM. There are three roles that can be performed by a CKO (Herschel, 2000, p. 37).

- Responsible for the development and execution of KM programs.
- Development of the strategy that guides the organisation on how to maintain and process their intellectual assets.
- Adoption of an organisational culture that focuses on permanent learning and growth. Turban et al. (2001, p. 40) indicated that the role of CKO represented the briefing of knowledge using the method of information technology and has three responsibilities, including generating infrastructure for KM, building a knowledge culture, and dissemination of the knowledge culture.

The job of KM director is not one position, but it is a management concept of various aspects, positions, and multiple sites, including (Probst et al., 2001, p. 38) those detailed next.

A Knowledge Officer's mission is to create and install a knowledge base and oversee development operations. An Excellence Fields Specialist's mission is to encourage the establishment of individual excellence fields and oversee development operations. A Communications Expert's mission is to ensure networking inside and outside the organisation and to ensure the easy flow of knowledge and distribution through the network. Asllani and Luthans (2003, pp. 55-56) have classified knowledge managers into two main groups.

Explicit Knowledge Managers include all employees in an organisation who are carrying out knowledge generation, transfer, classification, and connection. Managers of information technology are considered a prime model for explicit knowledge managers.

Tacit Knowledge Managers often focus on the process that facilitates the interaction between knowledge makers and experts, and they are also concerned with finding new experiences and achieving the benefits in time and place. Tacit knowledge requires that the basic formula for the transfer of knowledge is direct contact between individuals. Human resources managers are an example of tacit knowledge managers.

Effective knowledge managers find likely methods to access knowledge representation for others and adapt the process of re-drafting that knowledge to different users, different contexts, and applications, as they should be informed of the advance impact of the change on users (OSD Comptroller, 2002, pp.3-4). A

good knowledge director will find ways to ensure that adaptation to changes is less threatening. Based on the above, a knowledge manager in an organisation should have a high degree of professionalism and should have the qualities that qualify the manager to carry out KM efficiently, as the manager should possess a vision of what the organisation should be and should give this vision a high level of commitment. This vision must address the creative capacities of workers and encourage them to think about the future in innovative, renewable, and constantly evolving ways. The manager must also work toward developing a sense of awareness among workers of the importance of interaction and integration with modern technologies and toward generating valuable knowledge with beneficial applications.

Customer KM (CKM): represents the management of an external structure (capital of the customer), which reflects the knowledge of external customers of an organisation. Most organisations that are geared toward the customer have managers that know their customers and mostly succeed in KM "about" the customer, but few could appropriately manage their knowledge of the customers (Baserda, 2006, p. 76). The CKM is a retrospective process, through which organisations liberate their customers from only the receiving of products and services by admitting them as partners in knowledge and aiming to acquire customer knowledge in order to share and expand among them to achieve benefits to both the customer and the organisation (Gibbet et al., 2002, p. 2). There are two types of this knowledge (Rowley, 2002, p. 501).

- Knowledge about the customer, which may include knowledge about potential customers and their respective divisions.

- Acquisition (possession) knowledge through customers, regarding harmony between product lines (for example) or effective treatment of the complaints regarding a certain commodity, the wider environment of the organisation, and the marketplace where products and services are being delivered.

Organisations geared toward customers need to enhance their ability to manage the knowledge of those buying their products. To apply, there are five ways through them (or some of them) the organisation could manage the knowledge of its customers; these methods follow (Gibbert et al., 2002, pp. 8-11):

- **Production consumption (prosumerism)**: This is a term that refers to the possibility of a consumer that performs dual roles of the product and the customer. This joint role generates options and prior tendencies within the customer to provide something in the future, depending on the proposal of new ideas and benefits in an innovative way. Thus, through the stimulation of the pattern of idea generation, the customer becomes a generator of the joint value in the organisation.

- **Joint learning team:** Joint learning teams focus on the total change and re-configuration of organisations and value systems, where internal links in the organisation become consistent with the customer knowledge base, and participation in the activation of the joint EP with the customer.

- **Mutual innovation**: Most product innovations do not come from within the organisation, but come from the end customers of the product. The questioning of customers regarding what they need in the future may not necessarily lead to the emergence of new products, but may lead to continuous improvement of the product. Close cooperation between an organisation and the customer leads to innovative, mutually inclusive solutions for many work problems.

- **Knowledge generation group**: is one the methods of customer KM reflected in linking groups of customers with knowledge experts. Knowledge generation groups are groups of individuals who work together over a long period of time, have a common interest in the subject, and are interested in generating and sharing knowledge. The dialogue process is conducted between the customers themselves and among production managers and development engineers with the presence of observers to obtain knowledge from such dialogue.

- **Joint intellectual property**: This method may cause more and more powerful participation of knowledge between the customers and an organisation, and here, the organisation believes that its ownership belongs to the customers, and it works for them; therefore, the intellectual property that exists in the organisation is owned partly by the customers. This contributes to the generation of joint future work between an organisation and the customers, which encourages customers to provide strategic plans and structural proposals for the development of the organisation and its outputs and relationships.

Overall, customer KM focuses on strengthening the relationship with the customer and linking those interests with that of the organisation, as the customer is the provider of information and knowledge regarding the customer, customer needs, and the development of the organisation and its needs and outputs. Customer KM is directed basically to gain knowledge from the customer. In addition, there should be caution in dealing with customer knowledge in order to prevent unstudied pandering to a customer's wishes or reliance on misleading knowledge that may be issued from certain customers.

Overall, we can say that the knowledge of customer management focuses on strengthening the relationship with the customer and linking his interests with the interests of the organisation. This is because the customer is considered to be the provider of information and knowledge of himself and his needs and of the development of the organisation and its outputs. Knowledge of customer management is largely to acquire greater knowledge of the customer. Customer knowledge should also be treated with caution so that it does not result in following the customer's wishes, or relying on misleading knowledge that may be given by some customers.

In this respect KM can be considered a dynamic combination of specific processes, which include the identification of knowledge and its acquisition. Knowledge gained from customers must be learnt, which aids in the application of sharing and the exploitation of knowledge application and knowledge technology. The understanding of the concepts of these elements can contribute to the optimisation of the EP.

2.3. 5 KM in Higher Education Institutions

2.3. 5. 1 Concept of KM in Educational Institutions

The concept of KM is a recent concept in educational institutions, especially in practice, and there is no agreed upon definition for KM in universities and colleges. A Petrides and Nodine (2003, p. 10) study has defined KM in educational institutions as "a framework or a way that enables individuals working in the educational institutions to develop a set of practices to share information and to share what they know, resulting in behaviours or actions that will improve the level of service and products offered by the educational institution". In this definition, it is clear that KM is working on the linkage between the three primary

sources in an organisation, which are individuals, processes, and techniques to enable an organisation to invest and share its available information more effectively. Otaibi (2007, p. 21) has defined it as regular operations, which help educational organizations to generate, capture, organise, use and disseminate knowledge and make it available to all members of the organisation and outside beneficiaries

In addition, Abu Khudair (2009, p. 13) related KM in education to the technical human activities and practices that aim to link individuals from different administrative levels and sections of educational institutions. He maintains that in the form of teams or working groups where mutual trust relationships should be established among group teams, this can result in the automatic sharing and exchanging of what these individuals possessed of their own resources (information, knowledge, skills, expertise, and capabilities), which support the learning of individual and collective processes and improve and develop the performance of individuals and organisations.

Based on above, KM in education can be defined as a tool that gives guidance to managers and staff of educational organisations in the emerging world of KM to meet the challenges of the knowledge age. Knowledge management helps educational organisations realise the merits of knowledge creation and sharing as a means of enhancing the teaching and learning process.

There are some authors who have agreed on KM and its effectiveness on organisational performance (Choy, 2006; Kiessling, Richey, Meng & Dabic, 2009; McKeen et al., 2006; Ngah & Jusoff, 2009; Safa et al., 2006). However, there are quite a number of studies applied to determine the impact of KM in educational organisations (Daud & Abdul Hamid, 2006; Mohammad et al., 2010). Bose (2004) asserted that the managers of organizations have played a key role in ensuring KM effectiveness. Therefore, it is very important for them to effectively understand the nature of knowledge and knowledge development activities ranging from managing, measuring, and extending KM values to provide tangible additional value to their organisations.

It has been proposed that effective implementation of reliable KM strategy and ensuring that an organisation is knowledge-driven are necessary in the emerging knowledge economy (Bose, 2004). Kiessling et al. (2009) argued that the success

of an organisation depends on its ability to accumulate and process knowledge in a way that ensures organisational learning.

Ngah and Jusoff (2009) also say that knowledge sharing leads to better organisational performance. The researcher considered knowledge sharing to be one of the measures of KM in this study. Similarly, KM has been considered to have a positive impact on EP, and KM has assisted limited organisations in gaining a competitive advantage (Liao & Wu, 2009). The authors equate KM to the factors of production in any business. This demonstrates how relevant KM is to organisational performance. In line with the view of the researcher, KM processes (creation, conversion, and sharing) are identified as the necessary organisation preconditions of an effective KM system (Liao & Wu, 2009).

In general, knowledge environments are made up of the people who are affiliated with colleges and universities. As their organisational activities (such as teaching, research, and community service) revolve around knowledge, this notion has been supported by many authors. For example, Kidwell et al. (2000) mentioned that if knowledge is the heart of any higher institution of learning, then educational organisations should take the advantage of the emerging field of KM to enhance innovation, promote good customer service, and gain competitive advantage. The authors buttressed this by the statement, "colleges and universities have significant opportunities to apply KM processes to support every part of their mission".

Moreover, Kidwell et al. (2000) say that KM is can be applied to the teaching and learning process, research process, student and alumni services, and administrative activities as well as strategic planning in any educational organisation. Therefore, applying KM in a higher-education environment can reap benefits which include improved, result-oriented decision-making, shorter time required to deliver an educational product, more effective teaching and learning processes, higher quality and volume of research, and better academic and administrative services at a reasonable cost. More about applying knowledge in educational organisations can be found in the next section, which presents justifications for the application of KM in educational institutions.

The KM process is also recognised and implemented in Jordanian HEIs (Al-Shamary, 2006). It has a positive association with the effective performance of

HEIs. In the current study, the researcher is entrusted to investigate the impact of KM on the EP of Jordanian HEIs.

2.3. 5. 2 Justifications for the Application of KM in Educational Institutions

The regulatory environment of educational institutions such as universities and colleges is one of most suitable environments for the application of the concept of KM, but it may be the most suitable environment to apply this concept compared to other organisations due to their role in the community. As universities and colleges of various kinds are responsible for the preparation and the creation of a qualified and trained workforce, which is a vital element for all comprehensive social development, thus necessitating the adoption of the concepts, methods, and practices of modern management that contribute to raising levels of performance (teaching, research, innovation) that leads to upgrading the quality of its outputs (Abu Khudair, 2009, p. 14). A study by Kidwell et al. (2000) has shown that knowledge creation, innovation, discovery, dissemination, and circulation are the main reasons for the existence and establishment of universities and colleges, and they emphasise the importance of the inevitable adoption of KM as the entrance to the improvement and development that will contribute effectively in achieving its goals and mission. Mikulecka and Mikulecky (2000) have defined several justifications for considering the environment of universities and colleges and the role assigned to them as the most appropriate environment for the application of the principles and methods of KM, which are as follows:

- Universities and colleges usually own infrastructure and modern information.
- Knowledge sharing with others is normal between faculty members, lecturers, and students in general.
- Students seek access to knowledge sources that are accessible through joining universities and colleges.
- These institutions usually provide an organisational climate characterised by confidence; thus, no member would hesitate in the publication and distribution of knowledge.
- In light of the great similarity between universities and colleges and modern business organisations and in terms of the orientation of these institutions toward providing many activities and educational services, research, and advisory

meetings in return for money, any style or method that may give the university a competitive advantage and the ability to perform better may be of interest to those institutions, and KM is one of the modern management techniques leading in this direction.

Jordanian universities are one of that developing country's educational institutions that are not less popular than international universities in terms of the desire to attend, and perhaps the most important justification for their popularity and increasing demand is because they contain comprehensive, flexible courses that meet the needs of individuals and society and the needs of the development plans of human resources and the labour market (Amer, 2008). Jordanian universities provide a greater opportunity for those wishing to join the labour market and those who want to continue their advanced higher university education (Amer, 2008). The programme aims to provide students with the skills needed by the labour market, in addition to a broad base of information with multi-purpose use, such as basic science, language, communication skills, and the use of computers. Most Jordanian universities give a final certificate that qualifies the student for a specific career and emphasises proficiency for specialisation and familiarity with skills that can be refined by appropriate expertise from the corresponding profession (Amer, 2008).

Based on many researchers (Dacey, 2007; Mertins et al., 2001; Badr, 2010; Awdah, 2010; Alavi, 1997; Kiessling et al., 2009; al-Kobaisi, 2004; Alziyadat, 2008 Coakes, 2003; Alwani, 2006; Marquardt 2002; Alian, 2008; and others), the researcher considers knowledge identification and knowledge discovery as a single dimension referred to as knowledge identification. Other main processes of KM, which are storage, sharing, and application, make up the remainder of the processes (dimensions) of KM and, along with technology and KM teams, are considered in this study. A discussion of the three dimensions of KM follows in subsequent subsections.

2.3. 6 Previous Studies Related to KM

1. Study of Laszlo and Laszlo, (2002, pp. 400-412) "The Role of Knowledge Management in a Changing World" The study aimed to show the three different generations that KM passed through. The first generation focused on what KM is through the acquisition of intelligence represented by technology of intellectual

capital. The second generation focused on existing KM to propose what it could be through learning and innovation; this generation led literate organisations and enabled workers and groups to be creative, which directed them towards the third generation. The third generation focused on exploring the future by focusing on what KM should be. It is this generation that required from tasks what has become known as strong organisational citizenship and democracy-oriented knowledge through employee involvement toward more know-how. Per se, such changes in KM have clearly changed the modern world which is characterised by higher effectiveness and performance compared to earlier eras.

2.4 Summary

This chapter focussed on reviewing the literature on knowledge and KM. The above sections represent the first part of the literature review which aimed to understand the research related to knowledge and KM. Therefore, the above information in this chapter not only consolidates understanding of various published issues related to knowledge and KM but also helped to set up the required variables for the current research project. Therefore, this chapter focused on the main elements, including the background, the concept, related terminology, models and other related issues. The next chapter will be on the second part of the literature review under title Total Quality Management (TQM).The target of KM is to allow the sharing of knowledge among employees and with customers and business partners to achieve and maximise returns. Therefore, KM ensures the work of an organisation is moving towards intellectual viability and achievement of the best value in the assets of the organisation.

CHAPTER THREE

TOTAL QUALITY MANAGEMENT

3.1 Introduction

The previous chapter reviewed literature related to knowledge and knowledge management (KM). This chapter focuses on quality and total quality management (TQM). Generally, quality characterises the outcome of the product or service that is provided by an organisation. The term quality has evolved from other similar concepts and represents continuous processes related to perfecting products, services, operations, and the quality environment that do not just satisfy but exceed customer expectations. Many concepts and terms have appeared that reflect the accelerated development in quality. Inspection, quality control, total quality control, and quality assurance are stages the development of quality undergoes until TQM is reached. Generally, many concepts of TQM have evolved and are varied depending on the different viewpoints of researchers and interested parties. Taken as a whole, it can be defined as a management philosophy that seeks perfection in all aspects of the organisation, internally and externally, through leadership encouragement of workers to participate in continuous improvement and control customer satisfaction. The importance of TQM is represented in private and public benefits earned by organisations that have applied TQM. The most important distinction of TQM is the focus on internal and external customers of the organisation. In order to be successful, there is a set of conditions, factors, and statistical tools that help to achieve this. These two terms are associated with stakeholder satisfaction and the reputation of the organisation. The structure of this chapter will involve the literature related to the main elements of both quality and TQM. These include definitions, concepts and the related terminology.

3.2 Quality

Quality is crucial aspect for all types of organisations. This is due to a number of factors that influence customers to choose a product or a service. In this respect, the level of customer satisfaction plays a key role in selecting a product or service. Thus, customer satisfaction is one of the major factors that contribute to build up the reputation of an organisation. In education, quality education involves building knowledge, attitudes, values, and skills that depend upon the quality of the

curricula and human and physical resources, mainly the teaching staff which contribute to inspire knowledge and skills. This section focuses on five points, including the concept of quality and quality in education, quality inspection, quality control and quality assurance.

3.2. 1 The Concept of Quality

Regarding the concept, it means the suitability for usage as defined by Juran (1995), as quality is defined by some as matching features and characteristics. Others refer to it as a decrease in customer complaints. Others propose that it is the decrease in defects, damage, or losses during operation. Others say that it is the improvement of performance efficiency and achievement or cost reduction (Hamoud, 2010, p. 16). The American Oxford Dictionary defines quality as "level or degree of excellence" (Russell & Taylor, 1995, p. 88). From the point of view of management, science quality is "adequacy of the product or service for its designated purpose" or "doing the right things using a correct way in order to achieve the wanted goal, decreasing customer complaints, decreasing percentage of defects, continuously improving performance" (Alshaar, 2001, p. 38). The American association for quality control (ASQC) defined quality as "group of characteristics and features of a product or service depending on its ability to fulfil specific needs" (Evans, 1997, p. 45). The International standards organisation (ISO) described it as a "group of characteristics and features in a product or service resulting in the ability to fulfil declared or implied desires" (Heizer & Render, 2001, p. 171).

We can conclude from the above that the mentioned definitions focused on quality as the product or service matching its pre-specified requirements, although the concept of quality continued to develop later on, and the focus became the customer as the main factor in quality. In this context, Goetsch and Davis (1997, pp. 2-3) referred to a number of definitions stated by some individuals and organisations interested in the subject. For example the definition of quality by Smith (1973) was "achievement of the standard expected by the customer", and the definition of quality by the Boeing corporation was "providing our customers with products and services which always fulfil their needs and expectations". In addition, the American department of quality protection defines it as "doing the right thing in the right way from the first time, always striving to improve and

satisfy the customer". In a wider perspective (Gerosa, 1998, p. 40) defines it as "everything valuable to the customer". The definition of Goetsch and Davis (1997, p. 3), who sees quality as "a motion state related to products, services, individuals, operation and environment which fulfills or exceeds expectations", is considered one of the most accepted and comprehensive definitions from the researcher's point of view.

Based on that, the researcher proposes a definition of quality as being *a continuous process concerned by the individuals mastering the products, services, operations, and environment that satisfies and exceeds customer expectations*. According to this definition, we can emphasise the most important features of quality as follows.

- Quality is a continuous process. This means it is an evolving and uninterrupted process, and that which qualifies as quality today might not be considered quality tomorrow.

- Mastering is a feature that means it is considered top notch and the highest level of quality.

- Quality applies to individuals, products, services, operations, and even the internal and external environment of the organisation. It is not limited to products and services only. This requires extraction of the tacit knowledge from the individuals' minds and even customers in order to classify the knowledge and merge it with explicit knowledge in the organisation and manage it well to enhance the mastering of it.

- Quality does not only seek to fulfil customer expectations, but also to exceed those expectations.

3.2. 2 Quality in Education

Haworth and Conrad (1997) wrote that in the context of the ever-changing dynamics of the norms that we adhere to, it is only consistent that the definition of the quality of education also changes with time. Thus, it can be characterised as what society deems necessary to standardise as the minimum level of education within a certain factor, the ethics, and monetary pledge to achieve it (Davok, 2007). Therefore, it can be put forward as the accomplishment of the implied and explicit objectives of society that it expects from the educational system, while assuring strategic requirements (Tikly & Barrett, 2011). All of the process,

including its elements, inputs, and outputs, while justifying the expectations of the society, determines the direction of education, and the character of each of the mentioned elements determines the quality of education (Gidley et al., 2010).

The ultimate objective for a student within an educational institution is to successfully attain a certain noteworthy educational accolade that would enable the student to be a valuable contributor to society (Haworth & Conrad, 1997). Therefore, quality in education is the extent to which any educational institution is able to maintain the same educational quality. This was also put forward as being the definition of the quality of education by yet another school of thought (Jones, 2011). While considering the fact that (like the health sector) education is also a service sector, we can define the quality of education as the extent to which the educational needs and expectations of the individual in general, and society as whole, are met (Davok, 2007).

We can easily reach an ambiguous conclusion when trying to comprehend the definitions of the quality of education as put forward by different schools of thought in which there is no single factor or aspect that we can tag as the quality of education (Ediger, 2010). There are many different areas, and every school of thought addresses and focuses on the specific area that they have found to be important in order to gauge the quality of education (Tikly & Barrett, 2011). However, all schools of thought were consistent in implying that (regardless of the standards to determine the quality in education) customer satisfaction remains the core value (Gidley et al., 2010). It is also significant to understand that due to its characteristics and nature, it is almost impossible to accurately explain the quality of education in specific terms (Jones, 2011).

In general, it can be said that no universal definition of the term quality has yet to appear and that different authors place different emphasis on certain aspects of this concept according to their experience. However, while quality experts define the concept differently, they do all agree that customer satisfaction is the core element. But in acknowledging this, it must also be recognised that due to the nature and characteristics of the service sector, and especially the Higher Education sector, the term is more difficult to define in a very precise way and is expected to change over time.

3.2. 3 Inspection

Quality inspection was modified in order to separate non-conforming parts; therefore, the term "quality" can be a synonym for inspection. In the period of mass production, an examination for the purposes of quality assurance for all finished products was conducted. Inspection of quality was developed during the First World War. During the Second World War, the manufacturing systems were more complex and huge numbers of labourers were reporting to each foreman, who could easily have lost control of the quality of the work. Consequently, it was essential to employ full-time quality inspectors (Feigenbaum, 1991).

3.2. 4 Quality control

During the late 1940s and early 1950s, production was made a main concern, which was due to the shortage of civilian goods in the United States. In many organisations, quality remained the area of experts. During that time, both Juran and Deming introduced statistical quality control techniques to the Japanese to help them in their rebuilding efforts. They concentrated on upper management, rather than quality experts alone. With the support of top managers, the Japanese applied quality throughout their organisations and developed a culture of continuous improvement. In 1951, the Union of Japanese Scientists and Engineers launched the Deming Prize to reward individuals and organisations who met the strict criteria for quality management practice. Under a system of quality control, paperwork, and procedure control systems raw material and intermediate stage product testing, logging of elementary process performance data, and feedback of process information to suitable personnel are expected to be in place. In quality control there will be some development of basic inspection activities, in terms of the sophistication of methods and systems and the tools and techniques that are employed, while the main mechanism for preventing off-specification products and services from being delivered to a customer is screening inspection. Quality control measures lead to greater process control and lower incidences of non-conformances (Dale, 1994).

3.2. 5 Quality Assurance

Finding and solving a problem after a non-conformance has been discovered is not an effective method for eradicating the root cause of a problem. Under quality assurance, continuous development can only be achieved by directing

organisational efforts towards planning for and preventing problems from occurring at the source. This concept leads to the third stage of quality management development, which is quality assurance (Dale, 1994).

Overall, the concept of quality is widely defined in the literature. In order to achieve a high level quality, it is essential to consider the product or service that satisfies customer requirements. These requirements should be clear to the customers, whether they are specified in the purchase contract, identified under the declared specifications by law or otherwise.

3.3 Total Quality Management (TQM)

As indicated in the previous section, quality is an important feature or characteristic that is given to the product or service and is subject to competition by customers. TQM involves the overall management of all efforts to ensure long-term loyalty and customer satisfaction. Therefore, both quality and TQM are interrelated with each other, involving structured effort by employees (Oakland, 2003). It is a universal fact that quality is an attribute that cannot be measured in absolute terms, as it is not quantifiable, and there are numerous meanings to different schools of thought (Ediger, 2010). The issue is still the same; when we focus on TQM, a common concept in management style emerges, which was put forward in 1961 as Total Quality Control (TQC) by Feigenbaum (Black & Porter, 1996). This section focuses on the definition and the concept of TQM.

3.3. 1 The Concept of TQM

The concept of TQM has played a significant role in improving management practices by setting the guiding principles. Therefore, the current research undertakes the conceptual framework that investigates total quality TQM. This term is associated with the effectiveness of an organisation, and it is a manageable commodity. It has only been recognised as a discipline in the past few years, when there appeared to be some attempts to standardise it and apply it in a number of international organisations. In addition, it has become the most important competitive advantage for organisations seeking to acquire and exploit it. This resource is an important issue for organisations in light of the developments in high quality outcomes, and the rapid changes and fluctuations in the economic, social, and political fields at a global level.

Many considered TQM to be one of the most controversial topics within the management field; thus, this concept and its importance has been interpreted differently by many schools of thought over time (Lee et al., 2010). Regardless of all the differences, TQM is regarded by all schools of thought as a concept that is significant in constantly improving upon production and processes to improve and exceed customer satisfaction and expectations (Zakuan et al., 2010). TQM ensures that every employee of the organisation is involved in the process of developing a complete picture of the effectiveness of the business (Fotopoulos & Psomas, 2010). This ensures that the customer's needs and satisfaction, which may be internal or external to the business, are met by the organisation. (Tanninen et al., 2010). Thus, in the short and long term, TQM acts as a direction for businesses, providing advantages to all stakeholders (Perera & Kuruppuarachchi, 2010). By directing the energies and abilities of those on board, TQM tends to continuously meet customer needs and requirements at a feasible price (Black & Porter, 1996). It has been certified many times that those organisations that adhere to TQM in their management processes tend to benefit from augmented performance and benefits (Lee et al., 2010). It is believed to enhance and improve the management of the organisation to its optimal best, ensuring more productivity (Fotopoulos & Psomas, 2010).

The ultimate goal when focusing on continuous improvement of the overall business with the application of TQM is to acquire a competitive advantage for the organisation (Tanninen et al., 2010). It is also significant to understand the importance of this advantage when TQM tends to incorporate all aspects of the organisation and take every factor into account while directing energy in one direction to augment the effectiveness, competitiveness, and efficiency of the business for the sake of stakeholders (Zakuan et al., 2010).

Although many organisations consider TQM to be a fundamental key to management practice that necessitates adoption and implementation within their organisation, TQM is still in its early days when it comes to empirically proving the impact of its implementation with the application of certain variables (Fotopoulos & Psomas, 2010). Many variables have been considered to discover an acceptable relationship that would prove the effectiveness of implementing the TQM processes within an organisation since it is currently in the theoretical stage (Lee et al., 2010). This is followed by validation and subsequent improvement to

the validated theory once the variables and their relationship to gauging TQM have been identified (Perera & Kuruppuarachchi, 2010).

3.3. 2 Total quality management (TQM) Definition

It is a universal fact that quality is an attribute that cannot be measured in absolute terms, as it is not quantifiable, and there are numerous meanings to different schools of thought (Ediger, 2010). The issue is still the same; when we focus on TQM, a common concept in management style emerges, which was put forward in 1961 as TQC or Total Quality Control by Feigenbaum (Black & Porter, 1996). Many considered TQM to be one of the most controversial topics within the management field; thus, this concept and its importance has been interpreted by many schools of thought differently over a period of time (Lee et al., 2010).

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Total quality management has been defined as the constant application of a management technique to ensure improvement in the final production and product of an organisation with the overall goal of satisfying customer needs and meeting expectations. It can be acknowledged as the first real step taken by management to ensure that they achieve excellence (Black & Porter, 1996). It not only benefits the customers and the organisation itself but also proves to be of key significance to all stakeholders involved at different levels as it tends to make decisions that not only cater to financial growth, stability, and long-term strategies but also the human values and other resources that may cater to soft issues simultaneously (Lee et al., 2010).

Understanding TQM plays a major role in the constant, augmented improvement within the ranks, effectiveness and customer satisfaction of all stakeholders in an organisation, who must simultaneously be productive and result-oriented (Perera & Kuruppuarachchi, 2010). It is also integral to all organisational members that they realise the necessity and importance of TQM as a management practice to be implemented (Fotopoulos & Psomas, 2010).

Therefore, the overall impact that TQM carries over the organisational structure is very essential. This is because the process envelops the entire organisation, with each stakeholder at different levels (Zakuan et al., 2010). The influence of TQM is not limited; instead, it tends to determine the dynamics and direction of the overall

culture of the company, which may leave a mark on its end product and services to the delight of their customers (Tanninen et al., 2010). Thus, it also impacts the organisation in the long-term, as it can improve upon the processes, practices, and overall business aspects of the entire organisation.

Customer satisfaction has always remained the key objective for the implementation of TQM (Lam et al., 2012). It is because even from the goal-achievement aspect, customer satisfaction drives sales and generates profits for any organisation, be it in the product or service sector (Tanninen et al., 2011). While considering the end customer's satisfaction in perspective, we can explain TQM as the constant improvement in overall efficiency and effectiveness of a company to ensure that customer needs are met over and above both the competitors' ability and the customer's expectations, which results in a long-term relationship (Lee et al., 2010). It also enables the organisation to take all the stakeholders aboard on their journey of augmenting performance improvement and be a key participant to the process (Fotopoulos & Psomas, 2010).

When it comes to meeting customer needs and expectations, all schools of thought are unanimous in endorsing the practice of implementing TQM as the key to ensuring organisational performance that is reflected in end products and services (Zakuan et al., 2010).

Total Quality Management can be broken down into three terms that represent a world of meanings (Black & Porter, 1996). The first word *total* indicates that every member, department, and level of the organisation must be involved and has significance over the overall process of TQM (Perera & Kuruppuarachchi, 2010). The second word *quality* points to the fact that expectations of the end customers are not only met but also exceeded. Finally, the third word *management* indicates that management must be dedicated to implementing and ensuring that the TQM processes are followed (Lam et al., 2012).

In this respect, one common aspect that generalises TQM is related to continuous improvement, which is necessary for achieving the effective management of TQM. In this element, TQM processes are required for an effective method of maintaining organisational performance and competitiveness. Therefore, in the current study, the researcher has proposed the following operational definition of TQM in the HEI context, which captures the above-mentioned definitions.

Most authors agree that TQM is an integrated management philosophy aimed at continually improving an organisation's performance of products, processes and services to achieve and exceed customer expectations.

Generally, TQM can be considered a systematic approach for managing HEI in order to achieve high performance, which is mainly in academic achievement. These two elements of management require leadership commitment to achieve effective core quality elements, including effective planning and continuous improvement. Training and progress focus are other aspects that are required to develop a cohesive environment for academic institutions to enhance their continuous improvement for all education-related processes and activities.

3.3. 3 TQM as a Comprehensive System

This aims to achieve customer satisfaction (Khadra, 1998, pp. 6-7). Hammoud (2010, p. 75) defined TQM as a management system that puts customer satisfaction on its top priorities list instead of focusing on short-term profits. Orientation to customer satisfaction achieves long-term profits that are more stable and consistent compared to short-term profits.

3.3. 4 TQM as an Approach

The International Trade Center (ITC, 1996, p. 100) focused on quality to achieve long-term success through customer satisfaction and benefits for individuals, the organisation, and society (Goetsch & Davis, 1997, p. 5). Thus, the organisational approach for TQM is related to work performance to maximise competitive management. Research in this area refers to TQM as an administrative policy with philosophy concerning the necessity of meeting the requirements and expectations of the people (Lozi, 2009). Furthermore, Helal (2000, p. 16) related TQM to management of the organisation that relies on quality built on the contributions of all organisational members that aim to achieve long-term success through customer satisfaction and benefits to the working members in the organisation. From previous definitions, the thoughts of the pioneers of this trend have revolved around the concept of TQM as an approach to manage the organisation focusing on quality as a management science that achieves long-term success through investment in all organisational aspects as well as its internal and external activities.

3.3. 5 TQM as a Philosophy

Some institutions, such as the British Quality Institution, address TQM as an administrative philosophy for managing business. This takes customer needs and business targets as a base that enables its implementation inside both industry and society (Rogerson, 1994, p. 45). In addition, Spenley (1995, p. 3) described TQM as a philosophy of management that strives for the best usage of all resources and precious opportunities of continuous improvement. Dilworth (1996, p. 91) recognised the concept of TQM as a philosophy and a good way of managing an organisation. While the customer views this as a basic general value, through the organisation each section works on achieving excellent quality. Helga (1997, p. 19) maintains that TQM is a philosophy of management based on customer satisfaction.

Furthermore, Williams (1999, p. 5) stated that an organisation's philosophy for each of its individuals, who are also working on achieving continuous customer satisfaction through blending tools, technology, and training, including continuous improvement of internal operations in the organisation, will result in high quality products and services. According to Halawi (2000, p. 23), TQM is a philosophy and administrative tool focusing on continuous improvement in activities inside and outside an organisation with the purpose of achieving customer satisfaction and guaranteed consistency of an organisation in a competitive environment. Dagher (2001, p. 21) described it as an administrative philosophy, strategic approach, and management method to manage change in order to alter the thinking patterns and policies made for past requirements and environments. The development of managerial intellect in previous definitions is noticeable, although all the definitions in this paragraph consider TQM as an administrative philosophy. However, the most important distinction regarding the last definition is the strategic approach and means to manage change, which enable it to keep pace with future disturbances and changes over time.

The second perspective of the concept of TQM is its consideration for organisational culture. In this context, Logothetis (1997, p. 1) considered TQM as a culture requiring complete commitment to customer satisfaction through continuous improvement and innovation in all work fields. While Vasu et al. (1998, p. 235) described it as a specified organisational culture seeking to delegate all organisation members to undertake continuous improvement of work

performance, the main target of the process of continuous improvement is achieving customer satisfaction. Furthermore, Barwari (2000, p. 92) considered TQM a cultural uprising in the way management thinks and acts regarding quality improvement. It is an approach expressing a more mutual sense of practicing management, which confirms communication in both directions, as well as the importance of statistical measures of management practices and analytical means leading to continuous improvement, which lead to cost reduction. Thus, TQM is concerned about changing work traditions, values, and beliefs in a way that will establish an organisational culture that makes quality a behaviour practiced by all employees and administration in an organisation.

The third perspective of the concept of TQM is related to the strategic procedure that organisations seek to achieve in the long term. In this context, Spenley (1995, p. 3) defined TQM as a strategy of improving the main business; it is considered the main future concern of management because it is the base of efficiency and competitiveness. Bundagji (1996, p. 133) added that TQM as strategy is dependent on the synergy of efforts of all employees in the organisation, whether workers or administrative employees, in order to improve quality. In addition, Staggs (1999, p. 5) indicated that TQM as strategy is concerned about changing the core beliefs, values, and culture of an organisation while increasing the contribution and enthusiasm of everyone. In summary, it may be possible to indicate that TQM is a long-term vision that needs to build momentum, employ potentials and capabilities, prepare plans, and define proper policies that are necessary to achieve the strategic target from applying this concept.

Specifically, TQM can be defined as a systematic approach of managing quality aimed at achieving high performance in terms of academic achievement, which requires commitment from the academic leadership by adopting effective core quality elements (leadership commitment; strategic planning, continuous improvement, customer focus, process focus, employee involvement, training and learning, rewards and recognition, and management by fact) to develop a cohesive academic environment, which infuses and enhances the continuous improvement for all educational related processes and activities.

3.3. 6 The Components of TQM

Research on TQM describes it according to its components. As such, Dobbin and Fowler (1997, pp. 20-21) indicated that the meaning of *management* is the direct concentration on the employees' application of activities that allow them to provide the necessary quality for the customer. Managers help the workers to understand procedures and how to achieve interaction with others in order to achieve complete success. Thus, quality means to identify customer satisfaction and the level of fulfilment the product or service provides compared to the measures of general and specific requirements, which represent the engine leading an organisation to acquire a competitive advantage. Total means it includes all individuals and departments in an organisation that require some adaptation to achieve continuous improvement of operations guaranteeing good delivery to the customer. Staggs (1999, p. 5) further indicated that the word *total* means the possibility of applying the subject on all work aspects beginning from identifying customer needs to measuring satisfaction. The word *quality* means fulfilling and exceeding customer expectations while *management* means developing organisational capabilities and consistency to continuously improve quality.

Therefore, we may pose the following question, *is the TQM a process, technique, management method, target, or tool?* To answer this question, Williams (1999, p. 2) stated that TQM expresses all those things and more. In all cases, TQM expresses the leadership model creating an organisational philosophy that helps to achieve the highest possible level of product and service quality.

Despite several definitions and the variety of concepts for TQM, it is noted that a certain agreement exists among different researchers on the fact that TQM is based on achieving customer satisfaction. It relies mainly on two principles (Al_Batal, 1994, p. 291). The first is that its endless focus is on achieving customer satisfaction in the best way possible. The second principle is related to the continuous intention to achieve excellence through building competitive advantages, that is, leading in development and continuous anticipation of change in the customer's desires (Daradeka, 2005, pp. 20-21). The basic features of TQM can be described in the following points (Daradeka, 2005, pp. 20-21):

- Excellence: Organisations take the desires, needs, and expectations of customers in the form of feedback; this in order to provide the products and

services that meet those desires and expectations to enable it to prepare its plans and strategies in a way that serves it best.

- Focusing on quality in its broad sense: this requires knowledge of the measurable characteristics of products and services the organisation could offer and the way the customer perceives those products and services.

- Continuous improvement: this requires the organisation to avoid delaying improvement to distant periods of time and requires focusing on continuous improvement in all operations of the organisation.

- Cooperation between employees and the organisation and convincing those employees that their success on the individual level will lead to the success of the organisation.

- Making decisions based upon evidence and data.

- Adaptation of the concept of team work.

- Giving the employees more authority and power in the field of designing job descriptions and the related organisational policies.

- Attention to training and appreciating the efforts of the working individuals.

- Shared vision for employees and managers must be clear, expressing a specific trend of the organisation.

- Effective leadership must be the model to follow for employees and must feature objectivity and accomplishments more than slogans.

The researcher concludes from the above that TQM is an administrative system based on several foundations and requirements, including awareness of the philosophy and concept of total quality, and the commitment and persuasion of the leadership to apply it. This will be through sharing and strategic planning, focusing on internal and external customers, continuous improvement of products and services, defining standards of measure and task analysis, preventing mistakes before they happen, and giving necessary motivation for workers as well as proper training.

Accordingly, we can define TQM as an *administrative philosophy seeking to achieve excellence in all aspects of the organisation–internal and external–through management that encourages employees to share and through continuous*

improvement; it can be integrated with KM in order to achieve customer satisfaction and control it. Furthermore, Bakri (2002, p. 40) indicated that the foundations of TQM could be presented by three main indicators, which are achieving customer satisfaction, contribution of all individuals of the organisation, and continuity of improvement and development of quality.

3.3. 7 Quality Experts and their Contributions

The conceptual root of TQM can be traced to Walter Shewhart's work in Statistical Process Control (SPC) at the Bell Laboratories in the United States during the 1920s. Shewhart had a concern about developing a system to measure variables in production. Moreover, he designed the plan-do-check-act (PDCA) cycle, which applied the scientific method in order to improve the work process (Evans & Lindsay, 2001).

Shewhart's early work on the statistical control of processes and the control chart founded the quality of management movement. He concentrated on the need for statistical analysis to create enough understanding of work processes that was clearly influential for grasping the essence and causes of variation, both controlled and uncontrolled (Bank, 1992). Following Shewhart's innovations, the three gurus in the quality movement emerged. They are all Americans: Edward W. Deming, Joseph M. Juran, and Philip B. Crosby (Evans & Lindsay, 2001).

Experts have contributed to the thinking and practice of the quality improvement movement in two ways. Some of them focused on the philosophical aspects of quality improvement and others concentrated on the tools of quality management. However, Crosby, Deming, Feigenbaum, Ishikawa, and Juran can be considered the most important leaders of the quality management movement (Martinez-Lorente et al., 1998). The following section discusses the work of these pioneers as well as the work of Taguchi, Shingo, Oakland, and Moller.

3.3.7. 1 Edwards W. Deming

It is regarded by many researchers that Deming is the founder of the quality movement as cited by Beckford (2002). Inspired by Shewhart (the statistician from Bell Laboratories that contributed to the development of control charts), Deming endeavoured to achieve quality in 1940 when he focused on statistical sampling techniques (Flood, 1993) as explained in (Bank, 2000). Bank (2000) revealed that Deming's approach to quality was essentially based on Shewhart's contributions,

and the approach mainly aims at investigating the causes of the following two types of variations:

- Uncontrolled variation caused by an assignable cause.
- Controlled variation caused by an unassignable cause.

It was presented by Flood (1993) that efforts made by Deming are documented in the "Economic Control of Quality of Manufactured Product" published by Van Nostrand in 1931. Deming's contributions were beyond developing statistical methods and conducting surveys, rather he developed a systemic approach to problem solving represented in a four-step cycle; these are plan, do, check, act (PDCA). This cycle is iteratively completed with additional feedback based on each of its components.

The philosophy behind Deming's quality management review comprises the following areas.

Application for a system: This implies the need for all members of an organisation to realise their integrated roles within the organisation's system, where a failure in one of those roles consequently affects the remainder.

Knowledge of statistical theory: This calls for the need for all organisational staff to be aware of the general statistical methods followed and be able to use them appropriately.

Knowledge of psychology: Quality development entails different changes in personalities in terms of attitudes, values, and behaviours. As a result, staff at both levels (managerial and worker levels) must realise individual drivers and how these drivers can be customised for the progressive development of quality (James, 1996).

Bank (2000) pinpointed four major issues that are obstacles for the implementation of Deming's philosophy. These are the lack of constancy, preoccupation with short-term profit, different forms of performance appraisals, and the mobility of management and their dependence on visible figures as a success evaluation criterion.

Lack of constancy is Deming's phrase for this. It is argued by other researchers that management has been undergoing a great changeability and is being shifted from one theory to another, where management ideas become invalidated, as they are gradually applied with frequent moves from one idea to another. Manager failure to perform the required organisational changes demanded by new ideas gives rise to a lack of management constancy. Lack of management constancy

also rises when managers do not pay the required attention to a new idea and deliver faulty products as a consequence of being under pressure (Bank 2000).

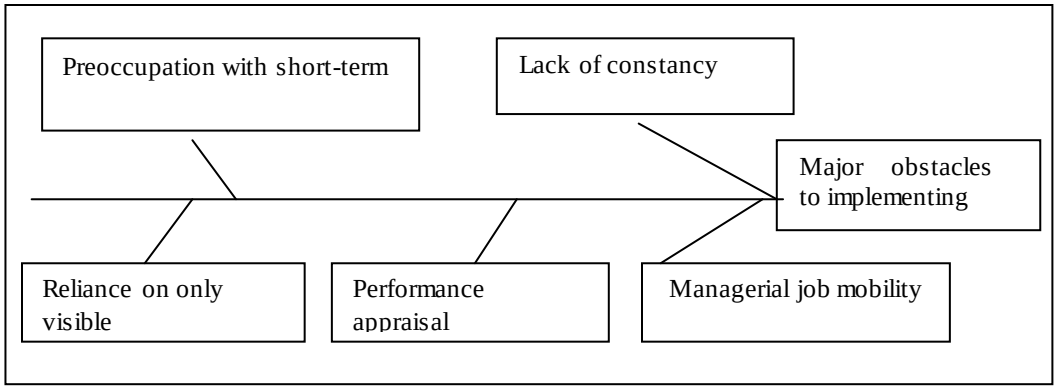

Figure 3. 1 Major obstacles to implementing Deming's philosophy.

Deming has identified 14 substantial actions to be taken to handle the widespread ailments in North American industry.

- Create constancy of purpose for the improvement of products and services,
- Adopt new philosophy,
- Cease dependence on mass inspection,
- Do not purchase on the basis of price tag alone,
- Constantly improve iteratively the system of production and service,
- Institute training,
- Institute leadership,
- Drive out fear,
- Break down barriers between departments,
- Eliminate slogans and exhortations for the workforce,
- Eliminate numerical quotas, managing by the numbers, and management by objectives,
- Remove barriers that rob people of pride of workmanship,
- Encourage education and self-improvement for everyone, and
- Take action to accomplish the transformation.

3.3.7. 2 Joseph M. Juran

Joseph M. Juran is among the pioneer researchers in the field of sound quality management practice, where he advocated the concept of quality planning, quality control, and quality improvement as stated by Flood (1993). It is argued by Flood (1993) that the Juran's trilogy of quality involves the following processes:

- Quality planning process, which includes all preparations to meet goals of

quality.

- Quality control process, which demands taking corrective actions based on evaluations conducted during operation.
- Quality improvement process, which aims at achieving unprecedented performance by means of waste reduction, delivery enhancement, and employee and customer satisfaction.

In the 1920s, Juran joined the Western Electrical Company, as it is among the firms that explored statistical methods for quality control. He founded and taught the principles of quality to the Japanese in the 1950s, where he played a central role in Japanese quality reorganisation. Juran set a definition for quality management, and he emphasised that quality is fitness for use. He argues that 80% of quality defects are consequences of avoidable factors by management (Flood, 1993). The definite set by Juran is induced from five quality characteristics.

- technological (e.g., strength),
- psychological (e.g., beauty),
- time-oriented (e.g., reliability),
- contractual (e.g., guarantees), and
- ethical (e.g., sales staff courtesy).

It is reported by James (1996) that Juran mainly focused on contributing towards quality improvement. He set goals to increase performance in order to achieve targets with unprecedented performance levels. Striving to achieve these goals, he emphasised that organisations have to radically change attitudes, organisational structure, knowledge, culture patterns, and results. He proposed a six-stage framework to solve problems. These are listed here and summarised in Table 3.1: identifying the project, establishing the project, diagnosing the cause, mitigating the cause, holding the gains, and replicating and nominating.

Juran's philosophy towards quality management can be briefly described in five key concepts.

- Quality is largely dependent on and effected by management.
- Planning is the central player behind quality improvement.
- Targets and plans must specified and iteratively evaluated.
- Training has an essential role in achieving quality goals.
- The three-step process of planning, controlling, and action is essential.

Table 3. 1 Juran's Six Steps to Problem Solving Source: James (1996, p. 65).

Activities	Steps
•Normal projects •Evaluate projects •Select a project •Ask: "Is it quality improvement" • Mission statement	Identify the project
•Select a team •Verify the mission •Analyse symptoms	Establish the project
•Confirm/modify mission •Formulate theories •Test theories •Identify root cause(s) •Identify alternatives	Diagnose the cause
Design remade •Design controls •Design for culture •Prove effectiveness •Implement •Design effective controls	Remade the cause
•Fool proof the remade	Hold the gains, replicate and nominate
•Nominate the new project	Replicate and nominate

In contrast to Deming, Juran does not consider making radical organisational culture change; he seeks to improve quality within the system. Juran's philosophy of achieving quality improvement is designed to fit within the existing business planning of an organisation, and tailored to minimise risk of rejection. He claims that employees at different levels of the organisation use their own language. In contrast, Deming argues that statistics should always be the common language between all employees (Flood, 1993; Evans & Lindsay, 2001).

3.3.7. 3 Philip Crosby

Philip Crosby is the founder of the "do it right the first time" concept (Bendell et al., 1995). He argues that the goals of any system should be defect-free as summarised by Owen (2002). This philosophy can be deduced from his four perspectives on quality; these are the following:

- quality is conformance to requirements,
- quality is achieved by prevention instead of inspection,
- quality goals should be defect-free,
- the evaluation of quality is the price of non-conformance.

The rationale behind Crosby's philosophy is that the higher the quality, the lower

the cost and the higher the profit. Thus, he argues that quality improvement does not cost money, and for this reason, he advocates that the way to achieve quality is defect-free programs and continuous improvement (Crosby, 1979).

Aiming to build a total quality culture, Crosby has developed fourteen principles of continuous quality improvement (Zairi, 1991; Flood, 1993). Dale (2003) listed the fourteen steps, which include:

- Management commitment: this aids managerial level staff to be aware of the importance of participating in a quality improvement program.
- Quality improvement teams: to build up quality teams from different departments.
- Quality measurement: to evaluate the current quality status throughout the company.
- Cost of quality evaluation: conducting such an evaluation aids assessment of the need to take corrective actions and evaluate their profitability.
- Quality awareness: this involves sharing awareness among all employees of the cost of non-quality by communication.
- Corrective action: it implies clarifying problems, diagnosing their causes, and resolving them on a regular basis.
- Establish an ad hoc committee for a defect-free program: this inspires and affirms that everyone should do things right the first time through management commitment to the reach zero defects.
- Supervisors train: prior to implementing the zero defects program, a formal orientation is to be carried out with all levels of management.
- Zero defect in a day: establishing zero defects as a company standard of performance in one day helps to create a long-lasting impression.
- Goal-setting: regular supervisory meetings help achieve specific goals and carry out particular tasks in a team-oriented way.
- Removal of task and error causes: identifying causes that prevent zero-defect work, and address these problems appropriately and functionally.
- Recognition: this aims to recognise individuals who perform outstandingly through a recognition program; however, rewards are not encouraged to be financial.
- Quality councils: quality professionals and specialists are advised to arrange regular meetings and to communicate effectively in order to update and improve

the company quality improvement program.

- Repeat: in order to implement a typical quality improvement program, setting up new representatives helps overcoming periodical (12-18 month) turnover problems and unplanned situation changes.

3.3.7. 4 Armand V. Feigenbaum

Feigenbaum's contributions in TQM built up an approach to TQM. His approach builds upon the idea of identifying socio-technical aspects in an organisation and controlling and coordinating all management and operational functions in a way that assists management company-wide. According to Feigenbaum, this can be achieved simultaneously by targeting consumer satisfaction and focusing on both suppliers and supplies **(**Flood, 1993).

Feigenbaum identified ten benchmarks to achieve competitive success in TQM (as cited in Dale 2003). These are listed here.

- Quality is a company-wide process.
- Quality is judged by the customer.
- Quality and cost are sums, not a difference.
- Quality calls for both individual and teamwork.
- Quality is a way of managing.
- Quality and innovation are mutually dependent.
- Quality is an ethic.
- Quality requires continuous improvement.
- Quality is the most cost-effective, least capital-intensive way to enhance productivity.
- Quality is integrated within a whole system connected with customers and suppliers.

Feigenbaum emphasises that managers should be committed to strengthening the quality improvement process with a company, such that it becomes the culture in an organisation. He adds that quality and cost should be targeted complementarily (Dale, 2003). This implies commitment to a systemic total approach that emphasises designing for quality in a team-oriented manner. However, this should be dependent on the human aspects of the organisation (Beckford 2002).

3.3.7. 5 Kaoru Ishikawa

Due to his role in launching Japan's quality movement in the 1960s, Kaoru

Ishikawa is known as the founding father for quality control circles (QCCs) (Bank, 2000). The rationale behind developing QCCs is to help establish the philosophy of participation. The idea behind the circles is that a quality circle is formed from a small number of volunteers in an organisation and is led by one of its members. The circle members meet regularly in order to perform their tasks effectively and efficiently (Flood, 1993).

Ishikawa's theories, as stated by Owen (2002), are based on the concept that quality improvement is a continuous process. He proposed a seven-tool system that can help achieve this continuous improvement. These tools require training, as they are basically cause and effect diagrams, flowcharts, Pareto diagrams, check sheets, histograms, scatter diagrams, and control charts.

Ishikawa's control chart philosophy is summarised by Evans and Lindsay (2001) in the following key elements:

- Quality begins and ends with education.
- The first step towards quality is to know customer requirements.
- The ideal state of quality control occurs when inspection is no longer necessary.
- Remove the root cause, not the symptoms.
- All workers and all divisions should contribute to quality control.
- Means and objectives are not to be confused with each other.
- Put quality first and set your targets on long-term profits.
- Markets are the entrance and exit of quality.
- Top management must not demonstrate anger when facts are presented by subordinates.
- Ninety-five per cent of problems in a company can be solved with simple tools for analysis and problem solving.
- Data without dispersion information (i.e., variability) is false data.

3.3.7. 6 Genichi Taguchi

Taguchi criticises the traditional approach to the design of an experiment as being impractical in industrial situations, and due to this, he made use of a method to develop his own approach, which he calls the Taguchi approach. This approach has been implemented in Japan for over 30 years, and the main ideas can be categorised into two principals. These are 'the loss function' and 'off-line quality control'. He proposed three unique stages to design for quality: system design,

parameter design, and tolerance design, as per Dale (2003). Owen (2002) proposed that Taguchi's ideas put quality on pre-production and services forward. He argues that quality and reliability are not a result of a quality inspection; rather they are directly linked with the design of services and products. The whole theory is summarised in the following eight stages: define the problem, determine the objective, conduct a brainstorming session, design the experiment, conduct the experiment, analyse the data, interpret the results, and run a confirmatory experiment (Beckford, 2002).

3.3.7. 7 Shigeo Shingo

Despite the fact that the impact of Shingo's contributions is immense, particularly in Japan, he is not as well known as the rest of the Japanese pioneers in this area. Shingo developed Poka-Yoke systems in 1961. The system simply means mistake proofing that involves devices or other methods to prevent introducing defects. The basic application of Poka-Yoke has been manufacturing systems; however, it is also applicable to administrative, customer-service, and other non-manufacturing systems. The rationale behind the method is to stop the process whenever a defect is identified and diagnose the cause to prevent it from reoccurring. The Poka-Yoke approach has 100% inspection during the process but not after the event. It is argued by Bendell et al. (1995) that using Shingo's concept of zero quality control can lead to achieving zero defects.

Quality awards have been developed by many nations to achieve different and numerous targets that include the promotion of awareness of productivity and quality, the fostering of information exchange, encouragement of organisations to adopt strategies that assist obtaining improved productivity and quality, the recognition of firms that have successfully applied strategies, and the provision of models for other businesses in the country (Evans & Lindsay, 2001).

It is pinpointed by Tan (2002) that awards are to be made annually for the most worthy and well-run firms. These awards are for well-run quality management practices. The awards include the following:

- different award categories depending on organisational sizes,
- awards for the manufacturing and service sectors,
- awards for non-profit organisations, and
- awards for different levels of quality management excellence attainment.

Tan (2002) states that generally, awards are managed and awarded by governmental bodies in collaboration with judges and examiners from private and public sectors.

In contrast, it is advised in (Vokurka et al., 2000) that using these models cannot be generalisable to all problems. Precisely, it is argued by Ghobadian and Woo (1996) that the use of models underpinning awards suffers from different limitations.

3.3. 8 Quality Awards

3.3.8. 1 The Deming Prize

The idea of self-assessment was established in Japan as the Japanese Union of Scientists and Engineers (JUSE) was first founded in 1946, while in the west it is relatively new. In 1950, Deming was invited by JUSE to give lectures and seminars to present his work in SPC, where the latter contribution created a devotion to quality control, which became ingrained in the Japanese industrial culture (Kathawala & Elmuti, 1991).

In Deming's honour, JUSE has instituted the first quality award for his work that effectively contributed towards improving Japanese industry through the emphasis on SPC (Zairi,1996). The wide acceptance of the Deming prize caused great improvement in manufacturing quality that placed Japan on the world map (Kathawala & Elmuti, 1991).

Deming's award is divided into two annual prizes. These are the Deming Application Prize and the Deming Prize. The former is awarded to organisations, divisions, and small enterprises, which through the application of company-wide quality control, have achieved distinctive performance improvement. The latter is awarded to outstanding contributors in the area of research and education (Evans & Lindsay, 2000).

It was indicated by Ghobadian and Woo (1996) that the Deming Application Prize checks for ten primary factors. These are policies, future plans, effects, quality assurance, control/management, standardisation, analysis, information gathering communication and its utilisation, education and dissemination, and the organisation and its operations.

It is expected from organisations applying for the prize to submit 30 copies of the documents that detail the quality control practices of the organisation, its business

units, business activities, and its prospectus. The submitted application is checked by the Deming Application Prize sub-committee, which in turn identifies whether quality control/management is applied systematically and effectively throughout the organisation. The shortlisted companies are then visited on-site for an examination (Ghobadian & Woo, 1996).

Since first created, Deming's prize has undergone various changes. Since JUSE manages the award, organisations applying for the award must first be approved by their consultants to undergo the review process. This is why Florida Power and Light (the first company from outside Japan to win the award in 1989) took such a long time to be accepted as an award applicant. It was stated by Porter and Tanner (1996) that the process is extremely thorough.

The Deming Prize is managed by JUSE and is awarded to private and public organisations that have successfully implemented or developed quality control activities/strategies. Unlike the above-mentioned quality awards, the Deming Prize does not provide a model framework for organising and prioritising criteria, rather it uses ten equally weighted checkpoints to assess a company's quality performance. These are policies; organisation; information; standardisation; human resources; quality assurance; maintenance; improvement, effects, and future plans.

Despite the fact that DP does not follow or adopt a model, the ten weighted checkpoints it considers emphasise values which are pointed out in the other above award models (Stading & Vokurka, 2003).

3.3.8. 2 Malcolm Baldrige National Quality Award (MBNQA)

While the growth of productivity in the American manufacturing sector significantly decreased between the 1970s and the 1980s, the Japanese industry has experienced a noticeably increasing growth accompanied with high quality products (Arvinder et al., 1997).

In the 1980s, several industrial and governmental leaders had the view that renewed stresses on quality were no longer an option for American organisations. They, however, stressed on the necessity of doing business and occupying a niche in a growing, demanding, and competitive international market. This attitude might be explained by the possibility that those leaders did not recognise the importance of quality or they did not know where and how to start. For this

reason, the United States Department of Commerce created the Baldrige Award in 1987 as a standard of excellence. The aim was to help US organisations achieve world-standard quality (Kathawala & Elmuti, 1991).

The goal of MBQNA is to raise quality awareness, to recognise achievements made by U.S. organisations, and most importantly to publicise successful performance strategies. Its evaluation criterion of an organization's performance is based on seven categories. These categories include: leadership, strategic planning, customer and market focus, information and analysis, human resource focus, process management, and business results. The MBQNA is awarded to manufacturing, service, small business, education, healthcare, and non-profit organisations (NIST, 2008).

The European Foundation for Quality Management (EFQM) has developed the European Quality Award EQA to develop a comprehensive and contemporary body of quality principles and best practices. It also aims to recognise top quality performance in terms of people and performance. Unlike other awards, the EQA is a regional award, and its model is a set of 'enabler criteria' and 'results criteria'. The former includes leadership, including people management, policy and strategy, and resource processes, while the latter is based on people satisfaction, including customer satisfaction, impact on society, and business results (Stading & Vokurka, 2003).

Despite the role that national quality awards play in providing a solid foundation to an organisation by assessing its performance, winning the award is not a remedy. It is still necessary to achieve and create a competitive advantage. This remains the basis for a particular organisation's infrastructure and its excellence efforts. It is reported in Tan, Wong et al. (2003) that organisations applying for the awards report that customer orientation, process orientation, and improvement orientation are all improved. Process and content must be connected and tightly related, as copying the process from an award model is not sufficient.

Table 3.2 compares MBNQA, EQA, and the Deming Prize. Generally, they all share virtually the same aims in terms of promoting quality awareness and recognising the requirements for quality excellence. However, they differ in their focus in terms of the framework criteria.

Table 3. 2 Comparative statements of MBNQA, and EQA, and Deming Prize adapted from (Sharma & Talwar, 2007).

Deming Prize	**EQA**	**MBNQA**	**Main points**
1951	**1991**	**1987**	
DP was established to honour the work of Dr. Deming in development of QC in Japan. DP ensures that good results are achieved through successful implementation of company-wide quality control in pursuit of continuous improvement, and extension of quality management to suppliers of the firm. Most of its criteria are focused to implement a set of principles and techniques such as process analysis, statistical methods, and quality circles (qcs).	EQA was developed to enhance the global competitive position of Western Europe by accelerating acceptance of quality as a strategy for global competitive advantage. It supported the evolution of the European Common Market and the emergence of a new European management identity. It represents the radically broader guidelines for addressing issues like a communityan, Wong et al., 2003, and highlights company and employee satisfaction as measures of quality performance.	Promoted by the US Department of Commerce for strengthening US competitiveness to improve organisational performance practices, capabilities, and results; facilitate communication and sharing of best practices information among US organisations of all types; and serve as a working tool for understanding and managing performance and for guiding organisational planning and opportunities for learning.	Year of evolution Objective

Responsible organisation	**NIST**	**EFQM**	**JUSE**
International influence award.	*North and South America, Asia, Oceania, and EQA*	*Europe, Central Asia, Middle East, and Africa*	*MBNQA reference at enactment, Asia*
Criteria and relative score.	1. Leadership 120.	1. Leadership 100.	A. Basic categories 100.
	2. Strategic planning 85.	2. Policy and strategy 80.	1. Management policies and their deployment 20.
	3. Customer and market focus	3. People 90.	2. New product development, work process innovation 20.
	4. Measurement, analysis and	4. Partnership and resources 90.	4. Maintenance and improvement 20.
	5. HR focus 85.	5. Processes 140.	5. Management system 10.
	6. Process management 85.	6. Customer results 200.	6. Information analysis and utilization of IT 15.
	7. Results 450.	7. People results 90.	7. HR development 15.
		8. Society results 60.	B. Unique activities 100. C. Role of top management 100.
		9. Key performance results 150.	

The difference between the framework criteria is based on socio-cultural attributes. Lastly, the three awards share a focus on the values of TQM, such as leadership, customer focus, people, process management, and continuous improvement (Tan, Wong et al., 2003). Kanji (2002) attempted to compare six business excellence models (BEMs) including the Kanji Business Excellence Model (KBEM), the Deming Prize, EFQM Excellence Model, Ericson Business Excellence Model (EBEM), MBNQA, and the Balanced Scored Card (BSC). He concluded that they all originate from TQM and thus cover the principles and concepts well.

The same study added that since the BSC is flexible and result-oriented, some of the TQM principles are not included. Many companies put their faith in quality award models and use them as guidance due to the lack of a universally accepted TQM model.

The study revealed that results are important in an implementation, and this importance was reflected in the comparative study.

For this reason, a more extensive research for an effective approach in achieving performance excellence that increases the credibility of these models is essential (Sila & Ebrahimpour, 2002). Another separate study has investigated other quality awards including MBNQA, EQA, the Japanese DP, the Canadian Quality Award, and the Australia Quality Award (AQA). The idea behind this choice is the significant contributions of these countries to the world's goods and services (74% in 1998).

Specifically, to achieve a competitive advantage, customer satisfaction, business results, and organisational performance is important; these elements play central roles as per Stading and Vokurka (2003).

It has been indicated by Evans and Lindsay (2001) that the following seven criteria embed the requirements for performance excellence:

- Leadership assesses senior executives' personal leadership. It also assesses their involvement in creating and sustaining values, company directions, performance expectations, customer focus, and a leadership system that promotes performance excellence.
- Strategic planning checks how the company sets strategic directions and how it identifies key action plans.
- Customer and market focus checks how the organisation finds out the requirements and expectations of customers and markets.

- Information and analysis examine the management and effectiveness of utilising data and information in order to support key company processes and the company performance management system.
- Human resources management focuses on how the workforce is enabled to ensure the development and utilisation of its full potential, which is tailored and customised to the company objectives.
- Process management checks process management key aspects, including customer-focused design, product and service delivery processes, supplier processes, and supplier and partnering processes involving all work units.
- Business results check the company performance and improvement in terms of its key business areas and performance levels and how it evaluates its position among the relative competitors.

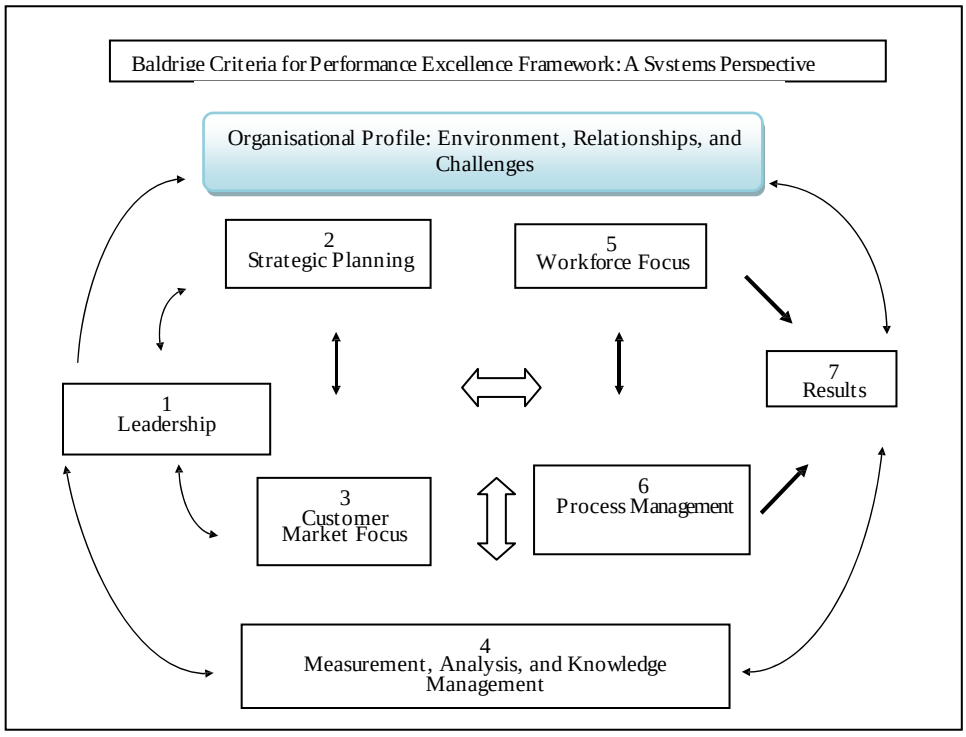

Figure 3. 2 Baldrige Model (NIST, 2008).

Evans and Lindsay (2001) analysed the above seven categories and assert that each category consists of several items, each of which focuses on major requirements on which the business should concentrate. It has also been highlighted by Prybutok and Cutshall (2004) that these seven categories can form one framework composed of four basic elements: driver, system, measures of progress, and the goal.

3.3. 9 Models of TQM

Several TQM models have been reported in literature, including Alshabrawy (Figure 3.3), Logothetis (Figure 3.4), and Krajewski and Ritzman (Figure 3.5) models. After these, the most common awards are the Deming Prize (1951), the Malcolm Baldrige National Quality Award (1987), and the European Quality Award (EQA) (1988).

These models are different in their main elements and aspects. The main elements for the first model involve achieving higher profitability and customer satisfaction. It also deals with setting up a better competitive position through several activities in an organisation. In contrast, the second TQM model is the Logothetis model or "Axioms of total quality management" also called the "TQM trilogy". This model involves three elements: commitment, scientific knowledge, and participation. The philosophy of the third model, the Krajewski and Ritzman model, focuses on customer satisfaction. It relies on continuous improvement and employee involvement as the two main elements. In addition, this model also considers various other issues, including the design of the operation, product, or service, purchasing and problem solving tools, and the basis of comparison representing other elements of TQM. Table 3.1 shows the core elements in TQM that include four elements that are associated with these TQM pioneers, (Deming, 1950; Williams, 1999; Juran, 1995).

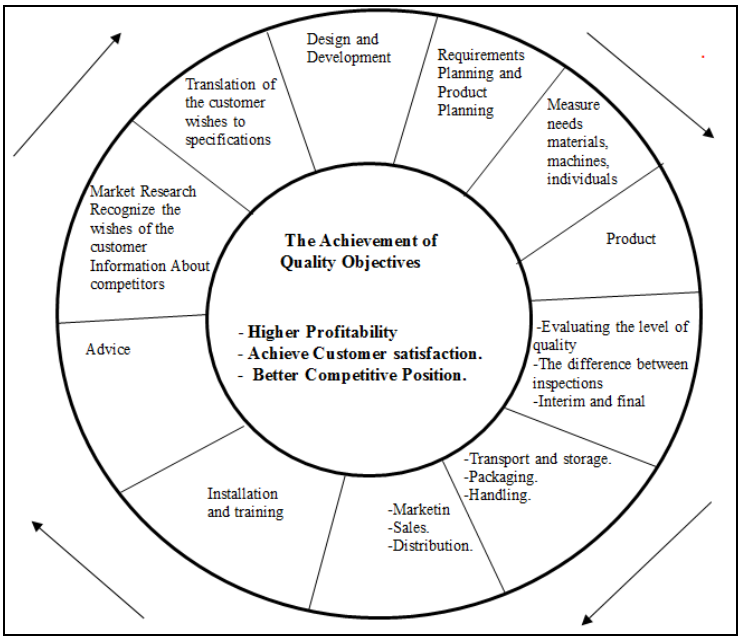

Figure 3. 3 Alshabrawy TQM model (Alshabrawy, 1995).

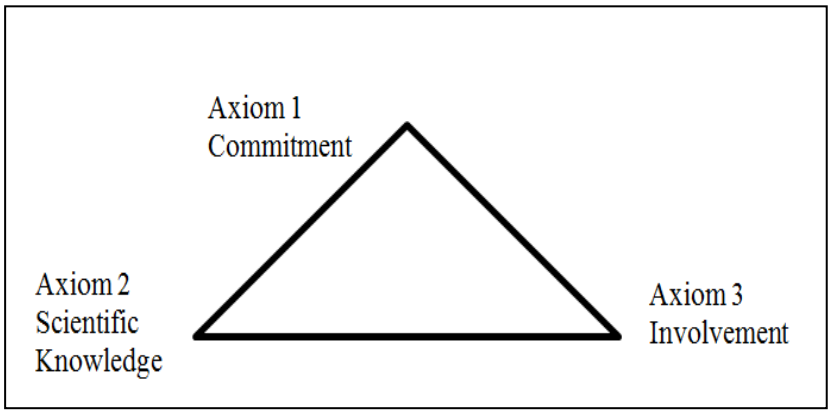

Figure 3. 4 Logothetis TQM model (Logothetis, 1997)

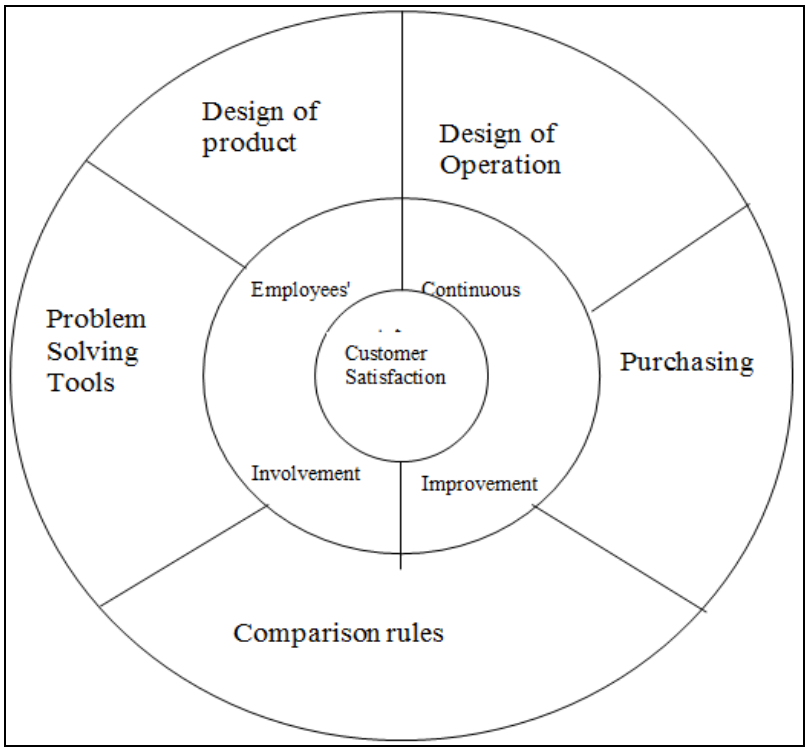

Figure 3. 5 Krajewski and Ritzman TQM model (Krajewski & Ritzman, 1999).

Based on the TQM models, the researcher suggests a new model for TQM (Figure 3.5). This model involves the association of three main factors that influence stakeholders. These factors are employment involvement, effective leadership, and continuous improvement.

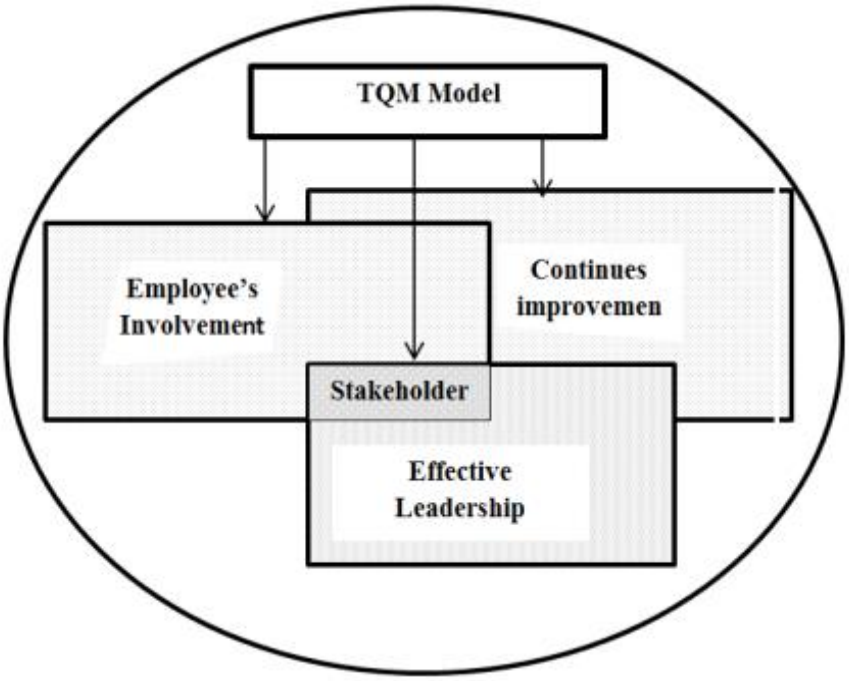

Figure 3. 6 Suggested TQM model

3.3. 10 TQM in Higher Education

To date, TQM has been globally adopted by organisations hailing from altogether different sectors successfully and has born fruits for management and stakeholders (Tanninen et al., 2011). However, it is a different story when it comes to HE. The HE sector has been bombarded with a number of hurdles while implementing TQM; some of these included performance measures, society and organisational culture issues, and customer identification and leadership (Ali & Shastri, 2010).

When it concerns the HE sector, there is a growing uncertainty over the adaptation of TQM practices (Pratasavitskaya & Stensaker, 2010). A school of thought believed that, although there were issues with the system, due to the slow progress of educational decline, they seldom were taken to task (Harvey & Williams, 2010). Instead, these issues become part of the systems and management of the institutions that allowed those to become part of the system, rather than treat them as an issue to be addressed and modified (Houston, 2007). The staff members also consider TQM to be a peril to the independence they have enjoyed within the HE sector since it presents added responsibilities, such as teamwork and customer satisfaction (Lomas, 2004).

One of the key issues that has been highlighted by management of institutions in the HE sector is that TQM has its roots within the manufacturing sector

(Pratasavitskaya & Stensaker, 2010). As TQM developed from the manufacturing sector, its utility and implementation in the service sector seems pointless to them and poses a grave threat (Harvey & Williams, 2010). Therefore, in this situation, without any precedent, it is hard for supporters of TQM to persuade institutions to adapt to TQM practices and implement this within the HE sector (Houston, 2007).

It is a fact that adhering to TQM practices, especially in different scenarios, sectors, and different situations may pose a number of hurdles, but even then it is not impossible to adapt to it (Ali & Shastri, 2010). A school of thought is adamant that educational institutions may even be directed to continuous improvement with the application of TQM (Lomas, 2004). Although they may face a few issues while adhering to TQM, even then it is likely to boost the quality of education within these institutions (Harvey & Williams, 2010).

With reference to the HE sector, other schools of thought, however, refrain from suggesting the associated benefits of adapting to TQM (Houston, 2007). Instead, they propose doubts and uncertainty in adapting. This is because education belongs to a service sector that has no tangible end product, rather a satisfied customer, which would vary by individual (Pratasavitskaya & Stensaker, 2010). They suggest alterations to TQM in a manner that it is on the same lines that would be deemed feasible for the HE sector (Harvey & Williams, 2010).

As discussed earlier, these distinct attributes do pose a range of boundaries and limitations especially when considering TQM from the educational institution and HE perspective (Lomas, 2004). However, it is also evident that within the education industry there are very few quality performance indicators present, if any (Houston, 2007). Therefore, rather than focusing on the education itself, TQM should be used as an indicator of the service that educational institutions provide (Ali & Shastri, 2010). This is even more suggestive since the customers in the HE sector are relatively unknown compared to the manufacturing sector where the end customer is identified and the end product is tangible (Houston, 2007).

However, there are a number of institutions within the HE sector that, in the span of last decade or two, began implementing facets of, if not the complete, TQM processes within their models (Lomas, 2004). The adherence was prompted in the development of the institutional cultures that were more prone to TQM principles and allowed the institutions to work more efficiently and effectively (Ali & Shastri, 2010).

However, the lack of a quantifiable tangibility of the end product and the lack of homogeneity for the customer pose a grave threat to TQM practice and somewhat segregates the manufacturing sector from the service sector, which encompasses the HE sector (Harvey & Williams, 2010).

Since TQM paves the way for quantifying and is suggestive of empirically calculating quality, it causes a point of concern for those who are employed by the HE sector (Houston, 2007). The quality management philosophy is beyond their comfort level (Pratasavitskaya & Stensaker, 2010). This is primarily because not only is education an on-going, long-term process, but also it is rather beyond the education sector to quantify and analyse the progress on the basis of goal achievement (Lomas, 2004). The education sector is more comfortable with dispersing knowledge, enabling the students to understand and comprehend, imparting wisdom to tackle issues, and developing the characters of the students to ensure that they become contributing member of society (Ali & Shastri, 2010). From their perspective, it is unfair to be subjected to analysis and measurement on specific goal achievements as a part of a TQM system for the education sector (Harvey & Williams, 2010).

Due to this culture in place within the education sector, it was suggested that a modified version of TQM can be implemented within the HE sector (Houston, 2007). An excellence model was put forward with a suggestion that strong leaders were required to apply and ensure its implementation within the institution while modifying the institutional culture (Lomas, 2004). There was a mutual agreement by different schools of thought that application of TQM within the HE sector was not impossibility. Instead, the management of the institution should focus on determining the modifications that are required within TQM to make it more adaptable from the HE perspective (Ali & Shastri, 2010).

There was a suggestion to modify the terms used in the context of TQM while applying it in the HE setting (Pratasavitskaya & Stensaker, 2010). However, it is significant to understand that each and every element of HE cannot be brought under the folds of TQM (Harvey & Williams, 2010). This notion is truer in the case of education, academics, teaching, and research where the tangibility of the effort poses a obstacle (Houston, 2007). Therefore, TQM is more applicable in the service sector if the independent nature of the professionals is taken into account or modifications are made in TQM to adhere to their liking within HE sector (Lomas, 2004).

Regardless of the fact that the manufacturing sector stimulated the creation of TQM philosophy, there is a belief that the approach would also help the education service sector (Ali & Shastri, 2010). The HE sector and the institutions within it need to identify the issues and tackle them with modifications that are more suited to their industry (Harvey & Williams, 2010). The issues faced by HE pertaining to TQM should be addressed and the barriers identified to ensure that TQM is implemented within institutions, and the education sector is able to make full use of the philosophy while ensuring organisational successes (Houston, 2007).

In the 1980s, TQM started gaining acceptance in US colleges and universities (Harvey & Williams, 2010). Although TQM made its way into the educational sector at that time, it was not able to cement its position within HE culture comprehensively as compared to other industries in the country (Lomas, 2004). This was because there were a number of impediments that were almost contrary to the culture and traditional characteristics of institutions within the HE fold in the US (Houston, 2007). Within HE sector, there were also a number of variations within the culture being adopted by different institutions that are discussed here (Ali & Shastri, 2010).

Universities that were relatively older were found to be engaging in longer-range plans. There was status quo in the top management, and they would not readily agree to any change or introduction of any new ways, culture, or any measures that would gauge their performance (Pratasavitskaya & Stensaker, 2010). They would resist any such implementations, as they considered TQM a threat to their independence and method of working (Houston, 2007). However, the newer universities and colleges were more apprehensive of their image and status and were found to be very eager regarding various aspects of TQM implementation within the HE sector (Lomas, 2004). Since the 1990s there has been an increase in pressure from various sectors and businesses to enforce TQM practices within the HE sectors and all institutions to adhere to TQM philosophy (Ali & Shastri, 2010).

As the global application and success of TQM started to become evident, the HE sector also started to implement the same within its institutions in the 1980s (Harvey & Williams, 2010). The importance of TQM was soon realised, as it started playing a major role in national developmental programs and global economies (Pratasavitskaya & Stensaker, 2010).

With the ever-changing dynamics of the global stage, there was a need to revise the curriculum to maintain it with the changes (Houston, 2007). This would be

applicable within an institution in the field of HE that would endorse consistent quality and performance improvement within the educational system (Lomas, 2004). Therefore curriculum, administrative units, non-academic units, and the core learning process were deemed to be four areas where the application of TQM could obtain better results for educational institutions (Ali & Shastri, 2010).

The issues that cropped up for the institutions in the HE sector during the application and adaptation to TQM practices were very common and suggestive ones (Harvey & Williams, 2010). These included issues such as the variation and character of the end customer of their services, the traditional management style of the educational institute, and the research and academic nature of the work done within the HE sector (Houston, 2007). The compartmentalisation, conformance to traditional style, lack of competition, and adherence to the status quo were identified as the four main obstacles to the continuous improvement cycle of TQM (Lomas, 2004). There was a sense among the employees that they had already worked enough to attain whatever excellence they may have already achieved (Pratasavitskaya & Stensaker, 2010). Since TQM was considered to be the brain child of the manufacturing industry, it was hard to assure those within the HE sector that it would have the same impact on the improvement in the education sector, which proved to be a major impediment as well (Harvey & Williams, 2010).

There was an understanding that instead of the academic itself, TQM was beneficial for employee and process performance within the HE sector, which in the long run on a continuous basis would be advantageous for teachers, students, and all stakeholders with the education sector (Houston, 2007). It would help in addressing the issues and problems of students, teachers, and other stakeholders, while assisting them in meeting the needs and expectations of those concerned (Lomas, 2004). Continuous improvement would analyse the effectiveness of the academic programs, identify areas of improvement, and work on how to resolve these (Harvey & Williams, 2010). An important aspect for continuous improvement in HE is to allocate resources to tackle the same areas and issues on priority (Ali & Shastri, 2010).

It is important for management to fully understand the importance of TQM and the benefit of the application of continuous improvement (Pratasavitskaya & Stensaker, 2010). Management posed serious impediments to its application due to

their misinformation and lack of relevant awareness (Houston, 2007). Even in the case of a willingness to continue with TQM, management failed to implement basic guidelines like teamwork, skill provision, agreed upon goals, and resource allocation (Lomas, 2004).

Literature indicated that the evidence in favour of the use of TQM in the educational context relates primarily to administrative tasks (Koch & Fisher, 1998; Koch, 2003; Venkatraman, 2007). The non-academic focus of TQM dramatically reduces its significance and impact in the world of higher education (Ahmed, 2008; Koch, 2003; Venkatraman, 2007). Hence, research is needed to test the position that TQM initiatives do, indeed, have a relationship with academic related improvements. In light of this, the present study will focus on the educational process as a core academic activity in HEIs. Moreover, the researcher aims to contribute in this direction by examining the TQM effect on performance through KM to further enhance the fitness of TQM in the higher-education context.

From the principles of TQM and other quality management theories, it is obvious that these are all highly structured towards one philosophy, which is continuous improvement in order to achieve a common goal—customer satisfaction (Adair, 2004). Therefore, it is necessary to identify the customers (stakeholders) of higher education. Kanji and Tambi (1999) classified the customers of higher education from two perspectives, primary and secondary customers, based on their position (i.e., internal or external) and the interactions the institution has with them. While the academic educator (as an employee) is defined as the primary internal customer, the students (as educational partners) are secondary internal customers.

Similarly, the student is also the primary external customer, and the government, business companies, and parents are secondary external customers.

Therefore, quality in higher education has become a public issue in Arab countries. Since Jordan is one of these Arab countries, the case is not different in the institutions of higher education in Jordan.

3.3. 11 Elements of TQM

Success in applying the philosophy of TQM is not easy to manage, but it is still possible. It is considered the biggest challenge faced by management. A lot of organisations attempted to implement this philosophy and failed, either because of poor understanding of the targets and tools of this philosophy, a lack of persuasion

regarding the necessary steps to achieve those targets, or a lack of interaction from the managers and individuals with the spirit of this philosophy. On the other hand, other organisations succeeded in achieving their goals by applying this philosophy. In general, there is a group of elements on which the philosophy of TQM relies on, and if committed to, will lead to success in applying this philosophy and achieving its targets, despite the multiplicity and divergence of those elements as a result of the divergence of visions related to the intellectuals, theorists, and quality researchers regarding the TQM concept. There are still some core elements already concluded from the contributions of the pioneers of this philosophy (Deming, Juran, Crosby, and Feigenbaum) that could be looked at as essential components of the philosophy of TQM, which includes all other elements of this philosophy. Those core elements are effective leadership, continuous improvement, employee involvement, and customer satisfaction (Baserda, 2006, p. 109).

Based on the main concepts related to TQM, the current study will identify the important elements of TQM in both private and public universities in Jordan in line with the requirements of this study and with customer satisfaction as the goal to achieve through the TQM philosophy. Therefore, in the current study the researcher has focused on three elements namely, effective leadership, continuous improvement, and employee involvement. These three variables have been adopted in the current research. Generally, achieving customer satisfaction is considered a performance indicator for TQM. In the following section, the core elements of TQM are discussed.

3.3.11. 1 Effective Leadership

Despite the overabundance of literature available on leadership, there is no consistent definition of this concept (Mello, 1999). Not surprisingly, Davies et al. (2001) observed that there are different definitions of leadership provided by different authors, including the following:

- The leader has the ability to influence a group of individuals towards the achievement of a particular goal.
- Leadership is about coping with complexity.
- Leadership is about coping with change.

"Leadership means visions, cheerleading, enthusiasm, love, trust, verve, passion, obsession, consistency, the use of symbols, paying attention as illustrated by one's calendar, out-and-out drama (and the management thereof) creating heroes at all

levels, coaching effectively, wandering around, and numerous other things" (Peters & Austin, 1985; see Zairi, 1994 b, p. 10).

Effective leadership in the organisation represents an important factor and the main requirement in order to guarantee the success of TQM philosophy. Commitment to apply this philosophy requires the organisational leaders to adopt a strategic plan with specific targets and means focusing on long-term profits. Management must also (a) build the momentum, (b) provide the requirements and potential necessary for the implementation to succeed, (c) perform an effective and continuous change process in the structure and culture of the organisation, (d) accurately predict problems and ensure a readiness to confront them, (e) make decisions based on facts, (f) build teamwork and coordination, and (g) encourage individual and group innovation in improving the quality of products as well as the method of productivity. All of the previous are considered the essence of effective management tasks, which seek to adopt TQM philosophy and succeed in its application.

Successful management models confirmed by this philosophy for the leaders of organisations are managed by circulating within an organisation (Logothetis, 1997, p. 94). This model depends on the leader circulating around all aspects of the work in the organisation, knowing the course of business, and listening to the employee complaints, in addition to training them in the latest technology in their work field. This is to enable the leader to know what is going on in the organisation and to discover the strengths and weaknesses, urging the employees to handle and solve issues in order to avoid repetition.

Gerosa (1998, p. 42) states that TQM focuses on the administrative process "the effort done" more than the achieved results, despite the importance of the final results, but instead of starting with the results, management must take the correct course in order to reach them. The real reason behind many failures is the lack of leadership in organisations more than anything else. Leadership alone can compensate for the gap between personal and organisational values, and only leadership can generate a common vision leading to a profound sense of responsibility. Leadership alone can delegate to the employees.

Based on that, and in order for the TQM philosophy to succeed, it must be directed to individuals. This means to focus on management orientation more than results.

This requires specific identification for a quality message, effectively building and executing strategies, and coordinating other elements of TQM. Effective leadership is the only qualified element to do this role, meaning that effective leadership is the most important element in TQM.

Effective leadership is the most important element in TQM. For HEIs, it is important to consider the leadership traits and the relation to constructing and maintaining a customer focus and leadership system. In addition, clear objectives and higher expectations are essential elements for leadership in HEIs (Michael et al., 1997; Venkatraman, 2007). The literature clearly emphasises the importance of leadership commitment as one of most important elements for TQM in HEIs.

3.3.11. 2 Continuous Improvement

The idea of continuous improvement arises from one main principle: everything is capable of being continuously improved. This is not limited to products and services offered by an organisation, but it includes the entire organisation and what relates to it.

The philosophy of continuous improvement, which represents the essence of TQM, is focused on improving every aspect of product and service provisions accurately, and as one of the daily tasks for responsible employees, it seeks to achieve two goals, which are (Al-Azzawi, 2002, p. 16) the following:

- Putting forth all efforts in order for the improvement to be easy in all parts of the organisation.
- Great focus on the operations that make the offered products and services as perfect as possible.

Organisations seek to achieve the targets of total quality in increasing productivity from applying the philosophy of continuous improvement—adopted from the first to successfully apply it (Japanese)—while retaining the quality of performance and achieving customer satisfaction.

In order to apply the philosophy of continuous improvement, several statistical means were used. The most significant is the "Schwart" circle also known as the "Deming" circle. It is a circle consisting of the four phases (PDCA) that assures its consistent nature, used mainly a base for activities of continuous improvement, and those phases are (Mustafa, 1999, p. 2) plan, do, check, act.

Plan: This phase starts with studying the current process, documenting it, then collecting data to identify the problems and analysing this data. A plan to improve is then designed, including standards to measure the execution of the plan.

Do: In this phase, the plan is implemented on a small scale every time it is possible. Any changes inserted in this phase are documented, and data is collected for measurement.

Check: In this phase, data collected during the execution is measured, tested to see the match between the results with the results wanted, and set in the planning phase.

Act: If the results are good, then they are documented in the new way. All individuals involved are notified and trained. If not, the plan is reconsidered and the cycle is repeated all over again. The following figure explains these phases.

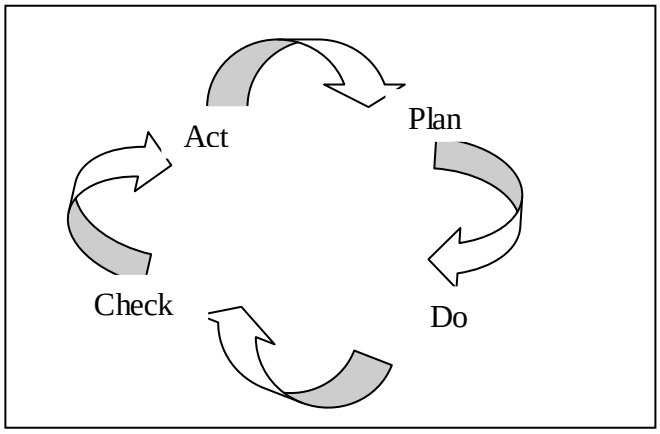

Figure 3. 7 Plan-Do-Check-Act Diagram

Calibration is considered helpful to continuously successful businesses as a standard way of operation using documentation and training.

The success of continuous improvement programs will help in achieving the organisation's goals and targets. Those programs will be successful if the following steps are implemented (Al-Azzawi, 2002, p. 16):

- Training the workers to use scientific tools in monitoring their operations.
- Forming teams for improvement consisting of employees themselves.
- Developing the awareness of technology regarding the process they will be in charge of completing.

Continuous improvement is an important factor and an essential foundation of TQM philosophy. It aims to discover systems and document easy methods to achieve expected results by contributions from the workers and their satisfaction

regarding their jobs as internal customers of the organisation. Developing the spirit of cooperation, innovation, and creativity and extracting tacit knowledge from their minds to use in the production process, it also aims to provide continuously improved products and services for external customers. Targets of TQM philosophy are achieved when they are satisfied and loyal in addition to the productivity increase while keeping the quality of performance, yet improving continuously through inventing ways to decrease, if not prevent, negative deviations during the production process and the stages of providing the product or service to customers.

Regarding this, the emphasis on continuous improvement is one of the important elements of TQM that is associated with the improvement of the management process. Generally, the concept of TQM is closely associated with the continuous improvement which is considered in the current study.

3.3.11. 3 Employee Involvement

Employee involvement as one of the foundations of TQM requires clarity of plans, policies, and goals to enable the worker to understand their individual role in successfully achieving this philosophy. The involvement of every individual in the organisation in teamwork and problem solving, decision-making, and quality improvement gives an impression to those individuals that the work they are doing is important and effective in achieving the organisation's targets; it also helps develop their loyalty and affiliation (Baserda 2006).

Management of the organisation seeks to increase the participation of the workers in different activities in order to achieve the targets of TQM and avoid the problems resulting from keeping the workers away from the decision-making process. The risk in keeping the workers away from practicing decision-making lies in the following (Williams 1999, pp. 57-58):

- Low quality decisions due to individuals who represent different organisational levels with a lack of involvement in this process. This also sends a message that the workers' ideas are not of any worth to the organisation. This results in barriers and hostility between management and the workers.

- Workers' feelings of non-importance as a result of constant elimination in important activities and decision-making only enhances the idea "it is not my business" which contradicts with the philosophy of TQM.

To achieve the participation and involvement of workers in the organisation seeking to apply the TQM philosophy, it requires a change in the role of top management represented in delegating and empowering the workers to enable important decision-making that helps to improve the quality of products and production process and to build, enhance, and integrate teams to express the teamwork principle in the organisation and to benefit from intellectual minds close to work problems.

Delegation and empowering techniques include the following (Heizer & Render, 2001, p. 175):

- Formation of communication networks consisting of workers.
- Developing and supporting supervisors.
- Delegating responsibility from managers to production workers.
- Innovation in official organisation structure and formation of quality teams among them.

Training for communication, interpersonal skills in conversations, and open discussions lead to successful advanced teamwork; it also urges the individuals to effectively participate in group activities, which allows them the opportunity to be effectively involved in product and operation improvement continuously (Bin Saeed, 1997, pp. 97-98).

3.3.11. 4 Strategic Planning

Strategic planning is the one of elements that determines successful TQM which precedes the actual implementation of TQM to provide an enabling environment for the TQM execution and deployment throughout the organisation (Cascella, 2002; Hung & Lien, 2004).

The criteria for the AACSB, EFQM, EQUIS, and MBNQ demonstrate how important strategic planning is as a principal element in quality improvement activities. From the principles of TQM through the ideas of the three pioneering quality experts, Crosby (1979), Deming (1986), and Juran (1988), it is obvious that strategic planning is another basic element of TQM. Landon (2003) investigated the strategic planning concept and concluded that the success of any modern organisation mainly relies on its strategic planning. It is emphasised

further that organisational strategic planning has a positive direct relationship on the achievement of organisational goals.

Strategic planning can be defined as the process that involves the top management of an organisation in planning its future by designing a number of required procedures and operations to achieve the organisational objectives (Evans & Dean, 2003). For that reason, it can be inferred from this definition that strategic planning delineates the course and direction of any organisation in fulfilling its long-term goals and objectives.

George and Weimerskirch (1998) gave a description of strategic planning as a planned and understood element of organisational supervision and the development of structure and management practices that are targeted at realising total customer satisfaction. The authors mentioned that strategic planning defines who we are and where we are trying to go, and quality is a strategic issue, rather than a technical aspect. Therefore, TQM as a strategic issue must be carefully incorporated into the overall strategic planning practices of an organisation (Santos-Vijande & Alivarez-Gonzalez, 2007). By integration, this implies that the decision-makers within the organisation must institutionalise TQM within the organisational strategic plan.

Strategic planning should be considered a crucial concern of top management in supporting an organisation in establishing action plans that relate to incessant improvement of consequences and customer satisfaction to gain a competitive advantage (Swift, Ross, & Omachonu, 1998; Hung & Lien, 2004; Lim et al., 2004; Santos-Vijande & Alivarez-Gonzalez, 2007).

Learning-centred education and operational performance are key strategic issues that are vital as parts of an organisation's general planning in HEIs. In particular, learner-centred education is considered a strategic view of education. The concentration is on the drivers of student learning, such as determination of the student, student and investor satisfaction, new markets, and market share, all of which are significant features in educational success (AACSB, 2012; EQUIS, 2012; MBNQA, 2011,2012). This means that strategic planning in HEIs should be concentrated on the real needs of students, including those related to market requirements and national responsibilities (AACSB, 2012; Hung & Lien, 2004; MBNQA, 2011,2012).

Briefly, *strategic planning* is conceptualised in light of designing a clear mission statement for educational objectives as well as a clear description of the learning-centred process, prioritising the learning-process, emphasising student requirements, monitoring staff performance, and designing clear quality goals (AACSB, 2012; Bayraktar et al., 2008; EQUIS, 2012; Evans & Dean, 2003; Hung & Lien, 2004; Lim et al., 2004; MBNQA, 2011,2012; Santos-Vijande & Alivarez-Gonzalez, 2007; Swift et al., 1998).

3.3.11. 5 Customer Focus

In the TQM context, the concept of *customer focus* has another interpretation, sometimes in literature it is referred to as *"delight the customer"*. According to Lynne and Ross (2007), delight the customer means being the best at issues that are considered the most essential to customers; these change continually. Customer focus is a key element of TQM that emphasises the importance of knowing and understanding customers' needs and requirements, and such understanding will ensure customer satisfaction and consistently boost organisational performance (Lagrosen, 2001; Samson & Terziovski, 1999; Venkatraman, 2007; Zairi, 2000).

There were many reasons that the customer, as the market of any organisation, cannot be treated with levity especially when effective organisational performance is desired. This supports Taylor and Wright's (2003) point of view where the focus is on the need to understand customer needs as a key factor of TQM success. Rampersad (2001) emphasised the need to understand customer requirements and that everyone within the organisation should take customer focus into consideration as a common issue and support the storage of a customer database for benchmarking to obtain what the customer needs.

For other conventional industries, it is very easy to identify customer needs. Regarding HEIs, many researchers have pointed out that there are varied customer focuses (Lawrence & Robert, 1997; Owlia & Aspinwall, 1998; Venkatraman, 2007). Therefore, it is necessary to identify the customers of HEIs. According to Lewis and Smith (1994), four categories of customers are identified vis-à-vis the internal-academic (students, faculty, and programs/departments), the internal-administrative (students, employees, and units/departments), the external-direct (employees, other colleges), and the external-indirect (legislature, community,

accrediting agencies, alumni, and donors). All these categories have specific needs (see Table 3.3). As a result, customer focus is important in order to understand customer needs.

Since the adoption of TQM in HEIs, there has been much debate on the identity of the main customer of HEIs (Sirvanci, 2004). Many researchers have clearly shown that the primary customer in an education system is the student (Bayraktar et al., 2008; Kanji & Tambi, 1999; Lim et al., 2004; Sallis, 1993; Sakthivel et al., 2005; Sirvanci, 2004). An investigation is being conducted in order to answer the question of whether the main customer depends on which aspect of the educational process is the focus. When focusing on the teaching process, the student is the primary customer for the delivery of the teaching process. In addition, MBNQA criteria for education, which were adopted from MBNQA criteria for business, translated the term "customer" into "student".

The MBNQA (2011, 2012) also revealed that the student focus in HEIs explains the ways in which the universities perceive current and future needs of their students and stakeholders. This is achieved with access to important information regarding necessary student requirements.

In this study, the focus is mainly on learning and teaching aspects of HEIs. Hence, the researcher's focus is on the student as the primary customer of HEIs. In brief, customer focus is conceptualised in terms of attending to the demands of students, understanding student requirements, consideration of suggestions from students, effective resolution of student complaints, using student complaints for improving the teaching/learning process, and regular assessment of student satisfaction (AACSB, 2012; EQUIS, 2012; Bayraktar et al., 2008; ISO 9000, 2008; Lagrosen, 2001; Lim et al., 2004; MBNQA, 2011, 2012; Samson & Terziovski, 1999; Venkatraman, 2007; Zairi, 2000).

It is clearly indicated in the literature that the emphasis on the quality gurus, empirical studies, and models of quality are vital issues that are related to TQM (Peters & Austin, 1985; Zairi, 1994; Al-Azzawi, 2002; Crosby, 1979; Deming, 1986; Williams, 1999; ISO 9000, 2008; Juran, 1988; Kanji, 1999; Lim et al., 2004; Oakland, 2000; and others). The researcher has identified three initial important elements of TQM. Table 3.3 summarises the core elements as variables of TQM. A discussion of the three important elements follows.

Table 3. 3 The elements in TQM

Core elements	Contributions of TQM pioneers			
	Deming (Williams, 1999)	Juran (Russell & Taylor, 1998)	Crosby (Logothetis, 1997)	Faginbaum (Dale et al., 1997)
Continuous improvement	- Permanent target, which is improving production. - New philosophy. - Continuous development in testing methods for product quality. - Finding good program for education and improvement.	- Achieving improvement based on a continuous foundation. - Establishing the purposes of improvement. - Increasing awareness of improvement chances. - Reporting the progress of work improvement. - Integrating the improvement process in the organisation systems and processes. - Developing infrastructure to execute the improvements. - Defining the area for improvement. - Building a team for improvement projects. - Providing the improvement team with necessary requirements.	- Formation of a team for quality improvement throughout the departments. - Problem solving once occurred. - Planning zero defects and committing to its program. - Emphasising the importance of defect elimination from the beginning because it is a new approach. - Encouraging individuals and teams to establish improvement purposes. - Continue to repeat everything.	- Management commitment to the quality improvement process. - Making sure quality improvement becomes a tradition of the organisation.
Employee involvement	- Establishing effective training centres. - Elimination of fear from the workers while working. - Elimination of obstacles between departments.	- Establishing an intensive training program. - Availability of training. - Formation of an improvement team and designating the responsibility of its members. - Providing the team with necessary tools to do their work.	- Formation of a quality improvement team. - Increasing the awareness of all employees to commit to quality. - Training supervisors to undertake their responsibilities in the program.	- Surpassing the individual organisational and functional limits.

	- Preparing a strong program for education and improvement.		- Encouraging individuals and teams to set goals for improvement. - Encourage the workers to notify the administration about the obstacles that withhold quality objectives. - Motivating individuals for participating and granting them the proper appreciation. - Establishing quality boards to enhance the continuous communication.	
Effective leadership: All the contributions of the TQM pioneers are considered missions done by the organisation's leadership, since the total quality is everyone's responsibility, there are missions that are related to the leadership which are:	- The presence of an effective leadership. - Ensuring strategic thinking and long term revenue. - Not focused on the personal perspective. - Doesn't follow the method of bypassing (jumping) jobs. - Making decisions based on facts.	- The foundation of improvement discipline and leadership is the higher administration responsibility.	- Adherence of the higher management to long-term quality.	- Adherence of higher management to the quality improvement process. - Higher management ensures that quality became a tradition in the organisation. - Monitoring all the higher levels of the organisation and determining all sorts of imminent issues.
Achieving customer satisfaction:	- Removing the obstacles that interfere with the craft's pride.	- Identifying the customer. - Determining customer needs. - Developing products in a way that meets the customer needs. - Developing systems and procedures that allow the response of the organisation.		- Organisation's customers must be contacted directly.

3.3. 12 Requirements for TQM Application in Institutes of Higher Education:

In order to apply the philosophy of TQM in institutes of HE, some requirements should precede this process. Saqqaf, (2007) indicated that the main requirements requested for TQM application include reshaping the culture of the university's institution, promoting and marketing the new concept, learning, training, consulting advisors, forming work teams, encouraging, motivating, monitoring, supervising, and evaluating.

One of the requirements for the introduction of any new principle for an organisation requires reshaping of its culture, and employee acceptance or refusal depends on their culture and beliefs. As such, adopting the TQM principle requires a culture that differs radically from the traditional culture, thus a proper organisational culture needs to be found to implement this management philosophy within it. It also needs the emphasis of TQM among workers in the institutions before making any decisions on its implementation. Marketing this management philosophy to the organisation's audience, whether inside or outside, helps to reduce the objection to change. Also, expected risks can be determined when the implementation starts, and management can prepare the proper actions.

In order to implement the TQM philosophy correctly, all participants should be trained on the implementation process and educated with the proper required methods and tools for this philosophy to be implemented on a solid grounding, which leads to the desired results and avoidance of errors, confusion, and randomness in implementation. This cannot be achieved without effective training programs. Furthermore, the purpose of consulting experts and advisors that specialise in implementing the quality management philosophy in institutions of HE from outside the institution on implementation start-up is to support and assist the internal experience and assist in discovering solutions for the problems that arise on the actual implementation.

Work teams are formed that each contain between five and eight members from the directly related departments or from those who assume the work in need of development. Those members should be trusted individuals and have a readiness to work, develop, and sacrifice as well as have loyalty to the organisation and the necessary powers to review, evaluate, and propose suggestions for improvement. Therefore, workers must be credited for performing distinctive jobs and trusted to support effective performance. This encouragement and motivation plays a role in developing the TQM philosophy in the institution and its continuity. This is done

through establishment of an incentive system that demonstrates care for astounding performance. Supervising work teams is considered one of the necessities to the implementation of TQM, as it works on adjusting any deviation from the proper course and monitoring achievements of these teams and adjusting them when needed through monitoring and supervision. Coordination can be achieved between workers on their different administrative levels and between all of the institution's departments to overcome difficulties that hinder those teams.

The development of a TQM strategy in a HE institution can involve three main stages: preparation, planning, and progress analysis. The first stage involves knowledge exchange, promoting experiences, identifying goals, identifying the need for improvement, and reviews of other institutions' experiments. In the second stage, the setting plan is devised on how to implement and identify the necessary funding resources. Finally, different statistical methods can be used to monitor continuous development and measure performance levels. Al-Banna (2007) proposed that the implementation of a TQM system in HE institutes requires a full understanding of the organisational culture and learning environment as well as commitment to its principles. The implementation of TQM also requires coordination between the management of the different departments and faculties to activate the participation of all administrative levels and workers in the efforts of total quality improvement communication.

3.3. 13 Indications of TQM in HEIs

Total quality management systems consist of ten criteria that describe the characteristics of TQM of institutions in general (Al-Banna, 2007), and they include the following:

- Strategic management is concerned with designing general institution policies and setting plans that determine the institution's path. The plan includes the institution's mission, vision, and objectives that must be achieved as well as performance indicators, priorities, the required resources to execute the plan, the learner's needs, and the quality management system indicators, which are set on the start of each college year.

- Quality management is concerned with the institutional ability to provide a service that meets the expectations of the beneficiaries (learners, academic and administrative workers, and the employment market).

- Marketing and customer care requires that the employment market and learners needs must be determined in order provide an effective training and education that achieves the beneficiary's satisfaction.

- The human resources development includes continuous training and education for workers in order to be able to perform their tasks effectively and with high productivity and to have the complete competence to perform their work properly.

- Equal opportunity guarantees should be provided for all the learners and workers in educational institutions and the employment market in a way that promotes a feeling of satisfaction, which is reflected on productivity.

- Health and safety ensures the presence of a safe, healthy environment for the learners and workers in these institutions.

- Communication and administration require that the administrations of these institutions seek to meet the needs of workers and learners; information must transition flawlessly through all levels.

- Guidance services focus on the learner's psychological, academic, and social needs (and work on achieving them).

- Program design and delivery are concerned with building teaching programs according to the requirements of the employment market and applying them, choosing proper teaching methods and focusing on the learner's needs and activities that they are interested in.

- Assessment design and delivery ensures that the learner achieving the requirements and indicators obtains the degree.

These indicators are used to explain and determine the degree of achieving a certain objective, (i.e., they must be standard or benchmarked), and they monitor the changes in the educational system, help build credible and stable characteristics for the educational system, and clarify the extent of similarity or differences in the education field.

Thus, TQM seeks to prepare learning outcomes with certain features to assist with assimilating the wealth of information, continuous change procedures, and huge technological advancements as the HE role will not be limited to knowledge transition and listening, but will include the process of handling information and using it sufficiently to serve the learning process. This stage requires a person with certain characteristics to assimilate, accelerate, and deal with the new information effectively

(Abo Mlouh, 2001). This requires a major role from the institutions of HE and from the teaching staff in these institutions. Work is done to provide an educational climate that allows free expression, discussion, and assisting students in cooperative and self-learning.

3.3. 14 The implementation of TQM in Higher Education Institutions

In order to activate TQM and its role in HEIs, several issues must be considered for implementation. Dotchin and Oakland (1992) focused on six issues for activating and implementing TQM. These are (a) identifying the stakeholders and discovering their needs, (b) determining the standards that are consistent with customer requirements (stakeholder), (c) calibrating procedures and improving their efficiency, (d) establishing quality systems, (e) management's responsibility to identify the quality policy for the institution, and (f) providing workers on all organisational levels with the energy to work on quality improvement. Doherty (1993) reported different elements for the implementation of educational TQM. These include providing methods to identify the customer needs and demands and ensure that quality is maintained throughout the educational process. This also requires a strategy in which workers at all levels adopt an effective quality improvement method that is acceptable to external institutions. In addition, the quality system should contain mechanisms that lead to clear improvements in quality and give attention to human service, care, compassion, and leadership. Such systems should encourage teamwork and provide the means that allow the teams to assume their responsibilities towards quality of HE.

Mustafa (1998) and others (Zidan, 1997, Mahyawi, 2007) indicated that the quality system of education should include the quality of student, technical staff, courses, the educational programme, and teaching methods. It should also include the material capabilities, the quality of senior management, legislation, and the quality of performance evaluation.

The student is the core of the learning process. Therefore, various issues should be taken into consideration during the educational process, including a student's selection and preparation. In addition, teaching staff and the quality of the educational programme are other important factors that affect TQM. Teaching is generally associated with the size and adequacy of the staff quality. The efficiency of the teaching staff is also determined by the quality of scientific and cultural training, teaching methods, academic performance, curriculum, and skills. In addition, several material

capabilities affect the educational quality in a university. These include buildings, libraries, books, periodicals, laboratories, and workshops. The building must have the ability to provide the required flexibility that is appropriate for the interaction between all the elements of the educational process and be able to accommodate the number of students.

The TQM of an academic institution is influenced by senior management and legislation. Senior management at the university can shape and direct the policy of the academic institution. The success of quality depends on the commitment and initiative of senior leadership regarding the quality management programs. There must be quality in the strategic planning and relations between leadership, workers, methods of communication, and the selection, preparation, and activity follow-up of personnel that lead to the creation of a culture that believes in the philosophy of TQM. In regards to legislation and university systems, instructions and decisions shall be at the level that ensure sufficient and effective conduct of work required by TQM and be clear, flexible, specific, and keep up with changes and developments in the surrounding environment. Furthermore, the evaluation factor is another factor that guides TQM and quality management. This requires the presence of criteria for evaluating all elements in order to be clear, specific, and easy to use for measurement. This requires the training of staff in TQM and the restructuring of functions and activities according to these standards and levels of performance.

3.3. 15 The Benefits of the Application of Quality Systems in Universities

The benefits of the application of quality systems in universities can summarised by the following: (a) improving the efficiency of university management, (b) improving curriculum development, (c) improving the development of measurement and evaluation methods, (d) improving the use of education technology, (e) raising the level of academic and administrative staff, (f) encouraging teamwork, (g) developing administrative capacity, (h) improving educational outcomes, (i) increasing student satisfaction, and (j) increasing production of scientific research at the university. Higher education quality in Jordanian universities can be measured (in addition to the study tool—a survey) through other measurements, such as graduate quality, access to jobs in the labour market, scientific awards obtained by the university, scientific contributions of faculty members at the university in international forums, creativity and excellence prizes awarded by the university.

Many researchers have incorporated the elements of TQM into different aspects of the educational field as a step towards achieving better management of higher education (Bayraktar et al., 2008; Koch & Fisher, 1998; Lim et al., 2004; Peat, Taylor & Franklin, 2005). The authors believed that the elements of TQM could positively contribute to the improvement of higher-educational performance.

3.4 KM Integration with Total Quality Management

The integration of KM with TQM can enhance and develop the organisation's performance as well as achieve its goals of excellence and leadership. These two issues are closely related to each other. Table 3.4 shows the similarity and differences between KM and TQM.

Table 3. 4 Similarities and Differences: KM and TQM.

Similarities	
KM	**TQM**
• Continuous improvement and learning from others • Valuing employees/intellectual capital • People/competence development • Empowerment/ involvement • Teambuilding/collaboration • Acquiring knowledge of competitors, customers, suppliers and partners • Facilitating/improving access to knowledge • Improving quality and efficiency of decision-making	• Continuous improvement and measuring to achieve customer satisfaction • Valuing employees/intellectual capital • Employee training/education/development • Empowerment/involvement • Teambuilding/collaboration • Acquiring customer and market knowledge • Selection and use of information and data • Open channel of communication • Improving quality and efficiency of decision-making
Differences (Focus/Strategies)	
KM	**TQM**
• Embedding knowledge in staff, customer, products, process, and services • Regarding knowledge as the source of competitive advantage • Achieving greater productivity through the use of knowledge • Creating/disseminating new knowledge and embedding it in new technologies • Searching for new source of information • Adapting knowledge to market needs	• Better use of resources, to achieve effectiveness and efficiency • Striving for excellence through benchmarking, etc. • Consistent and precise performance to high standards in all areas of the organisation • Effective leadership and team commitment throughout • Customer focus • Results focus • Measurement of quality using data and tools

To clarify, the relationship between the elements of KM and elements of TQM is exposure of the interrelationship between each element of the KM (knowledge management processes, its technology and team knowledge) on the unit, with all the elements of Total Quality Management (effective leadership continuous improvement and participation of workers (Ali Zwain 2012).

Relationship Between Knowledge Management Elements and Total Quality Management Elements

The knowledge management processes are represented as knowledge generation storage, distribution, and application and are determined by the relationship between each process of the four operations, with the elements of Total Quality Management (Ali Zwain 2012).

Relationship of knowledge generation elements of Total Quality Management: This relationship is reflected through mutual roles and contributes to the reactants between the process of generating knowledge with every element of the basic TQM (effective leadership, continuous improvement and participation of workers (Ali Zwain 2012).) as follows:

- Relationship of generating knowledge with effective leadership.
- Relationship of generating knowledge with continuous improvement.
- Relationship of generating knowledge with the participation of workers.

Relationship of knowledge storage with elements of Total Quality Management: This represents storage which is the second process of knowledge management processes. To determine its relationship with the basic elements of TQM, the exposure of the relationship to this process with each of these elements separately (Ali Zwain 2012) is as follows:

- Relationship of storing knowledge with effective leadership.
- Relationship of storing knowledge with continuous improvement.
- Relationship of storing knowledge with knowledge workers.

Relationship of knowledge distribution elements with Total Quality Management: In this Section, the relationship is based on the distribution of knowledge as one of the knowledge management processes with each element of the core of TQM as follows:

- Relationship of knowledge distribution with effective leadership.
- Relationship of knowledge distribution with continuous improvement.
- Relationship of knowledge distribution with knowledge workers.

Relationship of the elements of knowledge application with Total Quality Management:

Senior management in institutes of HE must lead the efficient application of knowledge in the organisation to achieve the objectives of total quality management and help pursue the philosophy of Total Quality Management to apply different types of knowledge in the work of the organisation. In this context, the nature of the relationship between the process of applying knowledge and core elements of TQM, is as follows:

- Relationship of the application of knowledge and effective leadership.
- Relationship of the application of knowledge and continuous improvement.
- Relationship of the application of knowledge and knowledge workers.

It could be observed from the numerous elements given by notable scholars in the area of KM and TQM, that they placed TQM (Effective leadership, Employee involvement Continuous improvement) as the mediator variable as well as placing KM (comprised of knowledge processes, technology and Team of knowledge) as a variable (Ali Zwain 2012).

3.5 Previous Studies Related to KM and TQM

1. Study of Waddell and Stewart (2006) "The Interdependency between Knowledge Management and Quality" This study aimed to test the relationship between KM and quality. The sample of the study consisted of 1000 questionnaires distributed to Australian companies; 25 per cent of the total number of distributed questionnaires were retrieved. The study found that of the many results, the most prominent one represents that there is a relationship between KM and quality and that there is a kind of support for KM as a key component for the transfer of culture of quality in these companies.

2. Study of Chua and Lam (2007) "Quality assurance in online education: The Universities 21 Global approach" This study aimed to describe the quality assurance processes in a global university. The study found that the quality assurance processes in the study sample of universities worked to achieve student satisfaction and to attract additional students. In addition, the adoption of quality assurance processes facilitated the enrolment of students in these universities through e-learning and the transfer of knowledge possessed by these universities.

3. **Study of Zhao and Bryar (2006) "Integrating Knowledge Management and Total A Complementary Process: Quality"** This study aimed to describe the quality assurance processes. The study provided a brief theoretical presentation on KM and TQM, and it compared both of them in terms of goals, strategies, and focus. Also, it attempted to integrate both philosophies in order to develop and provide continuous improvement in business organisations. The study found that knowledge that is based on TQM facilitates and guides the process of learning and provides continuous improvement in business activities. In addition to that, the integration between these two management systems leads to change in customer needs and expectations.

4. **Study of Baserda (2006) "The integration of knowledge management and total quality and its impact on performance"** Performance is a measure of efficiency, effectiveness, and learning for human resources, which is also the fundamental measure for success as well as the index upon which many administrative decisions are built. The study determined the effects of each element of KM and TQM on performance as a whole and on each of its components. There were large effects on performance (positive relations) when the activities and events of KM were integrated with TQM. Therefore, the study came to the conclusion that the model of balanced scorecards of parallel relations is the most important model that can be used to measure the performance of the organisation.

5. **Study of William Gang Dzekashu (2009) "Integration of Quality Management into the Tacit Knowledge Capture Process"** The study confirmed that adoption of QM in the process of documenting critical knowledge could lead to greatly improved knowledge quality as well as to operational excellence and better organisational performance. Organisations are encouraged to implement quality standards that best fit their culture.

6. **Juozas Ruþevièius (2006) "Integration of Total Quality Management and Knowledge Management"** The main field of KM is the use and development of an organisation's knowledge resources in order to meet its goals. Explicit documented knowledge needs to be managed as much as tacit subjective knowledge. An organisation's managers need to establish and determine all the processes related to the identification, creation, storage, and dispersal of knowledge. For this to occur, organisations must implement a system that trains employees on how to create, store, maintain, safeguard, and share knowledge. Although the concepts of TQM and KM are markedly different, there are four fields of commonality: goals, areas receiving particular attention, the position they hold in the organisation in terms of its general

management, and issues regarding the financial benefits of implementing these systems. The author has devised a model that integrates KM into TQM, which could be used in TQM training and when implementing TQM and KM in an organisation.

3.5. 1 What Distinguishes the Current Study from Previous Studies?

By reviewing the past studies, it appears that some of them examined the attitudes of managers towards the application of KM, and other studies examined the performance, creativity, and decision-making of KM as well as discovering the competitive advantage. The current study and what distinguishes it from past studies and research is that it reviews an important and vital aspect; that is, the integration of KM and TQM and its impact on EP in institutions of HE in Jordan and its role in achieving TQM in this institution, where most efforts and research were directed towards KM. Also, the researcher has benefited from previous studies, and this benefit is reflected in two important points. The first point is the formulation of the theoretical framework for the study, and the second is the formulation of the hypotheses.

3.6 Summary

This chapter focused on reviewing the relevant literature on quality and TQM. A large amount of literature focused on the attributes of quality and TQM. This literature reported various information related to the concept, its application and elements of both 'quality' and 'TQM'. As a result of the various studies, and global concern regarding quality, a large number of TQM pioneers have participated in its illustration, development, and ease of application. The appearance of many models has also contributed to the illustration, understanding, and interpretation of TQM. In the light of these models, various elements of TQM have emerged. Effective leadership, continuous improvement, and personnel participation are the significant elements of TQM. Furthermore, customer satisfaction is a pivotal goal that this philosophy seeks to achieve. In order to understand the concept of quality and TQM, it is necessary to comprehend the relevant issues that are interrelated with each other. Therefore, this chapter along with Chapter 2 has provided a background on TQM and KM, which are both essential issues for modern educational performance that will be reviewed in the next chapter.

CHAPTER FOUR

EDUCATIONAL PERFORMANCE

4.1 Introduction

The processes of KM and TQM are closely associated with the performance of higher education (HE). A number of elements are considered for KM and TQM. For KM, identification, acquisition, storage, sharing, and application of knowledge elements are considered. Whilst for TQM, elements include leadership commitment, strategic planning, continuous improvement, customer focus, process focus, employee involvement, training and learning, and rewards and recognition (Zwain, 2012). In addition, the measurement of performance plays an important role in the overall organisational process. Therefore, it is considered an integral part of managing educational performance. Literature reported that the importance of ensuring TQM directs the organisation for sustainable improvements (Armitage and Atkinson 1990, Vollmann 1990). TQM allows for the potential for an organisation to be competitive when it is suitably organised and performance is managed effectively. Human resources and strategic planning influence this.

This chapter represents the third part of the literature review and focuses on educational performance. The previous two chapters reviewed the literature related to knowledge and knowledge management (KM) (Chapter 2), and quality and total quality management (TQM) (Chapter 3). In this respect, the quality practices are an essential factor for managing the organisation system to achieve effective performance. This is associated with success and leads to many administrative decisions that benefit the organisation to sustain its performance in the market. Consequently, performance is the basis that reflects the organisation's ability to achieve efficiency, effectiveness, and the appropriate uses of its available human and material resources to achieve its goals. It is a measure for success and an indicator upon which many administrative decisions have been made. Furthermore, in light of the many complex and individual standards, there are many areas of performance. The BSC model, adopted by this study, is one of the most important complex standards to measure the performance of an organisation.

The structure of this chapter includes reviewing and discussing the main issues that contribute to a better understanding of educational performance. This chapter will concentrate on different aspects of performance in education, including concepts, mainly of BSC models and their application and implementation.

4.2 Performance

Performance is an important indicator based upon many important decisions. It identifies negative and positive trends of the organisation's activity and identifies approaching or receding from the achievement of the objectives and implementation of set plans. Thus, it reflects the extent of an organisation's success or failure.

Researchers differ in defining the concept of performance because of the multiplicity and divergence of indicators measured that depend on the different nature of the work of organisations, their goals, and those who measure it. Some believed that performance is the final result of the activity of the organisation, which was adopted by Wright (1996, p. 259) when he defined performance as "those results the organization is trying to achieve". Wheelen and Hunger (2000, p. 231) proposed that it is "the final result of the activities of the organization". Others believed that the performance is a reflection of an organisation's ability to achieve its goals and to measure these goals, which was expressed by Eccles (1991, p. 31) when he described performance as the "reflection of the ability of the organization and its ability achieve its goals".

Robins and Wiersema (1995, p. 278) explained that performance is the standard of the long-term goals of the organisation represented by goals of survival, adaptation, and growth. Others argued that performance is a reflection of how the organisation exploits its resources, and in this regard, performance is known as "a reflection of how the organization uses and exploits its material and human resources in a way that makes it capable of reaching its goals" (Miller & Bromiley, 1990, p. 757). Daft (1992, p. 120) agreed with both of them when he described organisational performance as "the ability of the organisation to achieve its goals through the use of available resources effectively".

Consequently, performance can be defined as a reflection of an organisation's ability to achieve efficiency, effectiveness, and learning in the use of its available material and human resources to achieve its goals. This means that performance is the mirror of an organisation's achievement of high productivity by attaining effectiveness and efficiency in the use of available material resources, knowledge generation, sharing, and application through human resources, in addition to achieving other goals represented in accomplishing customer satisfaction, high market share, and success in taking responsibility towards society. It also assists in the detection of the suitability of plans, goals, policies, and programs for available human and material resources as well as in

detecting the level of coordination between various functions and activities and in the ability of human resources to carry their mandate. In the light of this comparison, management can make the right motivational decisions that flow into the strategic goals of the organisation.

It should be noted here that performance management should not be confused with performance appraisal, as the latter is a component of performance management, which is concerned with the continued communication and planning that must occur between the worker and manager. When an organisation adopts the model of performance management, it moves from the model where individuals are in control to the model of direction and guidance. To reach successful performance management, the director should (Schwartz, 2001, pp. 4, 113):

- understand the functions of the worker,
- work with the worker to develop standards and expectations,
- ensure that every worker has obtained the proper appraisal by the co-workers, customers, and supervisors in an honest and continuous manner, and
- prepare and implement an appropriate writing process for the performance appraisal.

Consequently, the importance of performance lies in that it is the real detector of an organisation's position in the market and the extent of its success in achieving its internal and external goals. In addition, it is the basis upon which many important decisions in organisation are made. In other words, an organisation cannot know the direction of its activity or the extent of nearing achievement of its goals, unless it is guided by the compass of performance.

4.2.1 Areas and Measures of Performance

Areas of performance measurement differ according to the organisation's goals, the nature of its activities, and its strategic direction. Some researchers attempted to identify key areas of organisational performance (Miller & Dess, 1996, pp. 12-13) setting five key areas of performance, which include profitability, market share, productivity, individual development, staff satisfaction, and general liability.

As a result of the multiplicity of organisations and areas of performance, there are numerous indicators of performance measurement. Individual indicators that measure specific objectives for an organisation represent one type of these indicators. These can be represented by financial standards such as liquidity, profitability ratios, and others, or

by operational standards such as productivity, or by marketing standards such as the growth of market share. However, as result of seeking to achieve more than one goal simultaneously (financial and non-financial goals, long-term and short-term goals, internal and external goals), a complex standard has been epitomised that reflects a clearer picture of organisational performance.

We have a growing interest in using complex standards to measure organisational performance for the following reasons (Kaplan and Norton, 1992, p. 71):

- Individual standards express an individual goal. As organisations create a set of goals rather than one goal, it is appropriate to adopt a complex standard that fits the set of goals.
- Organisations deal with a group of parties that include administration, workers, shareholders, customers, and the local community. Each of these parties has a particular goal. Workers look for compensation and better work conditions. Shareholders seek to maximise profits. Customers desire high quality products at a reasonable price. Administration wants to adopt work methods that achieve higher productivity. The local community desires a clean environment. Thus, complex standards can help determine the extent to which these parties can achieve their goals, while individual standards are unable to do so.
- The current environment of various organisations is complicated and dynamic, which requires that these organisations should adopt performance measurements that determine the extent of its control over its activities. This fits exactly with the adoption of complex standards for measuring organisational performance.

The researcher believes that the Kaplan and Norton model (Figure 4.1), which is known as a balanced score card, is one of the most important complex standards in the measurement of organisational performance, which is based on financial and operational standards to measure performance (which are adopted in this study as a measure of performance). These standards include four main perspectives, financial, internal business process, customer, and learning and growth perspectives.

4.2.2 Balanced Score Card (BSC) Model

The BSC model is considered one of the most important performance measurement systems that has been developed recently. It is the most prevalent, which indicates this model provides effective and strong methods to translate BSC vision. Supporters of the BSC model and strategy have confirmed that it is an effective tool that transfers the

strategic goal and motivates performance compared to established strategic goals (Abu-Fada, 2006). The BSC model plays an important role as a tool of strategic management in an organisation. Kaplan and Norton (1996) explained that this model helps managers in performing four new management operations, working independently or integrating to connect between long-term goals and short-term actions. These operations are translation of vision, connection and linkage, work planning, and feedback and learning (Abu-Fada, 2006).

The strategy is a general framework that the organisation is guided by in defining its direction and future view in order to make its decisions (Idris & Morsi, 2006). Also, strategy management is an initiative and action process more than just work planning. It is a management process that is targeted to achieve the vision of the organisation through management and direction of the relationship between the organisation and its environment (Plant, 2007). Strategy management is defined as a continuous and repetitive process that passes through the different functions of the organization and aims to maintain the condition of the whole organization that is suited to its environment (Porter, 1996). As for Strickland and Thompson, they defined strategy management as "establishment of the future direction of the organization, revealing its goals on the long-term and choosing of the appropriate strategic manner of achievement in the light of internal, external and environmental factors and changes, then the application, follow-up and evaluation of the strategy" (Idris & Morsi, 2006).

The BSC model can be described as giving an organisation's managers the position of a pilot who needs information from several sources in the current environment, which assists the pilot in flying the plane, as the level of complexity in the business environment requires management to be responsible for monitoring performance in different sites inside and outside the organisation simultaneously.

4.2.2. 1 Identification of the BSC Model

The BSC model is a tool used to transfer the strategy of the organisation to various management units and levels, as well as for the measurement of implementation models in these units. It is used in a way that ensures the achievement of targeted goals, which support the strength of the organisation and its competitive position through providing a tool to execute the strategy and accountability of its target goals (Gering & Keith, 2000).

Kaplan and Norton (1992) maintained that the BSC is a comprehensive system that could be used for measuring the performance strategic perspective, and in this respect, the strategy of business administration can be translated to strategic goals, targeted values, and clear procedural steps.

4.2.2. 2 What is balanced score card?

With the four perspectives of organisational strategy in sight, the role of the BSC becomes significant when it comes to the application, execution, and implementation of the same (Rodriguez Bolivar et al., 2010). Balanced score cards assist in impartial and unbiased decision-making, while simultaneously helping to secure non-financial and feasible measures for the organisation (Holmes et al., 2006).

The BSC is helpful in associating tactical operations and daily achievements with the strategic long-term objectives of an organisation, while focusing on the future outlook (Tseng, 2010). In this way, the BSC tends to improve the working of the organisation in terms of current and future perspectives. Every moment, capability, and resource invested today is likely to impact the organisation of tomorrow with growth and development (Banchieri et al., 2011). The BSC helps in identifying leading and lagging indicators (Klassen et al., 2010). The former shows the direction for the performance indicators, while providing for methods to achieve performance goals, and the latter are the performance goals and objectives that are set for management and generally result from the outcome of earlier actions (Holmes et al., 2006).

The BSC tends to help an organisation with the factors that may impact the business both internally and externally (Tseng, 2010). This helps management and the business to understand the prospect of internal processes that may be critical to eventual goal achievement and the external impact that may be created from customer feedback and positioning of the product or service (Rodriguez Bolivar et al., 2010).

It is understood that strategy helps direct a company toward its specified goals for unknown positive consequences and results. In this regard, the application of the BSC helps management in associating tactics, cause and effect assumptions, and strategies (Klassen et al., 2010). The BSC works on the assumptions and postulates that would encourage management in achieving the already determined goals and objectives (Tseng, 2010). It also helps management in testing possible strategies for their organisation (Rodriguez Bolivar et al., 2010). The techniques and measures put together

in the BSC help management in attaining the objectives and goals, especially with reference to the financial outlook (Holmes et al., 2006).

The concept of a strategy map was put forward with input from all the departments concerning all organisational units and allocated resources (D'Antoni et al., 2010). The strategy map is a tool that is employed by management to describe the association between cause and effect relationships (Ni et al., 2010).

The financial perspective tends to inform management with the end result that they sought. Like every other business, they seek improved numbers for the organisation and stakeholders to earn substantial profits (Gapenski & Pink, 2003). It explains to them whether the strategy implementation for the business has proven to be successful or not (Shapiro, 2008). Financial perspective leads the company in assessing financial returns for the shareholders, who may have invested in the company (Brigham & Houston, 2011). Different aspects and terminologies of financial management, in this case, have made their way into the BSC as standards for performance indicators (Holmes et al., 2006). Yet, another method is to investigate customer satisfaction and product quality rather than financial growth to understand the performance indicators of a company (Rodriguez Bolivar et al., 2010).

Thus, in a way, the BSC provides an opportunity for management to associate their day-to-day, short-term, and tactical actions with their long-term strategy (Banchieri et al., 2011). Furthermore, the technique also facilitates management in establishing performance measures at all levels of an organisation to gauge performance and evaluate improvement (Holmes et al., 2006).

When managers put forth an effort to organise and accurately implement management processes, techniques, and decisions, customer satisfaction and need fulfilment are ensured (Shapiro, 2008). Another perspective of the internal process focuses on customer satisfaction, ensuring improved results that augment shareholder value. In this way, not only financial objectives are attained, but also customer satisfaction ensures long-term relationships (Gapenski & Pink, 2003). Business aspects that are crucial for customer satisfaction are taken into account, and the focus is more on factors like quality and the skills of the workers (Brigham & Houston, 2011).

Aspects like inventory turnover, productivity, development expenses, and delivery help management single out and tackle issues and identify core competencies, while ascertaining market leadership within the sector in this process (Shapiro, 2008).

Another perspective that details the infrastructure provided to sustain the other three perspectives crucial to organisational success is the learning and growth perspective (Chen et al., 2009). Considered to provide the basis for the BSC, the learning and growth perspective allows the other three perspectives to blossom (Rodriguez Bolivar et al., 2010). The former ensures that the continued improvement process continues with new innovations, expands into new territories globally, and increases the shareholder's assets and the value of the organisation (Shapiro, 2008). This perspective is generally gauged and evaluated by different aspects of learning and growth within the organisation, which include worker skills and knowledge, satisfaction, information flow, and other relevant tools (Gapenski & Pink, 2003).

This perspective also enables the institution to expand and structure their internal processes to ascertain the skill levels of their employees (Chen et al., 2009). With the help of this learning and growth perspective, the area of internal processes is also improved, which further enhances the stakeholder's confidence and end customer satisfaction that also translates into financial perspectives and outcomes (Brigham & Ehrhardt, 2013).

Many academic researchers used the BSC in their researches to quantify and empirically evaluate their research (Rodriguez Bolivar et al., 2010). It has paved way for the BSC to be used and implemented and as an evaluation tool by institutions and universities to gauge performance indicators for the HE sector (Holmes et al., 2006). The growing acceptance has enabled educational organisations and institutions to apply the BSC within their organisational settings (Banchieri et al., 2011).

More than seventy per cent of the universities that were being interviewed in the United States were found to be employing the BSC for most of their organisational performance aspects, indicator monitoring, and evaluation (Klassen et al., 2010). However, a significant aspect was that most of the referenced universities have not completely utilised the BSC in all aspects of their business (Rodriguez Bolivar et al., 2010). Most universities were using the BSC within the confinements of a certain department or an individual division (Gapenski & Pink, 2003). The only other universities and institutions that adhere to the BSC belong to the United Kingdom, Canada, and Australia. However, there were a few universities identified that still apply the BSC within their institutions (Klassen et al., 2010).

Research performance, educational performance, and management performance were therefore identified as three very important indicators of performance that can be used to evaluate the application of the BSC within the institutions (Tseng, 2010).

4.2.2. 3 The Basic Components of the BSC Model

For the success of the application of the BSC model, the following basic requirements should be available (Abdul-Aziz, 2003):

- A clear determination of strategic goals is considered the basic perspective in using the BSC model.
- The success of the use of the BSC model depends on the adoption of system input; however, this standard uses the strategic management system, but not a measurement system (i.e., integration of the four perspectives of the model in the form of an integrated system).
- Presence of motivation to choose the balanced performance standards is required (i.e., there should be a response for environmental changes and pressure on facilities, such as intensity of the competition, focusing on the customer and industrial integration, etc.).

4.2.2. 4 The basic Rules for the Implementation of the BSC Model

Pim (1997) demonstrated that there are number of basic rules (golden rules) for the implementation of the BSC model, and they can be presented as follows (Btanony, 2004):

- The need to support senior management in applying the standards of the BSC model with the necessity that this support must be clear to staff of the organisation.
- It must be realised that there are no standard solutions that fit all organisations, due to the differences between internal and external environmental factors that affect these organisations.
- It must be realised that the determination and understanding of the organisational strategy is the starting point in the project of the BSC model. When the strategic requirements for organisational success have been determined and understood, standards are selected that are consistent with the strategy and reflect the extent of the implementation of the specified goals.

- It is necessary to realise the effect of performance indicators on staff behaviour and to ensure that changing these will affect this behaviour to encourage improvement.
- The need to realise the difficulty of quantitative measurement for all performance standards; therefore, we should realise that there are quantitative standards and qualitative standards.
- A limited number of goals and standards shall be determined that must be consistent with the unique features that characterise each business organisation, in order to eliminate the phenomenon of dumping management with a huge amount of information beyond its analysis capacity and the subsequent obstruction of management work.
- The need to adopt communication input from bottom to top and from top to bottom of the organisation in order to comprehend persistent changes.
- It is preferred to start with a simple and rough analysis with the aim of learning and improving with the gradual expansion of use, so there will be no gap between analysis and application, rather than beginning with deep analysis.
- The need to realise, from the start, the accuracy and simplicity of communication systems, in order to prevent the transfer of false information to the end-user of the system.

4.2.2. 5 Advantages of Balanced Performance BSC Model:

Application of the BSC model has achieved many advantages for administration, including those listed below (Kholi, 2001; Kaplan & Norton, 1992; Johnson, et al 2007):

- The BSC model provides a comprehensive framework to translate strategic goals into an integrated group of standards that reflect strategic performance standards.
- The BSC model works to satisfy several administrative needs because it combines many parts of the competitive strategy into one report of the facility.
- The BSC model includes many balances, such as: the balance between short-term and long-term goals, the balance between financial and non-financial standards, and the balance between internal and external standards.
- The BSC model translates the vision and strategy of the facility in an interconnected group of performance standards.

- The BSC model helps in the effective management of human resources through performance-based staff motivation.
- The BSC model provides administration with a comprehensive picture of the facility's operations.
- The BSC model enables the facility to manage the requirements of related parties, such as shareholders, customers, employees, as well as operational processes.
- The BSC improves traditional systems of oversight and accountability by including non-financial facts.
- The BSC model leads to reduction of the problems of profit in a sub-organisation, where managers at senior management levels are forced to consider all important operational standards together.

Figure 4. 1 BSC Model Source: (Kaplan & Norton, 1992)

4.3. 1 Application of the BSC among Universities

The concept of BSC principles has been widely adopted among researchers. Many research studies have related the concept of implementation of the BSC to university management (Stewart & Carpenter-Hubin, 2000), academic departments (Lawrence & Sharma, 2002), university research (Pursglove & Simpson, 2000), university teaching

(Southern, 2002), and internal service providers within a university (Pursglove & Simpson, 2000). These prove that the BSC concept has not only been used among academic researchers, but the BSC will be more and more applied in various universities as well.

According to a survey study (Rompho, 2008), which interviewed universities regarding their implementation of the BSC, the researcher found that there were 22 universities out of 29, which had been using the BSC. In fact, most of these particular universities were located in the United States, while two were in the United Kingdom, another two were in Australia, and only one was in Canada. Yet, not all the universities applied the BSC to the entire university, as some implemented it for only a specific division. In addition, from literature, the researcher also provides a list of those universities that currently apply the BSC regarding the table below.

Table 4. 1 A list of universities that currently apply the Balanced Scorecard [Rompho, N. (2008).

University	**Country**	**Unit that implements the Balanced Scorecard**
1. University of California at San Diego	US	Business Affairs
2. University of California at Davis	US	Division of Administration
3. University of California at Berkeley	US	Business and Administration Services Division
4. University of California at Los Angeles	US	Administrative Information System, Business v Administration Service
5. University of California at Irvine	US	Division of Business and administration Services
6. University of California at Santa Cruz	US	Business and Administration Service
7. University of California at San Francisco	US	Campus Auxiliary Services
8. California State University at Northridge	US	Administration and Finance
9. California State University at San Marcos	US	Finance and Administrative Service
10.California State University at San Bernardino	US	Administration and Finance
11. Florida International University	US	Entire university
12. University of Louisville	US	Entire university
13. University of Vermont	US	Entire university
14. University of Akron	US	Entire university
15. University of Virginia	US	Library
16. Fort Heys State University	US	Entire university
17. University of Florida	US	Library
18. University of Edinburgh	UK	Entire university
19. Glasgow Caledonian University	UK	Entire university
20. Deakin University	Australia	Library
21. Bond University	Australia	Entire university
22. Carleton University	Canada	Finance and Administration

Wang (2010) also came up with three significant performance indicators that focused on the measurement of EP, research performance, and management performance, which will be addressed accordingly.

4.3. 2 Application Impact of the KM Approach to Performance Excellence in Universities

According to Kidwell and Johnson (2000), areas that enable institutions of HE to achieve excellence in their performance through KM, can be classified into six areas: scientific research, curricula and program development, student and graduate services, strategic planning, administrative services, and functions of a faculty member. Here are the most important benefits obtained in each of the above-mentioned areas of activity.

4.2.3 How Does Higher Education Measure Performance?

The impact of the BSC and the implementation of performance evaluation systems was also appreciated by the Australian government (Tseng, 2010). Australia, therefore, enabled performance management and evaluation systems within institutions and a few of its universities (Rodriguez Bolivar et al., 2010).

To apply the BSC within universities and institutions, ten evaluating performance indicators were identified that had a major role to play within the continuous improvement implementation in the HE sector (Holmes et al., 2006). These included aspects such as wherewithal, academic standing of the institution within the sector, learner experiences, imparting of knowledge and education, finances, leadership, and human resources and its development and grooming (Brigham & Ehrhardt, 2013). The highlighted factors and indicators mentioned above had a significant impact on the overall performance of an institution and were important indicators to gauge management performance (Gapenski & Pink, 2003).

Indicators including performance progress, graduate full-time employment, salary, student study time period, satisfaction, teaching, and other skills were highlighted by the Australian government (Chen et al., 2009). They suggested that these aspects have a massive impact when it comes to the performance indicators in the HE sector (Ferreira & Otley, 2009).

4.2.4 Educational Performance Indicators

To establish an institute's standing, performance on academic and educational grounds is considered the classical and usual method of understanding and evaluating performance measurements for education (Gaither, 1994). Educational performance tends to encompass all the processes from the beginning to the process considered the final yield (Harvey & Williams, 2010). The three indicators that are required to further understand educational performance include the input, output, and performance indicators (Houston, 2007). Input indicators evaluate the admission process as well as the onboarding process of students for different degrees and graduate programs in all disciplines and the required student-instructor ratio and other relevant facilities (Beard, 2009). The efficiency of knowledge communication, student satisfaction, contact hours, and the drop-out and retention rates of students and even teachers can be used as the measuring criteria for process indicators (Ali & Shastri, 2010). Finally, the extent of employment and number of graduations measure the outcome indicators (Harvey & Williams, 2010).

4.2.5 Research Performance Indicators

Ranking and rating an academic institute or university is carried out in comparison to others in the education sector, and the research studies that are undertaken by universities in the past and present improve the possibility of the institution attaining better points (Beard, 2009). The research performance indicators that help gauge and evaluate the system include research input, output, and outcome indicators (Secundo et al., 2010).

Research input indicators help evaluate sponsor-based research, successful grants for research, and partnerships to conduct research (Hazelkorn, 2011). On the other hand, the large number of publications, doctorates being conferred, thriving entrepreneurs, as well as the utilisation of academic property can be determined to be the output indicators of research (Gaither, 1994). Finally, research outcome indicators are those that calculate the research citation, membership of the research councils, ranking, and awards (Secundo et al., 2010).

4.2.6 Management Performance Indicators

It is necessary that managers running any facet of universities and institutes within the educational sector are on the same page as senior management regarding the goals and achievements that are expected of the institute in the longer term strategically (Chen et

al., 2009). They should be well aware of the university's future outlook, plans, and development processes that they might be implementing (Gaither, 1994). This will ensure that the managers on board would not take any wrong steps or incorrect decisions at this level that would become and obstacle in the long-term planning and future aspirations of the university (Ferreira & Otley, 2009). We broadly divide management performance indicators into major divisions (i.e., finance performance and human resources).

4.2.7 Applying the BSC to a Higher Education Institute (HEI)

The HE sector is one area of the public sector where the introduction of performance measurements (PMs) poses dilemmas (Ulrich, 1998). Even though human resources are the most valuable assets of HE institutions, many universities and colleges have established procedures and rules for the administration of personnel; however, they do not 'manage' their human resources (Shelley, 1999). There are various reasons for the restricted presence of human resources management (HRM) in HE institutions. Higher education institutions are described as loosely coupled systems (Weick, et al, 1976) or organised anarchies (Cohen & March, 1974) with weak regulation and control mechanisms; these are indicators that predict low PM impact. On the other hand, over the last decade, we have seen a rising institutional autonomy, and HE institutions are given more and more responsibility for managing their employees. Moreover, PM principles in HE institutions encounter important implications for the management of these organisations and have certainly altered the internal management of the HE institutions and the character and everyday existence of the academic manager in far-reaching ways (Deem, 2004).

Internal operational measures focus inward into the internal workings of universities on those processes and activities that deliver critical services to both internal and external customers. Internal business process measures address such items as productivity, accuracy, cycle time, core competencies, and the effective use of people and information resources. At the university level, quality of teaching, learning processes, other facilities, and management information are key activities. In their simplest form, these indicators characterise productivity in terms of ratios of resources to outputs.

4.2.8 The BSC in the Education Criteria for Performance Excellence

Although the concept of the BSC has been widely adopted in the business sector, the education sector has not embraced the BSC concept widely, as indicated by the dearth

of published research on this topic. A thorough review of the literature yielded few significant publications. For example, Cullen, Joyce, Hassall, and Broadbent (2003) proposed that a BSC could be used in educational institutions for reinforcement of the importance of managing rather than just monitoring performance. Sutherland (2000) reported that the Rossier School of Education at the University of Southern California adopted the BSC approach to assess its academic program and planning processes. Also, Chang and Chow (1999) reported that responses in a survey of 69 accounting department heads were generally supportive of the BSC's applicability and benefits to accounting programs.

4.2.9 Institutional Performance

Institutional performance is the common denominator for all the efforts exerted by management and workers in the framework of institutions, so performance is an essential concept for organisations in general. It is an almost totalitarian phenomenon for all branches and fields of management knowledge. In spite of the large number of research studies that dealt with the concept of performance, no consensus was reached on a specific concept for this title due to the different standards and criteria upon which organisations and managers depend in the study of performance. Such standards are closely linked to the objectives and directions that the organisation seeks to achieve (Baserda, 2006, p. 123).

4.2. 9. 1 The nature of institutional performance

In accordance with Sinclair (Zairi, 1995), performance is "the achievement of organizational goals by using resources efficiently and effectively." Efficiency means "to maximize results using less resource". The effectiveness relates to the "achievement of the desired objectives."

Meer (1995, p. 21) defines institutional performance as the "accomplishment of organizational goals by using resources efficiently and effectively, so it requires focusing on the unique elements of the establishment on which it shall be assessed. Unique elements include financial indicators, non-financial assets, and measuring the tangible and intangible, including the broad-based institutional strategies and operations, human resources and systems aspects of the performance."

4.3 BSC, Four perspectives

4.3.1 Financial Perspective:

The first perspective in the BSC model for the measurement of strategic performance includes a number of strategic standards, such as the standard of achieving fair profit, which represents a strategic goal most organisations are seeking to achieve, the standard of balanced growth of revenue and mix of investment activities, the standard of cost minimisation (in order to achieve maximum efficiency), standard of maximising the profit of shareholders and depositors through the achievement of real revenue on the investment, and the standard of achieving added economic value (Kaplan & Norton, 1996). This perspective includes the tangible outcomes in conventional financial terms.

4.3. 1.1 Finance Performance

One of the major needs of any university is the constant supply of capital investment (Gapenski & Pink, 2003). Thus, the amount of financial resources tends to propel the university's academic and research performance (Brigham & Ehrhardt, 2013). In this regard, financial position indicators and financial resource indicators become absolutely crucial.

Financial position indicators tend to focus more on financial operations. For instance, the focus is on financial ratios, percentages, deficits or surpluses, and the nature and duration of the financing employed (Gapenski & Pink, 2003). Managers tend to appreciate long-term financing and the annual number of investments in infrastructure (Cornett & Saunders, 2003).

Financial resource indicators, on the other hand, evaluate cost recovery and income from research, tuition fees, service charges, and shares in third party funded research (Brigham & Ehrhardt, 2013).

The amount of financial resources can significantly supply the capital investment in a university to increase the university's academic performance. The two critical financial indicators are financial resource indicators and financial position indicators (Kaplan & Norton, 1996).

Financial resource indicators measure beyond the amount of research income, research indirect cost recovery, share in third-party funding, share in governmental funding, and income from tuition fees and others services (Cornett & Saunders, 2003).

The measurement of these financial indicators is based upon a number of factors, including the operation of cost recovery, surplus or deficit as per cent of income, current ratio, and debt ratio as a short-term financial position. Long-term financial positions are an indication of a manager's satisfaction and an indication of whether the manager has satisfied the financial strategies and the annual amount of investment in infrastructures. Based on the above, the financial position indicators measure the operation of cost recovery, surplus or deficit as a percentage of income, current ratio, and debt ratio as a short-term financial position. Long-term financial positions are an indication of a manager's satisfaction of financial strategies and the annual amount of investment in infrastructures.

4.3.2 Human Resources

The main purpose of these indicators is to pay heed to the staff, teachers, instructors, lecturers, and all those that are involved in performance measurement. Human resources are gauged by the human capital indicators and human resources policies and practices indicators (Storey, 2001).

Human capital indicators, such as staff recruitment and the percentage of successfully carried out processes, determine the human capital indicator along with the employee's age distribution and diversity among the employees on board (Gatewood et al., 2010).
Human resource policy and practice indicators are more related to the operation of the human resource department for employee motivation and training that help employees develop and become more productive from the university's perspective (Wright & McMahan, 1992).
Based on the above, the employees in an institution, such as administrative staff or lecturers, drive university performance. There are two significant terms in measuring human resource performance. Human capital indicators measure performance using the percentage of success in recruitment, staff skill, staff diversity, and employee age distribution. Human resources policy and practice indicators Measure performance based upon on training and development and employee motivation.

4.3.3 Customer Perspective

The second perspective in the BSC model includes the standard of the fair market share and consists of elements that balance between available organisational capacity and targeted market share and the acquisition of new customers, considering the goal of achieving a fair profit. As for retaining exiting customers, it aims to apply standards that

meet the physical and psychological needs of the partners. Regarding customers' profit, it contains the standards of fair profit and customer satisfaction through the achievement of psychological satisfaction and fair material profit (Kaplan & Norton, 1996).

4.3.3. 1 Customers in HE

In fact, there is no specific definition of the HE customer (Michael et al., 1997; Motwani & Kumar, 1997; Davies et al., 2001; Sirvanci, 2004), although Michael et al. (1997, p. 109) put forward their ideas as follows:

"the customer of Higher Education is the student as a customer of knowledge and service, the future employer or graduate school as customer of the student product, and society as a whole as taxpayers and beneficiaries of the education operations of the institutions".

Some authors (Claver et al., 2003) use the term *customer management*, which includes activities aimed at enhancing customer satisfaction. Others use the term *customer-centric* (Siddiqui & Rahman, 2006). Essential to the concept of TQM is a customer-oriented culture (Motwani & Kumar, 1997) in which the customer him/herself is involved in designing and assessing products and services (Siddiqui & Rahman, 2006).

4.3.4 Internal Operation Processes Perspective

The third perspective in the BSC model includes a standard of achieving production efficiency aiming to achieve a target amount for less time or less cost and quality. It calculates the optimal ratio of acceptable quality in the units and services produced or the lowest percentage of allowed defects (Kaplan & Norton, 1996, 2001).

The BSC has proven effective in resolving the inability of traditional management systems to link long-term strategy to short-term actions. Most importantly, performance measures assist the establishment and support of a continuous process of self-evaluation and correction at all levels of an organisation.

Great customer performance is the result of processes, decisions, and actions that managers must focus on in order to satisfy customer needs (Kaplan & Norton,1992). According to Kaplan and Norton (2000), in the internal process perspective the organisation determines how it will achieve the value proposition for its customers and the productivity improvements to reach its financial objectives in order to satisfy its shareholders. This perspective measures the business processes that have the greatest impact on customer satisfaction. It measures factors like quality and employee skills.

Here, companies should identify and measure their core competencies and technologies critical to ensuring market leadership (Kaplan & Norton, 1992). Measures that can represent this perspective are inventory turnover, delivery, productivity, cycle times, and research and development expenses (Niven, 2006).

4.3.5 Growth and Learning Perspective:

The fourth perspective in the BSC model includes the following criteria: level of individual ability, provision of appropriate academic skills for individuals, individual creativity applied in administration, which requires the availability of superior mental abilities to devise solutions, employee satisfaction, employee profitability based on the ability to deliver added economic value, and employee retention, which emphasises the standards of individual efficiency and effectiveness (Davis, 1996).

The learning and growth perspective identifies the needed infrastructure to support the other three perspectives. Niven (2006) argued that measures of the learning and growth perspective are the enablers of the other perspectives and represent the foundation of the BSC. According to Kaplan and Norton (1992), continual improvements and the ability to learn and introduce new products and services are the preconditions to survival, expansion in the global marketplace, and the increase in the company's value. Knowledge, employee skills and satisfaction, and the availability of information and adequate tools are frequently the source of growth; therefore, they are the most common measures of this perspective (Niven, 2006).

The learning and growth perspective determines the skills and processes that can drive a university to develop significant internal processes. This perspective area can feed into internal processes to motivate stakeholder satisfaction and eventually, financial outcomes (Pingle & Natashaa, 2011).

4.3.6 Application Impact of TQM Approach to Performance Excellence in Universities

Measures in HEIs are vital to their development and serve as indicators of performance (Tai et al., 2008, pp. 325-326). The quality of academic performance, such as teaching, can be measured by student perceptions and satisfaction (Owlia & Aspinwall, 1996; Petruzzellis et al., 2006). In this respect, TQM is a useful tool to achieve continuous improvement in educational institutions (Kanji & Tambi, 1999). Thus, the quality of the

academic process should be complemented with the needs of industry and the evaluation of the academic programme (Hussein & Aboud 2008, p. 260).

Although the researcher has adopted the Kaplan and Norton model for measuring organisational performance, it was difficult to obtain the financial data from the relevant universities; therefore, this was collected indirectly from respondents via the questionnaire. Accoding to Alhakem, L. A., Zwain, A. A., & Alkhafaji, H. J. (2009) perspective of internal processes, customer (stakeholder) perspective, and learning and growth perspective were the endogenous variables.

4.4 Summary

The current chapter focused on highlighting the main issues related to educational performance. It provides a general background to the concept of performance and its measurements. Generally, performance is one of the main issues that reflect the organisation's ability to achieve efficiency and effectiveness and the appropriate uses of its available human and material resources to achieve its goals. Performance measures success and is an indicator upon which many administrative decisions can be made. Furthermore, this chapter has reviewed different areas of performance in light of the many complex and unique standards related to higher education. In this respect, educational performance provides justification for the suitability and sustainability of an organisation. However, educational organisations differ in their performance as each one has its own strategic goal. Nonetheless, the most common model for measuring performance is the BSC model. This model was reviewed in this chapter in order to identify the most common perspectives that are associated with the assessment of performance. The next chapter will deal with the research methodology.

CHAPTER FIVE

RESEARCH METHODOLOGY

5. 1 Introduction

The previous chapters focused on the general introduction and background related to the framework of the current project. This chapter focuses on the research methodology adopted in the current research. It includes discussion on the concept of research methodology, its design, and the analysis of data. It also involves setting up the questionnaire, selecting a sample population, and collecting the data related to KM and TQM in both public and private universities in Jordan. Both KM and TQM issues play significant roles in directing the educational process and subsequently quality educational outcomes. The general framework of the current chapter includes the following sections:

- Philosophical Assumption on Methodology and Methods.
- Research Design and Methodology.
- Population and Sample
- Measurement and Instrumentation
- Data Analysis

5. 2 Philosophical Assumption and Concept of Social Research

Research philosophy is considered a vital element for setting up the perspectives of research, developing new knowledge, and investigating the nature of that knowledge (Holden and Lynch, 2004). In addition, research philosophy refers to scientific practices based on presumptions about the cosmos and the nature of knowledge (Collis & Hussey, 2009).The presumptions of the current research were associated with the KM and TQM in relation to educational performance in Jordanian public and private universities. Therefore, it is necessary to understand the concept of the research choice to fill a gap or generate new knowledge that can contribute to the KM and TQM field. Specifically, the new knowledge is related to investigate the integration between KM and TQM and to answer the question about how private educational organisations consider KM and TQM and if public universities are different from private universities. Although both public and private universities are under the Ministry of Higher Education rules and regulations, it is still important to understand the nature of KM and TQM in both types of universities. So a number of theoretical assumptions were

adopted to grasp the nature of the current research problem as well as the methodological strategy. As indicated in Chapter 1, the research background on KM and TQM is associated with literature and the design of the current research. Literature helps develop research focus and its approach for deriving the required data for analysis and discussion (Labaree, 2013). Literature has highlighted two research philosophies or paradigms to include positivism and phenomethalogy (Collis and Hussey, 2003). These depend on the assumptions made related to the research. In this respect, Hughes (1994) listed the main character of research assumption to include matter, aspects as mind, reason, truth, nature, and proof of knowledge.

The research in this study is mainly descriptive and interpretive and focuses on different perspectives related to KM and TQM and how respondents in the two types of universities perceive KM and TQM-related issues. The interpretation of the results is analysed by statistical methods to evaluate respondent perceptions quantitatively. Therefore, the research philosophy of this study was not lead methodologically but was conducted by the methodological choice that is suitable for the current study.

Philosophically, social science research is associated with two concepts: the positivist and phenomenological. Social research is directly associated with the social context, reflecting the interaction between ideas regarding the social paradigm and the collected data on it (Bryman, 2012). Other methodologists indicated that social research involves a dialogue between ideas and evidence (Ragin, 1994). According to Ragin (1994), ideas help social researchers to make sense of evidence, and researchers use evidence to extend, revise, and test ideas. The end result of this dialogue is a representation of social life-evidence that has been shaped and reshaped by ideas presented along with the thinking that guided the construction of the representation (Ragin, 1994, p. 55). In addition, social research can be influenced by various researcher perspectives, including ability, assumption, aim, interest, values, and ambitions (Collins & Hussey 2009). The concept of social studies involves various interrelated perceptions, including ontology, epistemology, and theory. Thus, method cannot be separated when conducting research (Hesse-Biber & Leavy, 2006).

In addition, the philosophical suppositions of social research are associated with positivist, interpretive, and critical approaches. In this respect, identifying, measuring, evaluating, and providing rational explanations for phenomena are classified as positivist approaches (Lather, 2006). The concept of a positivist approach assumes that social phenomena are like objects in natural science. The purpose of a positivist

approach is to test theory and encourage better understanding of phenomena (Myers, 1997). In addition, Hammersley (2007) indicated that causes determine effects. Thus, this approach aims to contribute to directly observing, quantitatively measuring, and objectively predicting relationships between variables. As such, the positivist approach can be applied to the current research to quantitatively measure the perceptions of academic staff on EP in relation to the integration of KM and TQM. Thus, the positivism approach should involve a defined methodology for ensuring reliability and internal and external validity (Parr & Shanks, 2000). The concept of interpretive research places emphasis on the element of social constructions. These elements involve the awareness, shared meaning, and language needed to understand the phenomenon of social research. This critical concept in social research highlights the desire for improving human conditions. Therefore, the third concept focuses on human behaviour and assumes individuals are different from each other (Parr & Shanks, 2000).

The research philosophy that governs the current research is associated with the positivist paradigm since it refers to the subjective aspects of human activity by focusing on the substance rather than the measurement of the social phenomena (Johnston, 1986). This notion is managed by the quantitative approach for collecting data. In addition, this school of thought also believes that a commitment to quantitative precision and accumulation of facts is the only method to gain a closer estimation of a reality that exists independent of human discernment (Rubin et al., 1996). The research value of undertaking this research is primarily associated with the originality of this research and an obvious lack of previous research on this subject (Creswell, 2013).

Practically, it is important to differentiate between methodology and method. Although both terms are interrelated, the research methodology is the utilisation of approaches to inquiring into specific matters, while methods are techniques used to gather data (Grix, 2002). According to Blaxter et al. (2010), methodology refers to the philosophical meaning of collecting the data, while method denotes the technique of collecting the data. In addition, other researchers have expanded the concept of research methodology to include five issues: where, why, what the collected data is, and how data are collected and analysed (Collis & Hussey, 2009). These issues reflect the notion related to identifying something unidentified and making it known through collecting and analysing data (Gall et al., 2007). In order to find the unknown, a research approach that is most suitable for the study must be specified. In the current research, the quantitative approach was used. This approach is more suitable to this study as it involves an online

questionnaire. Therefore, the method for collecting data was through an online questionnaire that was sent to participants' email addresses. In this respect, online Survey Creator Software was used. In contrast, the other approach (qualitative) was thought to avoid biased opinions. These two approaches are commonly used in social research, either individually or combined (Bell, 2005; Blaxter et al., 2010).

The rest of this chapter provides the design, approach, concept and methodology that involves looking for and collecting data that helps to translate the philosophy into actual practice.

5. 3 Research Design and Methodology

Research design is an important part of how research components are planned and integrated in a coherent perspective and logical method (Kirshenblatt-Gimblett, 2006). It involves making various decisions regarding conducting the research problem and the level of analysis that is required to effectively answer the research question and justify the hypotheses (Sekaran & Bougie 2003; McDaniel & Gates, 1999). The previous chapters discussed the main issues related to stipulating the main research problems and justified their choice. Subsequently, different hypotheses were explicitly specified. In addition, the background to the research problem was supported by various literature. These initial steps in designing the current research are followed by other steps, which are related to the selection and design techniques for data collection and statistical analysis. Therefore, the following sections address the steps that were adopted in the design of the current research.

5. 3. 1 Research Approach

This research adopts the quantitative approach using the questionnaire technique. The objective of the quantitative research is closely related to the concept of positivism, as the research requires the hypotheses to be tested statistically. Therefore, the quantitative data can be obtained by the questionnaire technique. As such, the different components of the questionnaire should be examined to observe how respondents perceived various issues related to the current research problem. The questionnaire is based on numerical data collection. The choice for the questionnaire is described and discussed in the next sections.

5. 3. 2 Rationale of the Research Technique

Social methodologists have devised different techniques for collecting data in social research. They identified these techniques according to two research approaches, the quantitative and qualitative (Bell, 2005; Blaxter et al., 2010; Collins & Hussey, 2009). The main difference between these two approaches is the measurements employed in collecting and analysing the data. The quantitative research emphasises quantification in the collection and analysis of data. In contrast, the qualitative approach emphasises words rather than numerical data in data collection and analysis. In this context, the quantitative research involves a deductive approach and the qualitative research entails an inductive approach in which the accent is placed on testing or generation of theories, respectively. As indicated above, the quantitative approach was adopted in the current research. The purpose of this technique is to collect data for investigating the integration between KM and TQM and how they affect the EP in HE.

Generally, the questionnaire technique is an effective means of gathering information and is frequently used by many researchers for quantitative data collection (Blaxter, 2010). Therefore, it has various advantages, including reliability and anonymity, which encourage participants to respond and answer questions. In addition, the questionnaire technique is more economical in terms of time and money in obtaining information (Bell, 2005; Blaxter, 2010). Furthermore, it is faster and generates high-retained rates of data compared to the interview technique. Another advantage in using the questionnaire is that it can reach large numbers of respondents regardless of the distance. Thus, the administration of the questionnaire is much easier to approach compared to other social research techniques, including interviews.

With the fast expansion of software, it is efficient to convey the questionnaire digitally to a large number of targeted contributors. In this respect, a number of online questionnaire software and online survey services have been developed to aid researchers in administering their questionnaire to the sample population. Thus, the Internet-based survey can save time and reduce research costs despite being separated by geographic distances (Wright, 2005). There are different methods to invite participants of a community of interest, including email or posting the questionnaire directly online through different survey providers, including Smart Survey, Web Survey Creator, Research Online, and eSurvey Creator Software (Andrews et al., 2003). These incentive means of collecting data can provide access to samples beyond the researcher's reach and access a database of participants for full analysis.

5. 4 The Questionnaire

5.4.1 Development of Questionnaire

A questionnaire is a set of questions for measuring the perceptions of respondents quantitatively. The main objective of the questionnaire is to translate the researcher's information needs into a set of questions that respondents are willing and able to answer (Malhotra & Peterson, 2006). Therefore, the current research is about investigating respondents' perceptions associated with the interrelationship between KM and TQM. These two issues are important for EP and quality of HE. In order to study these issues, it was essential to develop the research instrument for conducting the survey. Therefore, a relevant questionnaire was developed to reflect the aim and objectives of the main core of this study. The development of the questionnaire passes through different steps (Churchill & Iacobucci, 2010). The earlier stage of research is formulating the main components of the research project, including the research problem, research questions, objectives, and hypotheses. These specific components help keep the questionnaire design focused. In this respect, understanding the specific components that are related to KM and TQM in HE are important steps in designing the specific questionnaire. Therefore, a continual review of the relevant literature and an understanding of the nature of modern academic processes were the main source for understanding the components of KM and TQM issues. Literature was the main source of setting up the main variables that are illustrated in Table5.1.

Table 5 1 Variables and Measurement Items.

Variable	Measurement items	Sources
KM processes	▪ Knowledge creation. ▪ Knowledge storage. ▪ Knowledge distribution. ▪ Knowledge application.	Lawson et al. (2003)
KM technology	(LAN) web. Administrative units with a network of computers. Update information system. Email, automated retrieval of information, word processing, audio-video conferences.	Trigg (2000)
Team of knowledge	Knowledge-makers. Knowledge managers. Students' KM.	Trigg (2000)
Effective leadership	The senior administration adopts a strategic plan to achieve quality. College adopts the principle of quality as the responsibility of all sections. College administration puts forward plans for	Logothetis (1997, p. 94)

Variable	Measurement items	Sources
	continuous improvement and encouragement of employees. Communication channels to the market place should be available. The college has competent research and development units to determine the needs and desires of the market place. Higher administrative decisions are made on the basis of facts. Higher administration makes a radical change to make the quality a part of the organisation's system.	
Continuous Improvement	▪ There are teams equipped with the necessary supplies to improve quality. ▪ There is a specific and a clear-cut program to avoid mistakes. ▪ There are statistical methods and tools to test and measure the quality of graduates. ▪ Devise ways and means continuously to help improve the quality of EP. ▪ Workers receive training to be aware of the opportunities and improvement targets.	Dahlgaard et al. (1998) and Seddon (1997)
Staff Involved	▪ Faculty members partake in making strategic decisions regarding quality. ▪ Faculty and staff are entitled to resolve major problems related to graduates. ▪ Efficient system to motivate individuals. ▪ The system rewards persons showing creativity. ▪ Facilitate communication. ▪ Efficient programs that help faculty members get acquainted with the objectives and mechanism.	Partlow (1996)
Internal Processes Perspective:	▪ Continuous increase in the productivity of faculty members. ▪ Continuous increase in the rate of the production capacity of the administration. ▪ Continuous increase in the rate of use of the educational technology. ▪ Continuous increase in the rate of development curriculum and educational programs. ▪ Continuous increase in the rate of development for educational environment.	Kaplan and Norton (1992)
Customer (stakeholder) Perspective	▪ Internal stakeholders. ▪ External stakeholders (marketplace).	Kaplan and Norton (1992), Williams (1999), Dobbin and Fowler (1997)
Learn and grow Perspective	▪ Technological innovation. ▪ Administrative innovation. ▪ Additional creativity.	Kaplan and Norton (1992) Hill and Jones (2001)
	Total number of statements = 90	

The next step in developing the current questionnaire was writing a set of statements in a way that ensures they are easy to understand by respondents. The statements were then organised and categorised into different sections according to the purpose of this study. The researcher believes that such strategy in the development of the questionnaire is important to answer the research questions and to justify the research hypotheses. As indicated in Chapter 1, sets of research questions and hypotheses were prepared according to the aim and objectives of this study. Furthermore, Likert (1932) rating scales were set up with a five-point scale (Table 5.2) for respondents to select the categories that best describe their perceptions on different statements. This response scale was selected because of the recommendation of researchers (Lopez et al., 2009). The final step in the design of the questionnaire in the current study involved examining and re-examining whether statements in different sections reflected the purpose of this study in investigating the perspectives of KM and TQM in HE, specifically at Jordanian universities. A few changes were made before the final draft of the questionnaire was developed. This step was followed by conducting a pre-test, which was necessary for the development to be clear and reliable (Churchill & Iacobucci, 2010). In the pre-testing, the researcher gave the questionnaire to a few experts in the field for review. A few suggestions and changes were made by the reviewers, which were taken into consideration.

Table 5 2 The Likert rating scale used in this study.

Likert scale	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Symbol	SD	D	N	A	SA
Individual statement	.....	.....	.....	.....	.....

5.4.2 Structure of the Questionnaire

In addition to the information listed in Table 5.1, Table 5.3 (see also Appendix. A) illustrates the general structure of the questionnaire. The questionnaire was organised to include two main sections. The first section is related to independent variables, including gender and age. This section of the questionnaire was aimed to collect data regarding the nature of the respondent's background. Generally, these variables do not change and cannot be influenced by external factors, compared to the variables that are often influenced by how individual respondents perceive certain issues. Therefore, variables in Section B are considered dependent variables.

The structure of Section B includes nine sub-sections (B-1 to B-9). Each subsection deals with certain issues related to both KM and TQM. In addition, each sub-section contains a different number of statements, which form the main core for collecting the data. The analysis of the collected data gives an insight into how respondents perceive KM and TQM–related issues and how the perception of respondents can impact the higher educational process at Jordanian universities.

Table 5 3 The general structure of the questionnaire

Category	Content
Section A: Demographic information	Gender, age group, degree, academic ranking, how long you have been working in this field, current position, university affiliation
Section B: Independent variables or the categorised statements related to the integration of KM and TQM and their impact on EP	

	Dependent variables	Number of statements
B-1. KM processes		
I	Knowledge Creation: university administration depends on the following to create knowledge.	5
II	Storing Knowledge: university administration depends on the following to store knowledge.	4
III	Knowledge Distribution: university administration depends on the following to distribute the knowledge.	6
IV	Application of knowledge: to apply the knowledge, the university administration should	5
B-2. KM Technology		8
B-3. Knowledge-related variables		
I	Knowledge Team	3
II.	Knowledge managers: university knowledge managers carry out the following	4
III.	Students' KM	5
B-4. Effective Leadership (TQM Processes)		7
B-5. Continuous Improvement		5
B-6. Staff Involvement		8
B-7. Internal Processes Perspective		5
B-8. Stakeholder related variables		
I	Stakeholder Perspective	6
II.	External Stakeholders	4
B-9. Learn and grow perspective		
I.	Technological Innovation	3
II.	Administrative Innovation	3
III.	Additional Creativity	2
	Total	90

Therefore, the structure and flow of topics are an essential part of the questionnaire structure to make it friendlier to the respondents. Well-mannered structure contributes to making the questionnaire easy for respondents to give the necessary information and for

the researcher to collect accurate and efficient data. In this respect, both the logical nature and clarity of the statements often encourage respondents to complete the questionnaire.

5.4.3 Piloting the Questionnaire

Piloting the questionnaire is an important step, which comes after the first draft. It is often suggested to have other opinions about how to design a sound questionnaire. The purpose of presenting the questionnaire to be pre-assessed is to check the wording, the order of statements, whether they are understood by respondents, whether some statements require elimination, and whether the questionnaire is adequate. Therefore, a copy of the first draft was distributed to ten academic staff for review to identify any mistakes that needed correction. They were asked to give comments and make changes to the first draft of the questionnaire. The researcher emphasised the clearness of the statements, the structure of the questionnaire, and that the content should be closely related to the main subject. Responses from the proofreading of the questionnaire resulted in a few comments that were mainly related to the statements it contained. The comments recommended changing the concept of a few statements. However, as the content of the questionnaire was derived from literature (Table 5.4), comments related to the concepts were not considered. However, some contextual changes were made, especially those that improved the statements to make them clearer.

The next step in the development of the current questionnaire was to send it to the supervisor for proofreading to achieve the desired results. Professor Les Ruddock suggested some changes related to the soundness of the questionnaire and eliminated some statements. Thus, the final draft of the questionnaire was downloaded online and emails were sent to the sample population.

Table 5 4 Jordanian universities that were involved in the current study..

Public Universities	Websites
1. The University of Jordan	www.ju.edu.jo
2. Yarmouk University	www.yu.edu.jo
3. Mutah University	www.mutah.edu.jo
4. Jordan University of Science & Technology	www.just.edu.jo
5. The Hashemite University	www.hu.edu.jo
6. AL al-Bayt University	www.aabu.edu.jo
7. AL-Balqa Applied University	www.bau.edu.jo
8. AL-Hussein Bin Talal University	www.ahu.edu.jo

9. Tafila Technical University	www.ttu.edu.jo
Private Jordanian Universities	
1. Amman Arab University	www.aau.edu.jo
2. Middle East University	www.meu.edu.jo
3. Jadara University	www.jadara.edu.jo
4. Al - Ahliyya Amman University	www.amman.edu
5. Applied Science University (Private)	www.asu.edu.jo
6. Philadelphia University	www.philadelphia.edu.jo
7. Isra University	www.isra.edu.jo
8. University of Petra	www.uop.edu.jo
9. Al-Zaytoonah University of Jordan	www.alzaytoonah.edu.jo
10. Zarqa University	www.zpu.edu.jo
11. Irbid National University	**www.inu.edu.jo**
12. Jerash University	www.jerashun.edu.jo
13. Princess Sumaya University for Technology	www.psut.edu.jo
14. Jordan Academy of Music	www.jam.edu.jo
15. Jordan Applied University College of Hospitality and Tourism Education (JAU)	www.jau.edu.jo
16. Faculty of Educational Sciences and Arts-UNRWA	www.fesa.edu.jo
17. Red Sea Institute of Cinematic Arts	www.rsica.edu.jo
18. American University of Madaba	www.aum.edu.jo
19. Ajloun National Private University	www.anpu.edu.jo
20. University of Banking & Financial Sciences	www.ubfs.edu.jo

http://www.mohe.gov.jo/brief/briefMohe1/tabid/558/language/en-US/Default.aspx

5. 5 Sample population

A sample population is part of the whole targeted population. In order to test certain populations, it is essential to make use of adequate sampling methods (Collis & Hussey, 2009). They explain two categories of sampling: probability sampling and non-probability sampling. These are related to whether the population is known or unknown, respectively. The sample in the current research is classified as a probability sampling, as the population in this study is known. Generally, the random method in selecting a sample population is a common method in social research. The advantage of this method is that a random sample is more representative of the entire population. Sample populations are often used when the population is large. Therefore, as it would be impractical and uneconomical to collect data from every single person in a given population, it is too time consuming and costly to collect data regarding every member of the population (Kelley et al., 2003; Collis & Hussey, 2009, Saunders et al., 2007).

However, when the total population is small, it is normal to collect data regarding each member of the population.

In the current research, the population size of this research was 500 members (academic staff, deans, and heads of departments) at both public and private universities in Jordan (Table 5.1). The list of the population members to be surveyed (sampling frame) was up-to-date and was obtained from a reliable source to enhance the external validity of the survey. The method by which the sample was selected from a sampling frame is integral to the external validity of the survey. The sample must be representative of the larger population to obtain a composite profile of the population (Kelley et al., 2003). Response rates are a potential source of bias. The results from a survey with large non-responses could be misleading and only representative of those that replied. It is unwise to define a level above which a response rate is acceptable as this depends on many local factors; however, an achievable and acceptable rate is 65% for self-completion postal questionnaires (Gilbert, 2008). The survey method was considered suitable for this study and the justification was elaborated in Section 3.7. The survey was targeted at the key players in staff in HE universities of Jordan. In general, every survey is involved in the issue of sampling. This is to use a range of techniques, either probability sampling or non-probability sampling, which enables the researcher to collect data from a sub-group, rather than a whole target population (Saunders et al., 2007). This research is concerned with the integration of KM and TQM and its impact on the EP in Jordanian HE, although the target sample must be as representative as possible of the key players in Jordanian HE. More importantly, with respect to the survey methodology, a small sample size is suitable for this research to be as generalizable and representative as possible.

5. 6 Data Collection

The research problems of the study should be constructed in order to choose a good data collection method (Tull & Hawkins, 1987). As such, in this section the choices made will be discussed considering the particular problems inspected and consequently examined at each level.

5. 7 Survey Research

As indicated above, the quantitative survey method is widely used in social research, which was adopted here for descriptive and causal research designs. According to Hair et al. (2010), survey research is distinctive from other types of methods because data

can be collected in a large quantity from the specified sample of Jordanian university employees using a questionnaire. Moreover, two other situations attest to the importance and appropriateness of this design. The first is when the variable(s) of interest cannot be controlled by the researchers, and the second is when the respondents of the study cannot be allocated, assigned, and controlled in the way that it can be done in experimental studies.

Furthermore, the questionnaire method is considered appropriate for the present study because through this method responses can be acquired from the respondents more accurately and completely (Malhotra, and Krosnick 2007). Therefore, survey research is considered best suitable for the present study in order to effectively examine the research hypotheses and questions.

5. 8 Reliability and Validity of the Questionnaire

To avoid the possibility of obtaining misleading results and to increase the accuracy of the result findings, close attention is needed in selecting valid and reliable research instruments (Saunders et al., 2007).

5. 8. 1 Reliability

Consistent and similar results obtained by different researchers would be an important indicator of reliability (Saunders et al., 2007). In addition to rapid change in the area of the integration of KM and TQM and its impact on EP, time and cost constraints might cause some difficulty in assessing the reliability of the same criteria. In order to avoid that, adequate effort and attention at each stage of planning, designing, conducting, and analysis would ensure the reliability of the research. Saunders et al. (2007) have indicated that it is likely the validity and reliability of collected data will be increased by a pre-test. Therefore, a pre-test has been conducted for this research.

5. 8. 2 Testing Reliability

Reliability is defined as an assessment of the reproducibility and consistency of an instrument. For self-completion questionnaires, two aspects of reliability should be examined.

Test-retest reliability was completed by requesting individuals to complete the questionnaire on two separate occasions approximately two to three weeks apart, assuming that their circumstances will not have changed in the interim. The two sets of responses can then be compared statistically using weighted Kappa (Altman, 1991) for

categorical data and Spearman's rank correlation coefficient (or its nonparametric equivalent, the Wilcoxon rank sum test) for continuous data.

The internal consistency of the questionnaire can be determined by asking questions in more than one way during the questionnaire. The responses given can then be compared as mentioned before.

5.8. 2.1 Reliability Analysis:

In order to assess the reliability of the amassers of the respondents, a sample of size 5 was selected to re-respond to the survey on a second round, and their responses were manipulated and pre-processed as was done in the first round of the survey. The Spearman's correlation was then measured between the answers of a respondent in the first round and their respective answers in the second round. Table 5.5 below shows the measured correlations:

Table 5. 5 measured correlations between the answers of a five respondents at two periods of time.

Respondent	Correlation
Respondent 1	0.9734423
Respondent 2	0.95074116
Respondent 3	0.94521052
Respondent 4	0.8870083
Respondent 5	0.98492110

As can be clearly seen from the table above, there exists a high correlation between the answers of the respondents in both survey rounds, which indicates that the answers collected were not random, which in turn indicates that the data collected is reliable enough to conduct the analysis upon.

5. 8. 3 Testing Acceptability

The qualitative method may be conducted to assess the acceptability of the questionnaire. According to William (2007), the subjects included in the pilot study should be asked to write their comments about the questionnaire on a separate sheet to indicate how they found answering the questionnaire during the validity testing and how long it took them to complete the questionnaire. In this study, all the respondents'

information was included in the cover letter that was used to accompany the questionnaire survey.

In order to measure the validity of the questionnaire used in this study, a number of procedures were followed in this research:

The goal of this was to validate the questionnaire and to avoid the possible confusion of each individual question, which might lead to misinterpretation of the data. The translated version was then pre-tested with selected relevant informants. Pre-testing is an important step in which the researcher can discover problems of comprehension or connotation that were not identified previously (Douglas & Craig, 2007).

A draft version of the questionnaire was presented to experts similar to the target population for comments as addressed by (Al-Awwad, 1991). The pilot questionnaire was designed and distributed to a number of researchers within the University of Salford who have experience in questionnaire design, including Prof. Les Ruddock, the supervisor of this thesis.

5. 9 Self-Administered Questionnaire

To administer the questionnaire form to a sample population, the researcher used the online eSurvey Creator (https://www.esurveycreator.com/s/dbd9332). This application, eSurvey Creator, offers a quick and easy way to create and automatically evaluate web surveys on any possible topic. In addition, it facilitates intuitive support in designing the web survey and linking the online survey by email, thereby members of the sample population were directly invited to participate in the current survey. Although SPSS was used in the analysis of the collected data, this online software provided descriptive analysis, including graphs, and organised data in an Excel sheet. A period of about two months was given to participants to receive the completed questionnaire. Each questionnaire administered was accompanied by a cover letter, an introductory page that contained the objectives of the study, research definitions, and the benefits of the study to respondents. The total responses to the questionnaire after two months were 351, or 70.2% of the questionnaires. Twenty questionnaires (5.7%) were incomplete and were excluded from the study.

This study employed a response rate calculation that removed partially completed questionnaires and non-responding participants, based on the response rate calculation as suggested by Bryman (2012), where only the number of usable questionnaires is considered.

Response rate (%) = [number of usable questionnaires/total sample-unsuitable members of the sample], therefore,

Response rate (%) 351/529-29

Using this calculation, the response rate was 70.2%, which is within the range of response rates of many questionnaires. In the first method of self-administration of the questionnaire (online administration), the questionnaire is sent to the respondent using either email or another portal, making the entire process electronic. In the second method (postal or mail administration), the questionnaire is posted to the addresses of the respondents, either home or office, and after completion of the questionnaire, it must be returned back to the researcher(s). In the last self-administered questionnaire method (drop-off questionnaire), the questionnaire is given to the respective respondents by hand by the researcher and is collected later after completion (Saunders et al., 2007). In this study, the researcher chose the first method, which was the online self-administration of the questionnaire (online administration).

5. 10 Conducting the Case Study

The case study was conducted in Jordan during the period from May to June 2013. All the questionnaires were carried out via email to have the opportunity to access the relevant documents.

According to the Malcolm Baldrige National Quality Award (MBNQA, 2004), senior leaders/leadership are referred to as those with the main responsibility for managing the overall organisation. Senior leaders may include administrators and faculty leaders. In this research, senior leaders refer to the dean of the faculty, the heads of departments, and staff members (Table 5.4).

The number of questionnaires in the two parts of the case study organisations was 300 in the first part, including the registrar and the dean of the university, who is a member of the Jordan HE committee, and was 200 in the second part. Those who consented to answer a questionnaire for both cases include: five faculty deans and five faculty heads of department, which covers 100% from the target questionnaire. Also, this included six heads of department for each case, which covers 3% from first part of case study and 4% from second part of case study (Table 5.5) and 290 staff members for first part of the case study and 190 staff members in second part of the case study. Therefore, the sample population was 500. The distribution of the sample population is illustrated in Table 5.5.

Table 5 6 Questionnaire groups from the two parts of case study organisations

Position of the interviewees	Referred in the findings
Dean of the Faculty,	Senior Leader (SL)
Heads of Academic Departments	Heads of Academic Departments (HODs)
Staff Members	Academic Staff and Administrations Office (STM)

Table 5 7 Presents the details of those participants.

	Target	First part of case study	Second part of case study	Total each level
	Senior Leaders (SL)	5*	5*	10
	Heads of Department (HOD)	5	5	10
	Staff Members (STM)	290	190	480
Total each case		300	200	500

*One from each level

Researchers who use logical positivism or quantitative research employ experimental methods and quantitative measures to test hypothetical generalisations (Hoepfl, 1997), and they also emphasise the measurement and analysis of causal relationships between variables (Denzin & Lincoln, 1998).

5. 11 Data Analysis

Analysis is about the search for explanation and understanding of the collected data. The collected data in this thesis are quantitative, which can be analysed descriptively and by multivariate analysis techniques (Blaxter et al., 2010). Descriptive methods of analysis were used to explore the demographic variables and to understand the characteristics of the acquired data and sample. In addition, various statistical analyses were used (see Chapter 4, Section 4.2). These include factor analysis, fitness of the measurement model, and validity of latent and correlation.

5.11. 1 Descriptive Analysis

Descriptive analysis is mainly used to describe the phenomena of interest (Sekaran & Bougie, 2010). In such analysis, descriptive information is analysed statistically in terms of how frequently certain phenomena occur (frequency), the average score or central tendency (mean), and the extent of variability (standard deviation). In this study, descriptive analysis was conducted in all sections of the research instrument. Other statistical analyses were also conducted in the current study. These are described

in the following sections.

5.11. 2 Correlation Analysis

Understanding the relations between variables is usually ~~is~~ interesting subject for empirical researchers, managers, and also decision makers. Sekaran (2003) proposes that to measure the relationship between two variables, researchers need to compute the correlation coefficients of observed variables. Therefore, this study employed the Pearson Correlation method to determine the numeric linear relationship among variables and sub-variables of the study (see Figure 1.2). In this respect, Spearman's correlation is not suitable for measurement of the relationship between different variables, as it is applied to the measurement of non-parametric ranges and monotonic relationships (Fujita et al., 2009; Hanke and Kossowski, 2011). The magnitude of coefficients shows the strength of a relationship and the value closer to +1 or -1 indicates the strength. The direction of relationship is determined by the sign of correlation coefficients. Results of paired correlation among the latent constructs of the study are presented in Table 4.18 in the next chapter.

Correlation analysis is primarily designed for measuring the association between two variables. In other words, correlation analysis measures how a variable relates to another variable (Hair et al., 2007; Sekaran & Bougie, 2010). Correlation analyses in this study consist of Pearson's correlation and canonical correlation.

Pearson's correlation is used to assess the linear association between variables of a continuous data, and as participants' responses are actually the averages of Likert scores across a set of statements (detailed in the case study in chapter 7 and in chapter 8) and are not the raw Likert scores, Pearson's correlation was used. In contrast to this, canonical correlation was used in the above reported reliability analysis as the analysis was conducted directly on the raw ordinal data (Murray, 2011 & Norman, 2010).

The number representing the Pearson correlation is referred to as a correlation coefficient. By using Pearson's correlation analysis, the researcher was able to understand the nature, direction, and significance of the bivariate relationship of the variables used in the study (Sekaran & Bougie, 2010). In addition, canonical correlation was also employed to examine the relationship between two sets of variables (Hair et al., 2010). In this study, canonical correlation analysis was employed to predict the relationships between the set of TQM elements and the set of KM elements, between

the set of TQM elements and the set of EP perspectives, and between the set of KM elements and the set of EP perspectives

5.11. 3 Multiple Regression Analysis

There is always a deficiency in the result of the correlation coefficient as it only gives the degree of relationships between the variables under test without necessarily giving an idea of how much the variance in the dependent variables or criterion variable will be explained when several independent variables are theorized to simultaneously influence it (Sekaran & Bougie, 2010). The correlation may exist not only in the relationship between independent variables and dependent variables but also among themselves or inter-correlations. Thus, multiple regression analysis was used to measure the concurrent effects of several independent variables on a dependent variable (Cavana et al., 2001; Sekaran & Bougie, 2010).

Adjusted R^2 is the statistic that can be used to measure how well the dependent variables can be predicted by the independent variables. Sample size has a direct impact on the statistical power of multiple regression. It is suggested that the minimum ratio is (5 to 1), meaning that there must be five observations for each independent variable (Hair, et al., 2010). Four assumptions that must be met under regression analysis are linearity, heteroscedasticity, normality and no serious multicollinearity problem (Coakes & Steed, 2007; Hair et al., 2010).

In the present study, regression analysis was applied to measure the significance of the relationship between TQM elements and KM elements, between TQM elements and EP perspectives, and between KM elements and EP perspectives. This analysis also provided information regarding the linear relationship between TQM elements with both KM elements and EP, and the linear relationship between KM elements with EP perspectives.

To investigate the linear relationship between TQM core elements with KM elements and EP, separate regression models were developed for each dependent variable so that two general models were posited. The first model was aimed to measure the linear relationship between TQM elements and KM elements, while the second model was developed to find out the linear relationship between TQM elements and EP perspectives.

5.11. 4 Structural Equation Modeling

Structural Equation Modeling (SEM) is a statistical methodology used by behavioural,

social, and educational scientists (Raykov & Marcoulides, 2006; Byrne, 2010). SPSS is also a family of statistical models and multivariate techniques, with mixing characteristics of factor analysis and multiple regressions that enables the researcher to test simultaneously a series of interrelated dependence relationships among the measured variables and latent constructs (Hair et al., 2010). In this study, the Statistical Package for the Social Sciences SPSS was applied for assessing the role of the relationship between KM and TQM.

Many researchers and statisticians (e.g., Bollen, 1989; Hair et al., 2010; Iacobucci, Saldanha, & Deng, 2007; James, Mulaik, & Brett, 2006; Kline, 2011) have revealed that SPSS performed better than regression while assessing the mediating role of a research variable. Hence, suggesting that SPSS was a superior statistical technique over the regression. According to Hair et al. (2010), the standard errors in the SPSS model are minimized due to the simultaneous estimation of all parameters in the SPSS model.

5. 12 Summary

This chapter focused on the methodology that was adopted in the current research. It highlighted the main issues related to the philosophical assumption of the research design, sample population, and setting up the quantitative approach for collecting the necessary data. The next three chapters will deal with the statistical analyses of the quantitative data that were obtained by the questionnaire.

CHAPTER SIX

DATA ANALYSES AND RESPONDENT CHARACTERISTICS

6. 1 Introduction

The previous chapter focused on the concept of methodology that was adopted in the current research. The outcomes of the previous chapter are discussed and analysed here and in the next chapters. The current chapter deals with analysing the characteristics of the academic staff or demographic data of the responses to the online questionnaire. Generally, the main characteristics of respondents were included in the questionnaire. These included gender, age group, degree, academic ranking, time worked in the field, current position, and university affiliation.

The Statistical Package for the Social Sciences (SPSS) was used to analyse data that were obtained from the questionnaire. The total number of respondents was 351 or 70.2%. These respondents belonged to two groups: academic staff in Jordanian public universities (200, 66.7% out of 300 academic staff) and academic staff in Jordanian private universities (151, 75.5% out of 260).

The demographic data that were obtained from the questionnaire were analysed statistically by SPSS. These included mainly descriptive statistics, which summarise and describe data related to the demography of respondents, the mean, and standard deviation. This chapter includes the characteristics of respondents.

6. 2 The Demographic Characteristics of Respondents

The demographic portion of the questionnaire was designed to get a clear picture concerning the characteristics of respondents. These demographic variables were analysed quantitatively by mainly frequencies and percentages (Tables 6.1 to 6.7), using SPSS. The data in these tables were organised by two main variables, sample group (respondents in public and private universities) and the individual demographic variables, such as gender and age.

6. 2.1 Responses by Gender and Age Group

Tables 6.1 reveal the results of the respondent distribution in public and private universities according to gender. The majority of respondents were male 81% and 77.5% in public and private universities, respectively (Table 6.1). Female respondents were 19% and 34% in public and private universities, respectively. In both types of

universities, male respondents were four times the number of corresponding female respondents.

Table 6. 1 The distribution of respondents by sample population group and gender.

Gender	Public Universities		Private Universities		Total	
	No.	%	No.	%	No	%
Male	162	81	117	77.50	279	79.49
Female	38	19	34	22.50	72	20.51
Total (%)	200	100	151	100	351	100

Table 6.2 illustrates the distribution of respondents by age group, but they dropped at 56 years of age and over. The distributions of both male and female respondents have the same pattern of distributions at both public and private universities. The majority of male respondents were between 41 and 45 years of age at 45% and 39.1% in public and private universities, respectively.

Table 6. 2 The distribution of respondents by sample population group and age groups.

Age group	Public Universities		Private Universities		Total	
	No.	%	No.	%	No.	%
24-40	56.00	28.00	48.0	31.8	104	29.63
41-45	90.00	45.00	59.00	39.1	149	42.45
Over 56	54.00	27.00	44.00	29.1	98	27.92
Total (%)	200.00	100.00	151.00	100.00	351	100.00

6. 2.2 Responses by Academic Degree Level

Table 6.3 indicates that the majority of respondents (87%) held a Doctorate degree, while the rest (13%) of respondents held Master's degrees in public universities. Responses from both public and private universities exhibited similar trends with slight differences in which responses from private universities were similar to the corresponding respondents from public universities.

Table 6. 3 The distribution of respondents by sample population group and academic degree.

Academic Degree	Public Universities		Private Universities		Total	
	No.	%	No.	%	No.	%
Bachelor	01.00	0.50	-	-	1	0.28
Master	26.00	13.00	18.00	11.9	44	12.54
Doctorate	173.00	87.00	133.00	88.1	306	87.18
Total	200.00	100.00	151.00	100.00	351	100.00

6. 2.3 Responses by Academic Degree, Experience, and Position

Table 6.4 shows respondent's distribution by academic rank in which lecturers showed the lowest distributions among other academic ranks. The respondents with higher ranks increased proportionally in public universities. However, in the private universities, the differences among academic ranks were slightly lower than the corresponding public universities.

Table 6. 4 The distribution of respondents by sample population group and academic rank.

Academic Rank	Public Universities		Private Universities		Total	
	No.	%	No.	%	No.	%
Lecturer	27.00	13.50	18	11.9	12.82	12.82
Assistant professor	51.00	25.50	44.00	29.1	27.07	27.07
Associated professor	58.00	29.00	40	26.5	27.92	27.92
Professor	64.00	32.50	49	32.5	32.19	32.19
Total	200.00	100.00	151.00	100.0	100	100

Table 6.5 shows responses by work experience in which the results are in agreement with the previous results in Tables 6.6 through 4.8. The majority (42%) of responses in public universities were from academics with work experience of eleven or more years. However, the highest (56.29%) responses in private universities belonged to academic groups with eleven or more years of experience. The other two groups (one to five years and six to ten years) were between 21.19% and 22.52%, respectively.

Table 6. 5 The distribution of respondents by sample population group and work experience.

Years	Public Universities		Private Universities		Total	
	No.	%	No.	%	No.	(%)
1-5	32	16	34	22.52	66	18.80
6-10	84	42	32	21.19	116	33.05
11 or more	84	42	85	56.29	169	48.15
Total (%)	200	100	151	100	351	100.00

Results in Table 6.6 indicate the vast majority (more than 95%) of respondents belonged to faculty member groups in both public and private universities. Five deans and four vice deans, or 83.33% and 66.67%, respectively, participated in this study, while none of the corresponding deans or vice deans in private universities participated in the survey.

Table 6. 6 The distribution of respondents by sample population group and current position.

	Public Universities		Private Universities		Total	
	No.	%	No.	%	No.	(%)
Faculty member	191.00	95.5	151.00	100.00	342	97.44
Dean	5.00	2.5	0.00	0.00	5	1.42
Vice Dean	4.00	2.0	0.00	0.00	4	1.14
Total (%)	200.00	100.00	151.00	100.00	351	100.00

6. 2.4 Responses by Sample Degree, Population Group, and Affiliation

Table 6.7 reveals the number of respondents by their affiliations. Responses from Yarmouk University (25%) and the Jordon University of Science and Technology (25%) exhibited the highest number of participants among private universities, while 27.85% of the responses from private Universities were from Philadelphia University (Table 6.7).

6. 3 Summary

This chapter described the distribution of respondents in both public and private universities. The results indicated that there is close similarity between the two types of the universities in relation to different demographic characteristics of respondents, including gender, age, work experience, and other related academic ranks. The next two chapters will focus on the data analyses from the public and private universities.

Table 6. 7 The distribution of respondents by sample population group and affiliation.

Affiliation	Public Universities		Private Universities	
	No.	%	No.	%
Yarmouk	50	25.64	-	-
Jadarah	35	17.95	-	-
Jordon University of science and Technology	50	25.64	-	-
Mutah	37	18.97	-	-
Balaqa	13	6.67	-	-
Al-Hussein Bin Talal University	10	5.13	-	-
Jerash	-	-	21	13.91
Zarqa	-	-	36	23.84
Applied Science Private University	-	-	33	21.85
Philadelphia	-	-	42	27.81
Jadara	-	-	19	12.58
Total (%)	195	100.00	151	100.00

CHAPTER SEVEN

RESEARCH FINDINGS FROM PUBLIC UNIVERSITIES

7. 1 Introduction

As indicated in chapter one, the overall objective of this study is to investigate KM and TQM in Jordanian universities. These issues have received much attention by various researchers to establish the quality of education (Chapter 2). This chapter focuses on the empirical data analysis generated by the online questionnaires (Appendix C, Chapter 5). It also focuses on the presentation and interpretation of the data to investigate how respondents in public universities perceived KM and TQM.

The Statistical Package for the Social Sciences (SPSS) was used to analyse the perceptions of 200 respondents, aiming to answer the current research questions (Chapter 1). The correlation between variables was mainly used to investigate the relationship between variables. Therefore, the data were analyzed statistically using diverse methods, including frequency, mean, Pearson correlation, T-test, and F-test methods for determining the relationship between different variables related to KM and TQM. The magnitude of coefficients represents the level of the strength of relationship between computed variables. The optimum value of the correlation coefficient is +1 or -1, which represents, respectively, the positive and negative correlation (Cohen et al., 2003). Regardless of the direction, values of the correlation coefficient *r* range between 1 (the strongest) and zero (no correlation). Thus, $r = + 0.95$ and $r = -95$ represent a high association, and both values are equal in the degree of association of the measured variables.

The structure of this chapter includes the following sections:

- The Quantitative Data Analysis of Respondent Perceptions in Public Universities.
- The Perception Towards KM.
- The Perception Towards TQM.
- Perception Towards Performance.
- Correlation Coefficient of the KM Process with Management-related Variables in Public Universities.
- The Effect of KM and TQM on Internal Process Perspectives.

7. 2 The Quantitative Data Analysis of Respondent Perceptions in Public Universities.

The purpose of this section is to analyse the responses of the academic public universities by the average of the Likert rating scale using SPSS (see Chapter 5). The data were then arranged in rank order. The data were categorised according to their order in the questionnaire. Furthermore, the analyses in this section are organised by individual statement and analysed first by frequency, mean, and standard deviation. Then, means of related statements were arranged in descending order according to the Likert rating scale. Furthermore, each group of statements was collectively analysed by correlation coefficient to test the hypotheses.

7. 3 The Perception Towards KM

7.3.1 The Perception Towards KM Process

Tables 7.1 to 7.4 show the means and rank order for the first 20 statements in the questionnaire that were related to the KM process. Table 7.1 indicates that the average of the collective Likert rating scale ranged between 3.93 and 3.85 with a standard deviation ranging between 0.98-1.129.

Table 7. 1 Ranking order for statements related to knowledge creation: university administration depends on the following to create knowledge (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
2	Its external environment {customers (stakeholder), equipped, competitors, etc.}.	3.93	0.98
3	Contracting with experts from outside the university to work there.	3.93	1.032
1	Individual learning for workers.	3.86	1.044
4	Insight into the experiences of workers and the experiences of others.	3.85	1.129
5	Internet, advanced computers' software, and advisory research canters.	3.85	1.052

[1]Numbering appears as in the questionnaire.

These results indicate that the perception of respondents at public universities rated knowledge creation-related statements close to 'agree' on the Likert rating scale (i.e., 'agree' is equivalent to four) (see Table 5.2, Chapter 5).

Similar results were obtained for storage of knowledge (Table 7.2), knowledge distribution (Table 7.3), and knowledge application (Table 5.4) statements. The range of

the mean and standard deviation (SD) were, respectively, 3.91 to 3.87 (SD 1.03 to 1.088), 3.98 to 3.78 (SD 0.908 to 1.135) and 3.96 to 3.72 (SD 0.876 to 0.926).

Table 7. 2 Rank order for statements related to storage of knowledge: University administration depends on the following to store knowledge: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
7	Computer and other digital information media storage.	3.91	1.03
6	Records and written documents.	3.89	1.038
8	Activated incentives (financial and moral) to maintain individuals of high knowledge and talents.	3.87	1.059
9	System to control the tangible knowledge assets.	3.87	1.088

[1]Numbering appears as in the questionnaire.

Table 7. 3 Rank order for statements related to knowledge distribution: University administration depends on the following to distribute knowledge: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
15	Metaphorical representation and imaging of knowledge.	3.98	0.908
11	Documents, publications, and internal information network.	3.96	0.968
10	Work Teams and regular meetings.	3.95	0.983
13	Relations and informal contacts.	3.92	0.948
14	The transfer of knowledge to others through lectures and services.	3.86	0.993
12	Training and openness in the exchange of thought and dialogue.	3.78	1.135

[1]Numbering appears as in the questionnaire.

Table 7.5 illustrates the overall mean for statements 1 to 20 (Tables 1 to 4). The mean (3.879) perception of respondents at public universities agrees with the individual statement means (Tables 7.1 to 7.4), which also indicates that respondents agreed with the KM process at Jordanian public universities.

Table 7. 4 Rank order for statements related to knowledge application: to apply knowledge, the university administration should: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
17	Grant faculty members freedom to apply their knowledge.	3.96	0.876
16	Make sure that faculty members realise the information they hold and feel able to find meaning for them.	3.95	0.955
19	Remove all barriers that stand in the way of knowledge access for individuals, experts, and administrative units.	3.81	0.893
18	Hire knowledge managers who urge well application to it.	3.77	0.889
20	Make rules to control of knowledge.	3.72	0.926

[1]Numbering appears as in the questionnaire.

Table 7. 5 Statistics of the overall ranks for KM process (statements 1-20, Tables 7.1-7.4)

	Mean	Standard deviation
Statements 1-20	3.879	0.259

7.3.2 The Perception Towards KM Technology

Table 7.6 reveals that the mean for statements 21 through 28 ranged between 3.99 and 3.80. This range is still close to the 'agree' option, which indicates that respondents at Jordanian universities agreed with the eight statements related to KM technology. Table 7.7 also demonstrates that the overall mean for the perception levels of these eight statements was 3.912.

Table 7. 6 Rank order for statements related to variable of KM technology (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
24	Keep pace quickly with changes of technology.	3.99	0.830
27	Use of office automation systems (email, automated retrieval of information, word processing, audio-video conferences) to carry out administrative tasks.	3.99	0.899
25	Use virtual reality systems in the work of the college.	3.97	0.918
28	Use university artificial intelligence systems.	3.97	0.832
26	Make crucial decisions with the help of decision support systems-based knowledge.	3.92	0.979
22	Connect faculty and administrative units in the university with a network of computers.	3.84	0.837
23	Update Information system in the university constantly.	3.84	0.794
21	The university has intranet (LAN) web	3.80	0.846

[1]Numbering appears as in the questionnaire.

Table 7. 7 Statistics of the overall ranks for KM technology (statements 21-28, Table 7.6).

	Mean	Standard deviation
Statements 21-28	3.912	0.350

7.3.3 The Perception Towards KM Knowledge Teams

Tables 7.8 to 7.10 summarise the average responses to the knowledge team-related statements 29 to 40. Table 7.8 shows the mean range to be between 3.99 and 3.97 for knowledge maker statements, indicated by responses from public universities. Similarly, the other two groups of statements that are related to knowledge managers (Table 7.9) and students' KM (Table 7.10) show mean values of four or slightly below or above on the Likert rating scale, which is equivalent to the 'agree' option. The mean responses for knowledge manager statements were all four with a standard deviation of 0.742 to 0.877 (Table 7.9).

Table 7. 8 Rank order for statements related to Knowledge-makers: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
31	They act as consultants for the university in the field of knowledge.	3.99	0.888
29	The university has its own qualified knowledge-makers and relies on them.	3.98	0.856
30	University knowledge-makers maintain modernity and advancement of knowledge as well as communicate with the outside.	3.97	0.856

[1]Numbering appears as in the questionnaire.

Table 7. 9 Rank order for statements related to knowledge managers: University knowledge managers carry out the following: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
35	Representation and adaptation of knowledge along with well application of it by university staff	4.05	0.742
32	Collection, classification, and knowledge transfer to the knowledge base.	4.00	0.877
33	Draw results from the knowledge base.	4.00	0.874
34	Development of KM programs and its implementation.	4.00	0.868

[1]Numbering appears as in the questionnaire.

Furthermore, Table 7.10 indicates that respondent perceptions to the 'agree' option ranged between 4.07 and 3.96, with a standard deviation of 0.705 to 0.873 (Table 7.10).

Grouping the statements 29 to 40 also displays a mean value of four with a standard deviation of 0.254, indicating that the perception of respondents towards team knowledge statements was positive, as respondents selected the 'agree' option. Computing the responses to statements 1 to 40 (Tables 7.1 to 7.4 and 7.6 to 7.10) also revealed similar results with respect to the collective mean (3.923, Table 7.12) obtained, which confirmed the perception of respondents' agreement. In addition, the results in

Table 7.12 represent a summary of the results of respondent perceptions of the KM process, KM technology, and knowledge teams at public universities in Jordan.

Table 7. 10 Rank order for statements related to students' KM: student's KM at the university is keen on: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
37	Linking up students to student knowledge base at the college.	4.07	0.705
36	Collecting a great deal of knowledge about students (their needs, their desires, and the degree of their loyalty to the college).	4.05	0.721
38	Linking students to groups of experts from the college.	4.00	0.777
40	Motivating students to submit their suggestions, opinions and ideas.	3.97	0.804
39	Adapting internal links so that it would become consistent with the student's knowledge base.	3.96	0.873

[1]Numbering appears as in the questionnaire.

Table 7. 11 Statistics of the overall ranks for team knowledge (statements 29-40, Tables: 7.8-7.10).

	Mean	Standard deviation
Statements 29-40	4.002	0.254

Table 7. 12 Statistics of the overall ranks for KM (statements 1-40, Tables 7.1-7.4, 7.6-7.10).

	Mean	Standard deviation
Statements 1-40	3.923	0.216

7. 4 The Perception Towards TQM

7.4.1 Effective Leadership

Table 7.13 shows the rank order of seven means for statements related to effective leadership, which are all close to the fourth option, 'agree'. The range of the seven means is 4.03 to 3.85, with a standard deviation of 0.740 to 0.903, respectively.

Table 7. 13 Rank order for statements related to variable of effective leadership (TQM Processes) (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
41	The senior administration adopts a strategic plan to achieve quality in all areas of the college.	4.03	0.740
42	The university adopts the principle of quality as the responsibility of all sections and parties involved in the college.	4.02	0.730
43	The university administration puts forward plans for continuous improvement and encouragement of employees to participate.	3.95	0.828
45	The university has competent research and development units to determine the needs and desires of the market place and exceed these requirements.	3.95	0.794
47	Higher administration makes radical changes to make quality a part of the organisation's systems and operations.	3.97	0.835
44	Communication channels to the market place should be available at the university to investigate grievances, opinions, and suggestions about the value-quality of graduates.	3.93	0.826
46	Higher administration decisions are made on the basis of facts and data or based on the recommendations of the staff and students.	3.85	0.903

[1]Numbering appears as in the questionnaire.

Table 7. 14 Statistics of the overall ranks for effective leadership (statements 41-47, Tables 7.13).

	Mean	Standard deviation
Statements 41-47	3.954	0.349

7.4.2 Continuous Improvements

Table 7.15 displays the means of respondent perceptions for five statements related to continuous improvement. The results indicated that respondents to these statements ranked these similarly to the previous perception level, or close to the fourth Likert rating option 'agree'. The range for the means of these five statements is between 3.95 and 3.82 with standard deviations of 0.794 to 0.890, respectively (Table 7.15). Computing these statements indicated that the overall mean of these five statements was 3.857.

Table 7. 15 Rank order for statements related to variable of continuous improvement (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
48	There are teams in the university equipped with the necessary supplies with a task to improve quality.	3.95	0.794
49	There is a specific and clear-cut program to avoid mistakes.	3.86	0.786
50	There are statistical methods and tools at the university to test and measure the quality of graduates.	3.83	0.837
51	Devise ways and means continuously to help improve the quality of the educational performance of the university and the quality of its graduates	3.82	0.869
52	Workers receive training to be aware of the opportunities and improvement targets.	3.82	0.890

[1]Numbering appears as in the questionnaire.

Table 7. 16 Statistics of the overall ranks for continuous improvement (statements 48-52, Table 7.13).

	Mean	Standard deviation
Statements 48-52	3.857	0.499

7.4.3 Employee Involvement

Table 7.17 shows the means and standard deviations of eight statements related to the perceptions of the responses of Jordanian public universities. The means ranged between 3.96 and 3.82, which were arranged in a descending order. These results indicate that the perceptions towards these eight statements were again close to the fourth option on the Likert rating scale, or 'good' option. Further statistical analysis indicated that the overall mean of these eight statements was 3.914 (Table 7.17).

Table 7. 17 Rank order for statements related to variable of staff involved: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
55	Faculty members and staff partake in solving the main problems at college.	3.96	0.795
60	There are efficient programs that help faculty members get acquainted with the objectives and mechanisms of the university functions.	3.96	0.876
56	The university has an efficient system to motivate individuals (financially and morally) to participate.	3.95	0.822
58	Administration works on removing fears among members of the faculty and staff while doing their job.	3.95	0.800
54	Faculty and staff are entitled to resolve major problems related to graduates.	3.94	0.31
53	Faculty members partake in making strategic decisions regarding quality.	3.90	0.823
59	Facilitate communication and strengthen links between the faculty and staff and senior management.	3.85	0.955
57	The university system rewards persons showing creativity.	3.82	0.935

[1]Numbering appears as in the questionnaire.

Table 7. 18 Statistics of the overall ranks for employee involvement (statements 53-60, Tables 7.1).

	Mean	Standard deviation
Statements 53-60	3.914	0.350

Table 7.19 summarises the perceptions towards TQM statements **(**41 to 60, Tables 7.13, 7.15, and 7.17), which show that the overall mean, 3.913, for these statements was also close to the fourth option on the Likert rating scale, or the 'good' option. These results agree with the above sets of the statements related to TQM in Tables 7.13 to 7.18.

Table 7. 19 Statistics of the overall ranks for TQM (statements 41-60, Tables 7.13, 7.15, 7.17).

	Mean	Standard deviation
Statements 41-60	3.913	0.295

7. 5 Perception Towards Performance

This section presents the statistical analysis results for how respondents at public universities perceived performance in the internal processes perspective, customer (stakeholder) perspective, and learning and growth perspective (Tables 7.20 to 7.28). In

addition, Table 7.29 summarises the overall perceptions of the academic staff at Jordanian public universities that were designated in this study.

7.5.1 Perspective of Internal Processes

Table 7.20 displays the mean perception of individual statements related to internal processes. Table 7.20 reveals the perceptions for the internal processes perspectives. The results indicated that the range of mean perceptions was 3.96 to 3.87. The means were arranged in descending order. However, in respect to the Likert rating scale, these results indicated that all mean values were close to the fourth option. This option represents the 'agree' option, which suggests that respondents agreed with the statements related to the internal processes perspective. Table 7.21 displays the overall statistical analysis for the internal processes perspective. The overall mean for these five statements is 3.918. These results exhibited a high level of significance at $p \leq 0.000$ compared to the significance at $p \leq 0.05$ (Table 7.21).

Table 7. 20 Rank order for statements related to variable internal processes perspective: (n= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
65	There is a continuous increase in the rate of development for the educational environment.	3.96	0.890
63	There is a continuous increase in the rate of use of educational technology.	3.94	0.866
61	There is a continuous increase in the productivity of faculty members at the college.	3.93	0.877
64	There is a continuous increase in the rate of development for curriculum and educational programs.	3.90	0.910
62	There is a continuous increase in the rate of the production capacity of the administrative system.	3.87	0.928

[1]Numbering appears as in the questionnaire.

Table 7. 21 Statistics of the overall ranks for perspective of internal processes (statements 61-65, Table 7.20).

	Mean	Standard deviation
Statements 61-65	3.918	0.408

7.5.2 Customer (Stakeholder) Perspectives

Tables 7.22 and 7.23 illustrate the mean of responses towards performance-related issues. The perceptions of respondents towards customer (stakeholder) perspectives

ranged between 3.97 and 3.82 (Table 7.22), which is again close to the fourth option on the Likert rating scale, or 'agree'. Similar results were also obtained in Table 7.23, whereas the range of the mean perceptions was 3.97 to 3.82 with a standard deviation of 1.080 to 0.809. The overall mean for respondent perceptions obtained was 3.851, which is also close to the fourth option, or 'agree'. These results indicated that respondents agreed with the six issues at almost the same level as obtained previously.

Table 7. 22 Rank order for statements related to variable of customers (stakeholder) perspective: (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
69	There is a constant decline in the rate of violations of faculty members in regard to work behaviourism.	3.97	0.888
66	Faculty members in the university show a high degree of enthusiasm at work.	3.95	0.809
70	There is a continuous decline in the number of faculty member job hoppers.	3.92	0.853
68	There is an increase in faculty proposals to develop the college.	3.88	0.911
71	There is a continuous decline in the rate of complaints of faculty members.	383	1.080
67	Faculty members are never absent unless it is reasonable.	3.82	0.890

[1]Numbering appears as in the questionnaire.

Table 7. 23 Rank order for statements related to external stakeholders (marketplace). (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
74	There is a continuous decline in the number complaints arising from marketplaces.	3.81	0.969
75	There is an increase of loyalty on the part of employment for the company compared to competitors.	3.76	1.030
73	There is great interest of parties offering jobs to submit proposals for the development of the university and its outputs.	3.75	1.056
72	There is a continuous increase in the total number of marketplaces compared to competitors.	3.74	1.095

[1]Numbering appears as in the questionnaire.

Table 7. 24 Statistics of the overall ranks for customer (stakeholder) perspectives (statements 66-75, Tables 7.22-7.23).

	Mean	Standard deviation
Statements 66-75	3.851	0.327

7.5.3 Learning and Growth Perspective

The learning and growth perspective is the last variable that encompasses the three sets of issues, including technology innovation (three statements, Table 7.25), administrative innovation (three statements, Table 7.26), and additional creativity (three statements, Table 7.27). The range of mean perceptions for technology innovation is 3.79 to 3.74, with standard deviations of 0.892 to 1.063. A similar range was obtained for the mean perceptions (3.78 to 3.73, Table 7.26) for administrative innovation and additionally for creativity (3.80 to 3.73, Table 7.27).

Table 7. 25 Rank order for statements related to technological innovation. (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
77	The university availed itself to local competent personnel in the process of increasing the number of graduates.	3.79	0.892
78	The university has received patents that enhance its creativity.	3.76	1.014
76	The university has initiated the graduation of new batches that suit the needs of the marketplace.	3.74	1.063

[1]Numbering appears as in the questionnaire.

Table 7. 26 Rank order for statements related to administrative innovation. (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
80	The university has conducted extensive changes (introduction or cancel sections) in its organisational structure.	3.78	1.005
81	The university has conducted radical changes in the use of computer systems in the administrative processes.	3.74	1.053
79	The university has pursued new policies in the area of recruitment, bonuses, promotions, and training.	3.73	1.060

[1]Numbering appears as in the questionnaire.

Table 7. 27 Rank order for statements related to additional creativity (N= 200).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
82	The university has conducted amendments to local talent to improve the learning process.	3.80	0.951
83	The university has introduced new programs to augment student loyalty.	3.73	1.012

[1]Numbering appears as in the questionnaire.

Table 7. 28 Statistics of the overall ranks for learning and growth perspective (statements 76-83, Tables 7.25-7.27).

	Mean	Standard deviation
Statements 76-83	3.756	0.367

In summary, the sets of statements that were analysed in this section indicated that respondents at Jordanian public universities exhibited similar perceptions towards all statements. The perceptions of respondents were all close to the fourth option, or 'agree'. The overall mean of the perceptions towards the 83 statements was 3.832, which falls in the same range of the obtained means for the 83 statements.

Table 7. 29 Statistics of the overall ranks for overall performance (statements 61-83, Tables 7.20-7.23, 7.25-7.27).

	Mean	Standard deviation
Statements 61-83	3.832	0.267

7. 6 Correlation Coefficient of KM Process with Management-related Variables in Public Universities

The results in the previous section indicated that respondents agreed on the 83 statements, as the overall mean was 3.832, which is closer to the fourth option on the Likert rating scale. This section focuses on the analysis of the same statements above to find the degree of associations between different variables. Table 7.30 demonstrates the correlation between the KM process and effective leadership, continuous improvement, or employee involvement. The results of correlation revealed a positive association between the KM process and TQM effective leadership (r= 0.368), continuous improvement (r= 0.284) or employee involvement (r= 0.368) at $p<0.000$ or $p<0.001$. These results indicated that the null hypotheses H0 1.1, H0 1.2, and H0 1.3 are rejected,

which means the alternative hypotheses H. 1.1, H.1.2, and H. 1.3 (see Chapter1) are accepted.

Table 7 30 Correlation coefficient of KM processes with TQM effective leadership, continuous improvement, or employee involvement in public universities (N=200).

	Variables			
KM Processes		Effective Leadership	Continuous Improvement	Employee Involvement
	Correlation Coefficient Value (r)	0.368	0.284	0,368
	Significance	0.000	0,001	0.000
Testing relevant hypothesis		H0.1.1 is rejected	H0.1.2 is rejected	H0.1.3 is rejected

Table 7.31 also displays a positive association between KM technology and TQM effective leadership (*r*= 0.383), employee involvement (*r*= 0.341), and continuous improvement (*r*= 0.398) in public universities at p<0.000 or p<0.001. These results indicate that the null hypotheses H0 1.4, H0 1.5, and H0 1.6 are rejected, which means the alternative hypotheses H. 1.4, H. 1.5, and H. 1.6 (see Chapter 1) are accepted.

In addition, similar positive associations were found between team of knowledge and effective leadership (*r*= 0.390), continuous improvement (*r* = 0.301), and employee involvement (*r* = 0.354) at p<0.000. These results also indicate that the null hypotheses H0 1.7, H0 1.8, and H0 1.9 are rejected, which means the alternative hypotheses H. 1.7, H. 1.8, and H. 1.9 (see Chapter 1) are accepted.

Furthermore, the correlation coefficient between KM and TQM in public universities demonstrated a moderate and positive correlation coefficient value (0.574) at p<0.000 (Table 7.32).

Table 7. 31 Correlation coefficient of KM technology with TQM effective leadership, employee involvement, and continuous improvement in the public universities (N=200).

	Variables			
KM Technology		Effective Leadership	Employee Involvement	Continuous Improvement
	Correlation Coefficient Value (r)	0.383	0.341	0.398
	Significance	0.000	0.000	0.000
Testing relevant hypothesis		H0.1.4 is rejected	H0.1.5 is rejected	H0.1.6 is rejected

Table 7. 32 Correlation coefficient KM team of knowledge with TQM effective leadership, continuous improvement, and employee involvement in public universities (N=200).

	Variables			
Team of Knowledge		Effective Leadership	Continuous Improvement	Employee Involvement
	Correlation Coefficient Value (r)	0.390	0.301	0.354
	Significance	0.000	0.000	0.000
Testing relevant hypothesis		H0.1.7 is rejected	H0.1.8 is rejected	H0.1.9 is rejected

Table 7. 33 Correlation coefficient of KM with TQM in public universities.

	Variables	
KM		**TQM**
	Correlation Coefficient Value (r)	0.574
	Significance	0.000
	Testing relevant hypothesis	H0.1.10 is rejected

7. 7 The Effect of KM and TQM on Internal Process Perspectives

Tables 7.34 through 7.37 demonstrate the results of multiple linear regressions of KM and TQM (independent variables) with three dependent variables, including internal process perspective, customer (stakeholder) perspective, and learning and growth perspective, and adopted dependent variable EP. Table 7.34 indicates that 52.1% of respondents to the 'internal processes perspective' can affect KM and TQM. In addition, computing KM and TQM using the coefficient of determination (R2) resulted in a value of 0.266. This value indicates that 26.6% of respondents to the internal processes perspective indicated the importance of KM and TQM–related issues. In addition, the F-test resulted in a value of 35.66 at $p<0.000$. Table 7.34 also reveals the *T*-value ($T = 0.500$) at an insignificant level, while the coefficient *T* value for KM was 3.707 at $p<0.000$. Furthermore, the *T* value for the TQM coefficient was 4.87 also at $p<0.000$ (Table 7.34). These results indicated null hypothesis H0.2.1 is rejected, which means the alternative H.2.1 hypothesis (see Chapter 1) is accepted.

Table 7. 34 Multiple linear regressions of KM and TQM with internal processes perspective.

Variable	RC[1]	T-Test		CC (R)[2]	CD (R^2)[3]	F-Test	
		Value	Sig.			Value	Sig.
Constant	0.230	0.500	0.618	×	×	×	×
KM	0.521	3.707	0.000	×	×	×	×
TQM	0.420	4.087	0.000	×	×	×	×
KM and TQM				0.516	0.266	35.66	0.000
Testing the hypothesis H.2.1				The null hypothesis H0.2.1 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r_2) = coefficient of determination R2 IP= 0.230+0.521KM+0.420TQM							

Table 7.35 illustrates multiple linear regressions for KM and TQM in relation to the customer (stakeholder) perspective. The results in Table 7.35 reveal the value of the coefficient of determination to be 0.177 (i.e., 17.7% of the respondents perceived the effect of customer (stakeholder) perspective on KM and TQM). The F-test indicated that the value of *F* was 21.229 at p<0.000, indicating that there is a significance of effective KM and total quality customer (stakeholder) perspective (Table 7.35). In addition, the value of the TQM coefficient was 4.881 with the calculated level of significance at p<0.000, which also indicated the effect of the customer stakeholder perspective on KM and TQM. These results conclude that the null hypothesis H0.2.2 is rejected, which means the alternative hypothesis H.2.2 is accepted.

Table 7. 35 Rank order for statement related to knowledge distribution: University administration depends on following to distribute knowledge: (N= 200).

Variable	RC[1]	T-Test		CC (R)[2]	CD (R^2)[3]	F-Test	
		Value	Sig.			Value	Sig.
Constant	1.838	4.704	0.000	×	×	×	×
KM	0.087	0.730	0.466	×	×	×	×
TQM	0.427	4.881	0.000	×	×	×	×
KM and TQM				0.421	0.177	21.229	0.000
Testing the hypothesis H.2.2				The null hypothesis H0.2.2 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r_2) = coefficient of determination R2 CP= 1.838+0.087KM+0.427TQM							

Table 7.36 shows similar results in terms of testing the hypothesis H.2.2. (see Chapter 1) The overall results indicated that this null hypothesis H0.2.2 is rejected. Computing KM and TQM with learning and growth perspectives indicated that the value of the

coefficient of determination is 0.061, or 6.1% of the responses were toward the effect of the change in learning and growth perspective in relation to KM and TQM. Testing by F-test resulted in a value of 6.623, at p<0.002. Furthermore, the T-test value was 5.342, at p<0.000. The coefficient of KM was 0.114 at an insignificant level of p<0.910, indicating that there is no effective significance of KM on the learning and growth perspective. However, the coefficient of TQM was significant at p<0.004, which indicates that there is an effective significance of TQM on the learning and growth perspective (Table 7.35) on KM and TQM. These results conclude that the null hypothesis H0.2.3 is rejected, which means the alternative hypothesis H.2.3 is accepted.

Table 7. 36 The results of multiple linear regressions of the independent variables of KM and TQM with the learning and growth perspective.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R^2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	2.499	5.342	0.000	×	×	×	×
KM	0.016	0.114	0.910	×	×	×	×
TQM	0.305	2.913	0.004	×	×	×	×
KM and TQM				0.251	0.061	6.623	0.002
Testing the hypothesis H.2.3				The null hypothesis H0.2.3 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r^2) = coefficient of determination R^2 LGP= 2.499+0.016KM+0.305TQM							

Table 7.37 illustrates computing KM and TQM with the adopted variable performance, which also indicates that testing the null hypothesis H0.2 results in rejection. The value of the coefficient of determination was 0.258, or 25.8% of respondents perceived changes in the adopted variable performance due to the effect of KM and TQM. The F-test resulted in an F value of 34.266 at p<0.000.

Table 7. 37 The results of multiple linear regressions of the independent variables, KM and TQM with adopted variable EP.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	1.719	5.681	0.000	×	×	×	×
KM	0.157	1.696	0.091	×	×	×	×
TQM	0.383	5.659	0.000	×	×	×	×
KM and TQM				0.508	0.258	34.266	0.000
Testing the hypothesis H.2				The null hypothesis H0.2 is rejected..			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r_2) = coefficient of determination R2 AD= 1.719+0.157KM+0.383TQ							

This result indicates that there is a significant effectiveness of both KM and TQM on the adopted variable, performance. Table 7.37 also shows *T* value of 5.681, at p<0.000, the *T* value for the coefficient of KM was 1.696, but at an insignificant level at p<0.091, and the *T* value for the coefficient of TQM was 5.659, at a significant level at p<0.000.

7. 8 Summary

This chapter focused on the statistical analysis of data obtained from the online questionnaire (Appendix A). Results indicated that the average perceptions of Jordanian public university respondents towards different issues related to KM and TQM were close to the fourth option on the Likert rating scale. This option indicates that respondents agreed with the 83 statements on the questionnaire. In addition, all correlation analyses demonstrated that the respondents' perceptions exhibited positive correlations at mostly high significance levels, which resulted in the support of the hypotheses. These results indicated the presence of a significant effect of the integration of KM and TQM in EP. The next chapter will focus on the analysis of respondents' perceptions of Jordanian private universities.

CHAPTER EIGHT

RESEARCH FINDINGS FROM PRIVATE UNIVERSITIES

8. 1 Introduction

This chapter focuses on the findings that were obtained from respondents at Jordanian private universities. As indicated in the previous chapter, respondents at public universities agreed with the questionnaire's statements and accepted the hypotheses. As indicated in Chapters 2 and 7, KM and Chapters 3 and 7 TQM, are important issues that support modern educational processes. Therefore, this chapter focuses on the empirical data analysis generated by the online questionnaires (Appendix.A, Chapter 5). It also focuses on the presentation and interpretation of the data to investigate how respondents in private universities perceived KM and TQM related issues.

The Statistical Package for Social Sciences (SPSS) was also used to analyze the perceptions of 151 respondents, aiming to answer the current research questions (Chapter 1). The correlation between variables was mainly used to investigate the relationship between variables. Therefore, the data were analyzed statistically using different methods, including frequency, mean, Pearson Correlation, T-test, and F-test methods for determining the relationship between different variable related to KM and TQM. The magnitude of coefficients represents the level of strength of relationship between computed variables. The optimum value of the correlation coefficient is +1 or -1 which represents respectively the positive and negative correlation (Cohen et al., 2003). Regardless of the direction, values of correlation coefficient (r) range between 1 (the strongest) and zero (no correlation). Thus, r = + 0.95 and r = -95 represent high association and both values are equal in the degree of association of the measured variables.

The structure of this Chapter is the same as in the previous Chapter which includes the following sections:

- The Quantitative Data Analysis of Responses Perception in Private Universities.
- The Perception Towards KM.
- The Perception Towards TQM.
- Perception Towards Performance.

- Correlation Coefficient of KM Process with Management-Related Variables in Private Universities.

The Effect of KM and TQM on Internal Process Perspective.

8. 2 The Quantitative Data Analysis of Responses Perception in Private Universities.

The purpose of this section is to analyse the responses of the academic private universities. The mean of the Likert rating scale was first analysed by SPSS (see Chapter 5). As in Chapter 7, the data were arranged in rank order and categorised according to their order in the questionnaire. In addition, the respondents' perceptions were analysed by the same statistical analyses, including mean. Similar to the previous chapter, this section is organised in a way that individual statement was analysed first by frequency, mean, and standard deviation.

8. 3 The Perception Towards KM

8.3. 1 The Perception Towards KM Process

Tables 8.1 to 8.4 show the mean Rank order for the first 20 statements in the questionnaire that were related to the KM process. Table 8.1 indicates that the average of the collective Likert rating scale ranged between 3.91-3.85 with a standard deviation ranging between 0.969 -1.143.

Table 8. 1 Rank order for Statements Related to Knowledge Creating: University Administration Depends on the Following to Create Knowledge (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
2	Its external environment {Customers (Stakeholder), Equipped, Competitors, etc.}.	3.91	0.969
3	Contracting with experts from outside the University to work there.	3.89	1.030
1	Individual learning for workers.	3.87	1.044
4	Insight into the experiences of workers and the experiences of others.	3.86	1.143
5	Internet, advanced computer software and advisory research canters.	3.85	1.054

[1]Numbering appears as in the questionnaire.

These results indicate that the perception of respondents at private universities rated knowledge creation-related statements close to 'agree' on the Likert rating scale, i.e. 'agree' is equivalent to 4 (Table 5.2, Chapter 5).

Tables 8.2 and 8.3 show the results for storage of knowledge and knowledge distribution, and both tables show similar results. Furthermore, Table 8.4 shows the means for knowledge applying statements. The range of the mean and standard deviation (SD) are, respectively, 3.96 to 3.81 (SD, 0.972 to -1.122), 3.93 to 3.79 (0.984 to 1.067) and 3.92 to 3.70 (0.902 to 0.997).

Table 8. 2 Rank order for statements related to storage of knowledge: University administration depends on the following to store knowledge: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std. Deviation
6	Records and written documents.	3.96	0.972
7	Computer and other digital information media storage.	3.95	0.985
8	Activated incentives (financial and moral) to maintain individuals of high knowledge and talents.	3.85	1.073
9	System to control the tangible knowledge assets.	3.81	1.122

[1]Numbering appears as in the questionnaire.

Table 8. 3 Rank order for statements related to knowledge distribution: University administration depends on the following to distribute knowledge: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std. Deviation
10	Work Teams and regular meetings.	3.93	0.984
13	Relations and informal contacts.	3.93	0.987
14	The transfer of knowledge to others through lectures and services.	3.93	0.899
15	Metaphorical representation and imaging of knowledge.	3.93	0.980
11	Documents, publications and internal information network.	3.89	1.049
12	Training and openness in the exchange of thought and dialogue.	3.79	1.067

[1]Numbering appears as in the questionnaire.

Table 8.5 shows the overall mean value of 3.868 for 1-20 statements, which indicates that the respondents in private universities were agreed on the first 20 statements.

Table 8. 4 Rank order for statements related to knowledge applying: to apply knowledge, the University administration should: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
16	Make sure that faculty members realise the information they hold and feel able to find meaning for them.	3.92	0.997
17	Grant faculty members freedom to apply their knowledge.	3.90	0.943
19	Remove all Barriers that stand in the way of knowledge access for individuals, experts, and administrative units.	3.77	0.953
18	Hire knowledge managers who urge proper application of it.	3.71	0.942
20	Make rules to control knowledge.	3.70	0.902

[1]Numbering appears as in the questionnaire.

Table 8. 5 Statistics of the overall ranksfor KM process (statements 1-20, Tables 8.1-8.4).

	Mean	Standard deviation
Statements 1-20	3.868	0.269

8.3. 2 The Perception Towards KM Technology

Table 8.6 shows that the mean for statements 21 through 28 ranged between 4.03 and 3.79. This range is still close to the 'agree' option, which indicates that respondents at Jordanian private universities agreed with the eight statements related to KM technology. Table 8.7 also shows the overall mean for the perception levels of these eight statements was 3.91 when analysed.

Table 8. 6 Rank order for statement related to knowledge distribution: University administration depends on following to distribute knowledge: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
27	Use of office automation systems (e- mail, automated retrieval of information, word processing, audio-video conferences) to carry out administrative tasks.	4.03	.844
24	Keep pace quickly with changes of technology.	3.99	.796
25	Use virtual reality systems in the work of the college.	3.98	.905
28	Use University artificial intelligence systems.	3.95	.862
26	Make crucial decisions with the help of decision support systems-based knowledge.	3.91	.941
23	Update Information system in the University constantly.	3.84	.825
22	Connect faculty and administrative units in the University with a network of computers.	3.81	.852
21	The University has intranet (LAN) web	3.79	.861

[1]Numbering appears as in the questionnaire.

Table 8. 7 Statistics of the overall ranksfor KM technology (statements 21-28, Tables 8.6).

	Mean	Standard deviation
Statements 21-28	3.91	0.357

8.3. 3 The Perception Towards KM Knowledge Team

Tables 8.8 to 8.10 give a summary of the average perception of respondents on the knowledge team-related statements 29 to 40. Table 8.8 shows the mean range to be between 4.00 and 3.97 for knowledge markers statements, indicated by responses from private universities. Similarly, the other two groups of statements that are related to knowledge managers (Table 8.9) and students' KM (Table 8.10) show mean values 4.00 – 3.97 that mean approach of 4 or slightly below or above on Likert rating scale, or equivalent to the 'agree' option. The mean responses for knowledge managers' statements were all 4.0 with a standard deviation of 0.753 - 0.927 (Table 8.9).

Table 8. 8 Rank Order for Statements Related to Knowledge-Makers: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
30	University knowledge-makers maintain modernity and advancement of knowledge as well as communicate with the outside	4.00	0.757
31	They act as consultants for the university in the field of knowledge.	3.99	0.856
29	The University has its own qualified knowledge-makers and relies on them.	3.97	0.832

[1]Numbering appears as in the questionnaire.

Table 8. 9 Rank Order for statements related to knowledge managers: University knowledge managers carry out the following: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
35	Representation and adaptation of knowledge along with well application of it by university staff	4.11	0.694
34	Development of KM programs and its implementation.	4.03	0.836
33	Draw results from the knowledge base.	4.02	0.883
32	Collection, classification and knowledge transfer to the knowledge base.	3.97	0.927

[1]Numbering appears as in the questionnaire.

Furthermore, Table 8.10 indicates that respondents' perception to the 'agree' option ranged between 4.11 and 3.99, with a standard deviation of 0.655 to 0.841 (Table 8.10). Grouping the statements 29 to 40 also showed a mean value of four with standard deviation of 0.244. This result indicates that the perception of respondents towards team knowledge statements was positive, as respondents selected the 'agree' option. Computing the responses to statements 1 to 40 (Tables 8.1 to 8.4, 8.6 to 8.10) also showed similar results, with respect to the collective mean (3.933, Table 8.12) for statements 1 to 40 was obtained which confirm the perception of respondents' agreement. In addition, the results in Table 8.12 represent a summary of the results of respondents' perception of the KM process, KM technology, and knowledge teams at private universities in Jordan.

Table 8. 10 Rank order for statements related to Students' KM: student's knowledge management at the University is keen on: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
37	Linking-up students to student knowledge base at the college.	4.11	0.655
36	Collecting a great deal of knowledge about students (their needs, their desires, and the degree of their loyalty to the college).	4.05	0.686
40	Motivating students to submit their suggestions, opinions and ideas.	4.02	0.753
39	Adapting internal links so that it would become consistent with the student's knowledge base.	3.99	0.841
38	Linking students to group of experts from the college.	3.97	.803

[1]Numbering appears as in the questionnaire.

Table 8. 11 Statistics of the overall ranks for Team knowledge (statements 29-40, Tables 8.8-2.10).

	Mean	Standard deviation
Statements 29-40	4.017	0.244

Table 8. 12 Statistics of the overall ranks for KM (statements 1-40, Tables 8.1-8.4, 8.6-8.10).

	Mean	Standard deviation
Statements 1-40	3.933	0.226

8. 4 The Perception Towards TQM

8.4.1 Effective Leadership

Table 8.13 shows the rank order of 7 means for statements related to the effective leadership. The results indicated that mean values of respondent perceptions at private universities were close to the fourth option, or 'agree' on the Likert rating scale. The range of the 7 means was between 4.01 and 3.87, with the standard deviation of, respectively, 0.762 and 0.866. The overall mean is 3.958.

Table 8. 13 Rank order for statements related to variable of effective leadership (TQM Processes) (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
45	The University has competent research and development units to determine the needs and desires of the market place and exceed these requirements.	4.01	0.762
41	The senior administration adopts a strategic plan to achieve quality in all areas of the college.	4.00	0.783
42	The university adopts the principle of quality as the responsibility of all sections and parties involved in the college.	3.99	0.766
47	Higher administration makes radical changes to make the quality a part of the organisation's systems and operations.	3.97	0.860
43	The university administration puts forward plans for continuous improvement and encouragement of employees to participate.	3.94	0.866
44	Communication channels to the market place should be available at the university to investigate grievances, opinions and suggestions about the value-quality of graduates.	3.93	0.806
46	Higher administration decisions are made on the basis of facts and data or based on the recommendations of the staff and students.	3.87	0.859

[1]Numbering appears as in the questionnaire.

Table 8. 14 Statistics of the overall ranks for effective leadership (statements 41-47, Tables 8.13).

	Mean	Standard deviation
Statements 41-47	3.958	0.350

8.4.2 Continuous Improvements

Table 8.15 shows the means of respondent perceptions for five statements related to continuous improvement. The results indicated that respondents to these statements were similar to the previous perception level, or close to the fourth Likert rating option 'agree'. The range for the means of these five statements is between 3.97 and 3.85 with 0.734 and 0.86 respectively (Table 8.15). Computing these statements using overall mean of these 5 statements was 3.86.

Table 8. 15 Rank order for statements related to variable of continuous improvement (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std. Deviation
48	There are teams in the university equipped with the necessary supplies with a task to improve quality.	3.97	0.734
50	There are statistical methods and tools at the university to test and measure the quality of graduates.	3.87	0.785
49	There is a specific and clear-cut program to avoid mistakes	3.85	0.836
51	Devise ways and means continuously to help improve the quality of the educational performance of the University and the quality of its graduates	3.85	0.833
52	Workers receive training to be aware of the opportunities and improvement targets.	3.77	0.934

[1]Numbering appears as in the questionnaire.

Table 8. 16 Statistics of the overall ranks for continuous improvement (statements 48-52, Tables 8.13).

	Mean	Standard deviation
Statements 48-52	3.86	0.479

8.4.3 Employees Involvement

Table 7.17 shows the means and standard deviations of eight statements related to the perceptions of the respondents at Jordanian private universities. The means ranged between 3.96 and 3.82 and were arranged in a descending order. These results indicated that the perceptions towards these eight statements were again close to the fourth option in Likert rating scale, or 'good' option. After further statistical analysis, the overall mean of these eight statements was 3.92 (Table 7.18).

Table 8.19 summarises the perceptions towards TQM statements **(**41 to 60, Tables 8.13, 8.15, 8.17) which shows that the overall mean (3.91) for these statements was also close to the fourth option in Likert rating scale, or 'good' option. These results agree with the above sets of the statements related to TQM in Tables 8.13 to 8.18.

Table 8. 17 Rank order for statements related to Variable of Staff Involved: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
59	Facilitate communication and strengthen links between the faculty and staff and senior management	3.99	0.792
54	Faculty and staff are empowered to resolve major problems related to graduates.	3.98	0.787
56	The University has an efficient system to motivate individuals (financially and morally) to participate.	3.95	0.843
55	Faculty members and staff partake in solving the main problems at college.	3.91	0.871
60	There are efficient programs that help faculty members get acquainted with the objectives and mechanisms of the university functions.	3.91	0.948
53	Faculty members partake in making strategic decisions regarding quality	3.89	0.873
58	Administration works on removing fears among members of the faculty and staff while doing their job.	3.88	0.840
57	The university system rewards persons showing creativity.	3.83	0.941

[1]Numbering appears as in the questionnaire.

Table 8. 18 Statistics of the overall ranks for employee involvement (statements 53-60, Table 8.1).

	Mean	Standard deviation
Statements 53-60	3.92	0.364

Table 8. 19 Statistics of the overall ranks for TQM (statements 41-60, Tables 8.13, 8.15, 8.17).

	Mean	Standard deviation
Statements 41-60	3.91	0.312

8. 5 Perception towards performance

This section presents the statistical analysis results for how respondents at private universities perceive performance in the internal processes, customers' (stakeholder) perspective, and learning and growth perspective (Tables 8.20-8.28). In addition, Table 8.29 will summarise the overall perceptions of the academic staff at Jordanian private universities that were selected in this study.

8.5.1 Perspective of Internal Processes

Table 8.20 shows the mean perception of individual statement related to the internal processes. Table 8.20 showed the perceptions for the internal processes perspectives. The results indicated that the range of mean perceptions was 3.97 -3.85.

Table 8. 20 Rank order for statements related to variable internal processes perspective: (n= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
61	There is a continuous increase in the productivity of faculty members at the college.	3.97	0.875
65	There is a continuous increase in the rate of development for educational environment.	3.94	0.975
63	There is a continuous increase in the rate of use of educational technology.	3.93	0.899
64	There is a continuous increase in the rate of development for curriculum and educational programs.	3.91	0.894
62	There is a continuous increase in the rate of the production capacity of the administrative system.	3.90	0.885

[1]Numbering appears as in the questionnaire.

The means were arranged in a descending order. However, in respect to the Likert rating scale, these results indicated that all mean values were close to the fourth option. This option represents the 'agree' option, which suggests that respondents agreed with the statements related to the internal processes perspectives.

Table 8.21 shows the overall statistical analysis for internal processes perspectives. The overall mean for these 5 statements is 3.93.

Table 8. 21 Statistics of the overall ranks for perspective of internal processes (statements 61-65, Table 8.20).

	Mean	Standard deviation
Statements 61-65	3.93	0.417

8.5.2 Customers' (stakeholder) perspective

Tables 8.22 and 8.23 show the mean of responses towards the performance-related issues. The perceptions of responses towards customers (stakeholder)' perspective ranged between 4.00 - 3.82 (Table 8.22), which is again close to the fourth option in Likert rating scale, or 'agree'.

Table 8. 22 Rank order for statements related to variable of customers (stakeholder)' perspective: (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std. Deviation
70	There is a continuous decline in the number faculty member job hoppers.	4.00	0.766
68	There is an increase in faculty proposals to develop the college.	3.97	0.852
69	There is a constant decline in the rate of violations of faculty members in regard to work behaviourism.	3.96	0.901
66	Faculty members in the University show a high degree of enthusiasm at work.	3.95	0.831
67	Faculty members are never absent unless they have a reasonable excuse.	3.89	0.896
71	There is a continuous decline in the rate of complaints of faculty members.	3.82	1.090

[1]Numbering appears as in the questionnaire.

Similar results were also obtained in Table 8.23; the range of mean's reception was 3.81-3.71 with standard deviation of 0.985 - 1. 122. The overall mean for respondents' receptions obtained was 3.858, which is also closer to the forth option, or 'agree'. These results indicated that respondents agreed with the 6 issues almost at the same level as obtained before.

Table 8. 23 Rank order for statements related to external stakeholders (marketplace). (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
74	There is a continuous decline in the number complaints arising from marketplaces.	3.81	0.985
73	There is great interest of parties offering jobs to submit proposals for the development of the University and its outputs.	3.75	1.039
72	There is a continuous increase in the total number of marketplaces compared to competitors.	3.72	1.122
75	There is an increase of loyalty on the part of employment for the company compared to competitors	3.72	1.096

[1]Numbering appears as in the questionnaire.

Table 8. 24 Statistics of the overall ranks for customers' (stakeholder) perspective (statements 66-75, Tables 8.22-8.23).

	Mean	Standard deviation
Statements 66-75	3.858	0.331

8.5.3 Learning and Growth perspective

The learning and growth perspective is the last variable, which encompasses 3 sets of issues, including technology innovation (3 statements, Table 8.25), administrative innovation (3 statements, Table 8.26), and additional creativity (3 statements, Table 8.27).

The range of mean perceptions for technology innovation is 3.92-3.78, with the standard deviation of 0.918 - 0.973. A similar range was obtained for the mean perceptions (3.94 - 3.83, Table 8.26) for administrative innovation and for additional creativity (3.96-3.81, 6.27).

Table 8. 25 Rank order for statements related to technological innovation. (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
76	The University has initiated the graduation of new batches that suit and the needs of the marketplace.	3.92	0.973
78	The University has received patents that enhance its creativity.	3.91	0.918
77	The University availed itself to local competent personnel in the process of increasing the number of graduates.	3.78	0.944

[1]Numbering appears as in the questionnaire.

Table 8. 26 Rank order for statements related to administrative innovation. (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
80	University has conducted extensive changes (introduction or cancel sections) in its organizational structure.	3.94	0.874
79	The University has pursued new policies in the area of recruitment, bonuses, promotions and training.	3.91	0.912
81	University conducted radical changes in the use of computer systems in the administrative processes	3.83	0.958

[1]Nuumbering appears as in the questionnaire.

Table 8. 27 Rank order for statements related to additional creativity (N= 151).

No. of statement[1]	Statement	Rank order (Mean)	Std Deviation
82	University has conducted amendments to local talent to improve the learning process.	3.96	0.824
83	University has introduced new programs to augment student's loyalty.	3.81	0.922

[1]Numbering appears as in the questionnaire.

Table 8. 28 Statistics of the overall ranks for learning and growth perspective (statements 76-83, Tables 8.25-8.27).

	Mean	Standard deviation
Statements 76-83	3.733	0.362

In summary, the sets of statement that were analysed in this section (8.3. The perception towards KM) indicated that respondents at Jordanian private universities showed similar perceptions towards all statements. The perceptions of respondents were all closer to the fourth option, or 'agree'. The overall mean perception towards the 83 statements was 3.841, which agrees with and falls within in the same range as the obtained means for the 83 statement.

Table 8. 29 Statistics of the overall ranks for overall performance (statements 61-83, Tables 8.20-8.23, 8.25-8.27).

	Mean	Standard deviation
Statements 61-83	3.841	0.265

8. 6 Correlation coefficient of KM process with management-related variables in private universities

The results in the previous section indicated that respondents agreed on the 83 statements, as the overall mean was closer to the fourth option in Likert rating scale. This section focuses on the analysis of the same statements above to find the degree of associations between different variables. Table 8.30 shows the correlation between KM process and effective leadership, continuous improvement and? employee involvement. The results of correlation showed positive association between KM process and effective leadership (r = 0.414), continuous improvement (r = 0.249) or employee involvement (r = 0.404) at p<0.000 or p<0.001. These results indicate that the null hypotheses H0 1.1. H0 1.2 and H0 1.3 are rejected, and that means the alternative hypotheses H 1.1. H 1.2 and H 1.3 (see Chapter 1) are accepted.

Table 8. 30 Correlation Coefficient of KM processes with effective leadership, continuous improvement or employee involvement in the private universities (N=151).

	Variables			
KM Processes		**Effective leadership**	**Continuous Improvement**	**Employee involvement**
	Correlation Coefficient Value (r)	0.414	0.249	0.404
	Significance	0.000	0.001	0.000
Testing relevant hypothesis		H0.1.1 is rejected	H0.1.2 is rejected	H0.1.3 is rejected

Table 8.31 also shows positive association between KM technology and effective leadership (r= 0.406), employee involvement (r= 0.338) and continuous improvement (r= 0.393) in the private universities at p<0.000 or p<0.001. These results indicate that the null hypotheses H0 1.4. H0 1.5 and H0 1.6 are rejected, and that means the alternative hypotheses H 1.4. H 1.5 and H 1.6 (see Chapter 1) are accepted.

Table 8. 31 Correlation coefficient of KM technology with effective leadership, continuous improvement in the private universities (N=151).

	Variables			
KM Technology		**Effective leadership**	**Employee involvement**	**Continuous improvement**
	Correlation Coefficient Value (r)	0.406	0.338	0.393
	Significance	0.000	0.000	0.000
Testing relevant hypothesis		H0.1.4 is rejected	H0.1.5 is rejected	H0.1.6 is rejected

In addition, similar positive association was found between team of knowledge and effective leadership (r= 0.468), continuous improvement (r= 0.350), and? employee involvement (r= 0.442) at p<0.000. These results also indicate that null hypotheses H0 1.7. H0 1.8 and H0 1.9 are rejected, and that means the alternative hypotheses H.1.7. H 1.8 and H 1.9 (see Chapter 1) are accepted.

Table 8. 32 Correlation coefficient KM team of knowledge with effective leadership, continuous improvement and? employee involvement in the private universities (N=151).

	Variables			
Team of Knowledge		**effective leadership**	**continuous improvement**	**employee involvement**
	Correlation Coefficient Value (r)	0.468	0.350	0.442
	Significance	0.000	0.000	0.000
Testing relevant hypothesis		H0.1.7 is rejected	H0.1.8 is rejected	H0.1.9 is rejected

Furthermore, the correlation coefficient between KM and TQM in the private universities showed moderate and positive correlation coefficient value (0.613) at p<0.000 (Table 8.33).

Table 8. 33 Correlation coefficient of KM with TQM in the private universities.

	Variables	**TQM**
KM	Correlation Coefficient Value (r)	0.613
	Significance	0.000
	Testing relevant hypothesis	H0.1.10 is rejected

8. 7 The effect of KM and TQM on internal process perspective

Tables 8.34-8.37 show the results of multiple linear regressions of KM and TQM (independent variables) with 3 dependent variables, including internal process perspective, customer (stakeholder) perspective, and learning and growth perspective, and adopted independent variable EP. Table 8.34 indicates that 46.8 % of respondents to the 'internal possess perspective' can affect KM and TQM. In addition, computing KM and TQM using coefficient of determination (R^2) gave a value of 0.259. This value indicates that 25.9 % of respondents to the internal processes perspective indicated the importance of KM and TQM –related issues. In addition, F-test gave a value of 25.872 at $p<0.000$. Table 8.34 also shows T-value (T = 0.892) at insignificance level while the coefficient T value for KM was 2.839 at $p<0.005$. Furthermore, the T value for TQM coefficient was 3.482 at also $p<0.001$ (Table 8.34).

Table 8. 34 Multiple linear regressions of KM and TQM with internal processes perspective.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R^2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	0.462	0.892	0.274	×	×	×	×
KM	0.468	2.839	0.005	×	×	×	×
TQM	0.416	3.482	0.001	×	×	×	×
0.509				0.509	0.259	25.872	0.000
Testing the hypothesis H.2.1				The null hypothesis H0.2.1 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r^2) = coefficient of determination R2 IP= 0.462+0.468KM+0.416TQM							

These results indicated that the null hypothesis H0.2.1 is rejected, and that means hypothesis H.2.1 (see Chapter 1) is accepted.

Table 8.35 shows the multiple linear regressions for KM and TQM in relation to customer (stakeholder) perspective. The results in Table 8.35 show that the value of the coefficient of determination (0.171) or 17.1 % of the respondents perceived the effect of customer (stakeholder) perspective on KM and TQM. F-test indicated that the value of F was 15.254 at $p<0.000$, indicating that KM and TQM have a significant effect on Customer (Stakeholder) Perspective (Table 8.35).

Table 8. 35 Multiple linear regressions of the independent variables "of KM and TQM with customer (stakeholder) perspective.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R^2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	1.691	3.887	0.000	×	×	×	×
KM	0.248	2.792	0.045	×	×	×	×
TQM	0.305	3.030	0.003	×	×	×	×
KM and TQM				0.413	0.171	15.254	0.000
Testing the hypothesis H.2.2				The null hypothesis H0.2.2 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r^2) = coefficient of determination R2 CP= 1.691+0.248KM+0.305TQM							

In addition, the value of the TQM coefficient was 3.030 with the calculated level of significance of $p<0.003$ which also indicates the effect of customer stakeholder perspective on KM and TQM. These results conclude that the null hypothesis H0.2.2 is rejected, and that means the alternative hypothesis H.2.2 is accepted.

Table 8.36 shows similar results in term of testing hypothesis H.2.2 (see Chapter 1). The overall result indicated that this hypothesis is accepted. Computing KM and TQM with learning and growth perspectives indicated that the value of the coefficient of determination is 0.055, or 5.5 % of respondents toward the effect of the change in learning and growth perspective in relation to KM and TQM. Testing F-test gave a value of 4.322, at $p<0.012$. Furthermore, T-test value was 4.992, at $p<0.000$. The coefficient of KM was 2.032 at insignificance level of $p<0.048$, indicating that KM has a significant effect on learning and growth perspective. However, the coefficient of TQM was significant at $p<0.004$ which indicates that TQM has a significant effect on Learning and growth perspective (Table 8.35). These results conclude that the null hypothesis H0.2.3 is rejected, and that means the alternative hypothesis, H.2.3, is accepted.

Table 8. 36 The results of multiple linear regressions of the independent variables "of KM and TQM with learning and growth perspective.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R^2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	2.535	4.992	0.000	×	×	×	×
KM	0.065	2.032	0.048	×	×	×	×
TQM	0.241	2.055	0.042	×	×	×	×
KM and TQM				0.235	0.055	4.322	0.015
Testing the hypothesis H.2.3				The null hypothesis H0.2.3 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r^2) = coefficient of determination R2 LGP= 2.535+0.065KM+0.241TQM							

Table 8.37 shows computed values for KM and TQM with adopted variable performance, which also indicates that testing the hypothesis H0.2 is rejected, and that means the alternative hypothesis H.2 is accepted. The value of the coefficient of determination was 0.294, or 29.4% of respondents perceive changes in adopted variable performance due to the effect of KM and TQM.

Table 8. 37 The results of multiple linear regressions of the independent variables, KM and TQM with adopted variable EP.

Variable	**RC[1]**	**T-Test**		**CC (R)[2]**	**CD (R2)[3]**	**F-Test**	
		Value	**Sig.**			**Value**	**Sig.**
Constant	1.563	4.856	0.000				
KM	0.260	2.541	0.012	×	×	×	×
TQM	0.321	4.314	0.000	×	×	×	×
KM and TQM				0.542	5.294	30.834	0.000
Testing the hypothesis H.2				The null hypothesis H0.2 is rejected.			
[1] RC = Regression coefficient, [2]CC(r) = Correlation Coefficient R, [3]CD(r^2) = coefficient of determination R2 AD= 1.563+0.260KM+0.321TQM							

F-test gave F value of 30.834 at $p<0.000$. This result indicates that there is a significance effectiveness of both KM and TQM on adopted variable performance. Table 8.37 also shows T value of 2.541, at $p<0.01$, the T value for coefficient of KM was 2.541, but represented an insignificant level at $p<0.012$, and T value for coefficient of TQM was 4.314, at a significant level of $p<0.000$.

8. 8 Summary

This Chapter focused on the statistical analysis of data obtained from the online questionnaire (Appendix.A) for private universities in Jordan. The results in this Chapter were similar to the ones that obtained for public universities in. Jordan. This shows that the means of perceptions of Jordanian private universities towards different issues related to KM and TQM were also close to the forth option in Likert rating scale. This option indicates that respondents agreed with the 83 statements of the questionnaire and that results were similar to the ones obtained for public universities. Also, statistical analyses such as the correlation gave results similar to the corresponding analyses conducted for public universities, which indicate that the hypotheses were also accepted. The next Chapter will focus on the general discussion, suggestions, and recommendations.

CHAPTER NINE

GENERAL DISCUSSION AND RECOMMENDATIONS

9. 1 Overview of the Current Research

The current chapter focuses on the general discussion related to the research findings in the two parts of the case study. As indicated in Chapter 1, this research project aimed *to establish a framework that represents the integration of KM and TQM* that reflects the performance of HE at both public and private universities in Jordan. Literature has highlighted the importance of KM and TQM in establishing best practices in modern academic organisations (Chapter 2, 3 and 4). These two issues are closely related disciplines (Ribière & Khorramshahgol, 2004). They complement each other for successful management. Indeed, the review of literature in Chapter 2, 3 and 4 described and discussed various issues related to KM and TQM. These literature studies helped to clarify the theoretical concept of KM and TQM and how to approach the methodology, mainly in setting up and designing the questionnaire for collecting the data (Chapter 5).

The data collected from the 351 respondents who responded to the online questionnaire were analysed using various statistical methods, including skewness, kurtosis, kolmogorov-Simrnov, Shapiro-Wilk, mean, standard division, correlation, and other methods. The results of analyses indicated close similarities between the perceptions of respondents in public (Chapters 7) and private (Chapters 8) universities. Therefore, the discussion will focus on the overall perceptions of respondents and justifying the hypotheses of this research (Chapter 1).

9. 2 General Discussion

This section focuses on the discussion of the results in relation to different variables related to KM and TQM. Generally, the overall perception at both public and private universities indicated that respondents agreed with the statements in the questionnaire.

The perceptions of respondents from public and private universities on knowledge creation, storage of knowledge, knowledge distribution, and knowledge were significant related to the KM process. Although there were slight differences between public and private universities, the means for the first 40 statements were close to the fourth option on the Likert rating scale. These results indicated that respondents from both public and private universities agreed on statements related to KM. In this respect,

the three main aspects that were involved in this study included the KM process, KM technology, and team knowledge. These three elements are important in respect to higher educational success. We may argue that these three elements of KM are interrelated in a dynamic process, which supports how people assimilate information and knowledge and how they exchange and combine it to create new information (Gillingham & Roberts, 2006). The implementation of KM has the capacity to capture, share, and integrate knowledge within environments, which requires key elements, including KM teams, KM strategy, and technology (Albers, 2009). The results obtained from the questionnaire in the current study revealed respondent satisfaction in the creation, storage, distribution, and application of knowledge that was obtained internally or externally. These results demonstrate a sign of good implementation in modelling KM at both public and private universities in Jordan. In addition, both technology and knowledge teams play an essential role in managing higher educational institutions in. Jordan. Per se, the current results indicated that both public and private universities have adopted modern information technologies in managing the educational process through systems-based knowledge. However, the interrelationships between the KM process, KM technology, and team knowledge individually displayed positive correlations among variables (r = 0.249-0.468) with effective leadership, continuous improvement, and employee involvement. It is difficult to give a clear explanation of these results. Literature indicated that KM is a complex process without end; however, effective KM can be a goal for any organisation (Clark & Rollo, 2001; Crawford, 2005). In addition, multiple regression analysis revealed that KM processes at public and private universities impact effective leadership. The individual's knowledge creation, distribution, storage, and knowledge application factors affected leadership, indicating that all four process factors (awareness and acceptance of knowledge processes and perceived usefulness and ease of use) have positive effects on effective leadership. The perceived usefulness has a higher effect in private universities (r = 0.414, $p<0.001$) than in public universities (r = 0.368, $p<0.001$), but all universities have a positive effect on the relationship between KM processes and the relationship with effective leadership.

The direct effect of each KM process factor on the relationship with continuous improvement was tested through simple regression, and all four possible factor effects were found to be significant and positive. Conscientiousness, agreeability, and extraversion have significantly contributed to the relationship with continuous

improvement. These results were found to be consistent with prior results showing that these are valid predictors of the relationship between them (Molina et al., 2005).

These findings suggest that KM process factors are easier to correlate with continuous improvement than with others, and these are important and more easily understandable for predicting KM processes. These results were also consistent with earlier studies (Hsu & Shen, 2005; Lee & Asllani, 1997; McAdam & Leonard, 2001). Extraversion has a slightly higher effect in public universities (r = 0.284, p <.001) than in private universities (r = 0.249, p <0.001). These results corroborate the relationship between KM processes and continuous improvement.

In addition, the four factors (knowledge creation, storage of knowledge, knowledge distribution, and knowledge application) significantly contributed to the relationship between KM processes and employee involvement. The results of the regression analysis supported the hypothesised relationships. Among all four factors, perceived usefulness had a reasonable effect on the relationship between them (r =*0*.404 p<0.001) in private universities and (r = 0.368 p<0.001) in public universities. These results are consistent with earlier studies' results demonstrating the relationship between KM processes and employee involvement (Kaufman, 1992; Silos, 1999; Wilson & Asay, 1999; Bhatt, 2000; Choi, 2000; Hall, 2001; Binney, 2001; Ryan & Prybutok, 2001; Hung et al. 2005; Moffett et al., 2003).

The results regarding KM technology factors as predictors reveal that issues related to technology in KM were found to be informative predictors of the relationship with effective leadership. Literature revealed that conscientiousness, agreeability and extraversion were found to be valid predictors of this correlation. (Abdul-Wahab, 2007; Hijazi, 2005). These findings suggest that it was possible to correlate technology factors with effective leadership. These factors are important and more easily understandable for predicting the enhancement of this correlation (Baserda, 2006). These factors showed slightly higher correlation, (r = 0.406, p <0.001) for private universities than for public universities (r = 0.383, p <0.001).

Analysing the association of KM processes in relation to KM technology and continuous improvement indicated positive low correlation in public and private universities (r = 0.398, p<.001). These results may suggest that public and private universities are in close contact with each other; therefore, there exists a positive relationship between KM technology and continuous improvement in TQM. These

results corroborate the hypothesis that there is a relationship between KM technology and continuous improvement in TQM (Dataware Technologies, 1988).

The correlation between KM technology and employee involvement is another key factor in linking KM and TQM (Ju et al., 2006). Therefore, the correlation between KM technology and employee involvement in TQM were tested. This subsection presents the discussion and interpretation of the results regarding the direct effect of KM technology factors on employee involvement through simple regression. These results revealed that all factors contributed to the correlation between them and fully supported the hypothesised relationships. Among all factors, perceived usefulness has a slightly higher effect on the relationship between KM technology and employee involvement (r =0.341p<0.001) at public universities than (r =0.338 p<0.001) private universities.

Again, the direct effects of knowledge team elements, including knowledge managers and knowledge makers, on effective leadership in TQM indicated that both elements were significant and positively correlated. Knowledge teams were also found to positively contribute to effective leadership. These results are supported by the hypothesised relationship (Oakland & Porter, 2004). With respect to both types of universities, the effect of knowledge teams on effective leadership was higher at private universities (r = .0.468, p<0.001) than at public universities (r = 0.390 p<0.001). In both cases, these results clearly show the relationship between knowledge teams and effective leadership. In higher educational institutions, tasks and performance influenced the educational outcome, as they are closely related to teaching and learning processes that are performed by the academic staff. The continuous improvement factor was also found to be another factor that impacted the knowledge team (Baserda, 2006). By looking into the effects of continuous improvement on knowledge team factors, the current results indicated that three out of five were found significant and positive as predictors of a relationship between continuous improvement and knowledge team factors. Conscientiousness, agreeability, and extraversion were found to be significant predictors of a relationship. Knowledge team factors were found to be slightly higher at private universities (r = 0.350, p<0.001) compared to public universities (r =0.301 p<0.001), suggesting that private universities were agreeable and more significant than the correlation with the public universities. Finally, the effects of knowledge team factors on employee involvement supported the hypothesised relationships. By considering the impact of knowledge

team factors on employee involvement, the results indicated that knowledge team factors had a positive effect on employee involvement, based on the correlation between the two factors. Private universities showed a higher correlation coefficient (r = 0.442, $p<0.001$) than public universities (r =0.354 $p<0.001$), suggesting that general knowledge team factors can enhance employee involvement.

While making comparisons among the effect sizes of KM factors on TQM, the results showed that KM factors have a greater impact on TQM. One possible implication of these results suggests that KM can be taken as a mediator of the relationship between TQM factors. This means the results supported the main hypothesised relationships and were consistent with earlier studies' results (Gloet & Terziovski, 2004; Hsu & Shen, 2005; Lee & Asllani, 1997; McAdam & Leonard, 2001).

Further analysis indicated that the integration between KM and TQM had an impact on the three related EP factors, including internal processes, customer (stakeholder), and learning and growth. The relationships between the three related EP factors were statistically significant at $p<0.001$-0.005. These findings are convergent with earlier studies' findings by Kidwell and Johnson (2000) and others (Tai et al., 2008). The regression results indicated that the integration between KM and TQM positively impacts the internal processes of EP. The impact of the five internal process factors demonstrated awareness and acceptance of the integration between KM and TQM, with a significant and positive effect on this relationship. The perceived internal processes showed a higher level of effect on TQM (T = 3.482, $p<0.001$) than KM (T = 2.839, $p<0.005$) in private universities. In public universities, the T-test value for TQM was 4.087 at $p<0.001$, which it is more than the corresponding value (T = 0.707, $p<0.001$) for KM. These results indicated the acceptance of the relationship between the integration of KM and TQM and the internal processes, especially when F = 25.872 at $p<0.001$ in private universities and F = 35.66, at $p<0.001$ in public universities. These results suggest that, although in general, KM and TQM factors enhance the relationship with internal processes of EP, the perceived usefulness has a greater role in EP. These results clearly reveal the association between the integration of KM and TQM with the internal processes. The integration between KM and TQM exhibited a positive impact and a major hub in the internal processes, as a key perspective of the universities' performance (Kidwell & Johnson, 2000; Owlia & Aspinwall, 1996; Petruzzellis et al., 2006).

With respect to the effect of the relationship between the integration of KM and TQM and the customer (stakeholder) perspective of EP, results also indicated a positive association among the related factors. The customer (stakeholder) perspective is influenced by the integration of KM and TQM. Furthermore, this correlation has a great impact on EP. The customer (stakeholder) perception had a high effect on TQM in private universities (T = 3.0303, p<0.004), which is more than KM (T =2.792, p<0.05), and in public universities TQM (T = 4.881, p<0.001) was more than KM (T = 0.730, p>0.05). This means that the result of public universities is negatively significant. The overall results indicate the acceptance of the relationship between the integration of KM and TQM with the stakeholder, especially when F = 21.229, at p<0.001 in public universities and F = 15.254, p<.001 in private universities. These results suggest that, although in general KM and TQM factors enhance the relationship with the stakeholder of EP, the perceived usefulness has a medium role in EP (Kaplan & Norton, 1996). Furthermore, the effects of integration of KM and TQM on learning and growth factors (technological innovation, administrative innovation, and additional creativity) were significant. These results indicated the impact of the integration of KM and TQM on EP. The analysis of the learning and growth factors for TQM obtained a T value of 2.055, at p<0.044), which is more than the corresponding value for KM (T = 2.032, p<0.05) in private universities. The T value for TQM was 2.913, at p<0.005, which is more than the corresponding value for KM (T = 0.114, p>0.05) in public universities. These results indicated that the result of public universities was negatively significant. Nonetheless, the overall results reflect the acceptance of a relationship between the integration of KM and TQM with learning and growth, especially when the F value was *6.623*, at p<0.001 in public universities and when the value of F = 4.322, at p<0.020, in private universities. These results suggest that, although in general KM and TQM factors enhance the relationship between learning and growth of EP, it is less than the previous perspectives of EP. In this respect, the perceived usefulness was found to have a medium role in EP (Davis, 1996).

In the light of the previous results of the integration between KM and TQM and its impact on EP perspectives, literature revealed a positive and large impact on the performance of universities (Kidwell & Johnson, 2000; Kanji & Tambi, 1999; Hussein & Aboud 2008).

These results conclude that respondents accepted their adopted approaches in conducting TQM. In this respect, the similarity in the mean results between public and private universities may be related to the fact that both types of universities follow the same higher educational system (Chapter 1). The Jordanian government has considered HE an important sector. Therefore, the government has introduced several laws and constitutions aimed to further develop the HE sector, improving its ability to compete with other educational institutions in the region (Al-Tarawneh, 2011). Generally, HE plays an essential role in the development of education and society, as it affects the growth of community in all organisational sectors (Sallis, 2002). The perceptions of respondents in the current study indicated that both public and private universities were aware of the concept of KM. Knowledge management plays a vital role in the improvement of organisational competitiveness by adopting best practices, achieving better decision-making, faster responses to key institutional issues, better process handling, and improved people skills (Bhusry et al., 2012).

In addition, the issue of TQM has been addressed in HE institutions, as they are related to productivity and financing (Ali & Shastri, 2010). Those adopting TQM in HE have varying perspectives on the approach. Some see TQM as a management system with customer or student satisfaction as the crucial element (Temizer & Turkyilmaz, 2012). Others see TQM as a philosophy promoting change in an organisation or educational institution. Academic institutions have used both the approaches in applying TQM in HE settings. Quality of education takes into account the external environment in which institutions operate and the internal environment where teaching and learning takes place as well as the home environment of learners (Kahreh et al., 2014).

9. 3 Framework

After reviewing the relevant literature, a theoretical framework was generated, as following in Figure (9.1).

9. 4 The Revised Framework

By comparing the literature review conclusion with those that emerged from the two parts of the case study, a substantial amount of consistency was discovered. However, after analysing and discussing the data collected during the fieldwork, a new relationship relating to KM and TQM was revealed, and as a result the framework has been changed, revised, and expanded, as it was revealed that the newly-identified relationship appears to have the above model (Figure 9.1) and should be considered the

overall framework for the analysis. The figure illustrates the relationship between KM, TQM, and its impact on EP.

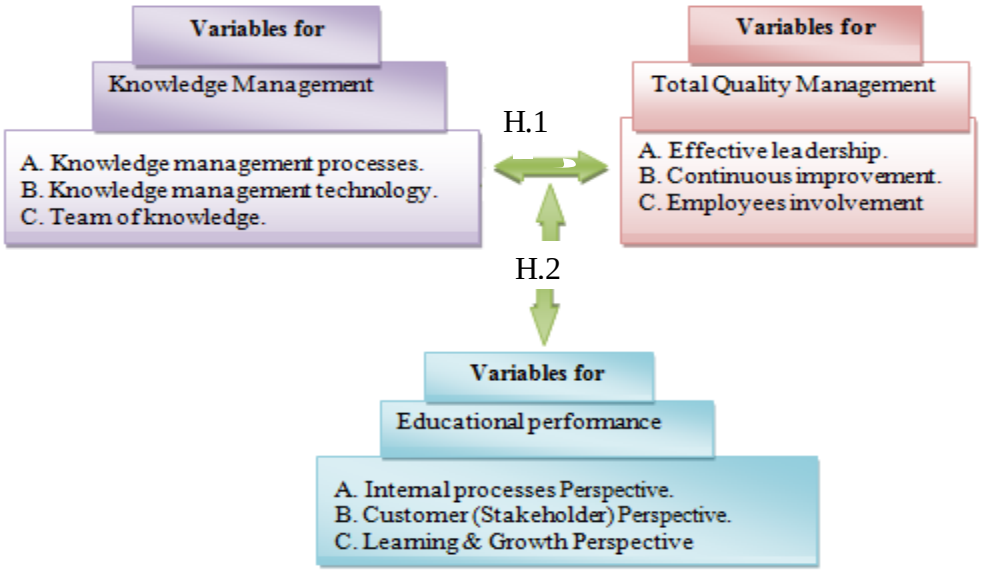

Figure 9. 1 The Theoretical Framework

The independent variables in this framework are KM, TQM, and EP, whereas the dependent variables are the elements of each one (KM, TQM, and EP) and their effect on EP within the Jordanian HE universities. The revised framework (Figure 9.2) displays the influences affecting the integration relating to KM and TQM in Jordanian HE and the integrations that are discussed in this chapter. In addition, this research aimed to investigate the direct relationships between integration of TQM with KM and its impact on EP.

Comprised of three dimensions (core elements), TQM includes leadership commitment, continuous improvement, and employee involvement. Meanwhile, the three key elements of KM are knowledge identification, knowledge processes, knowledge technology, and team of knowledge. In order to explain the relationship between TQM, KM, and EP, EP is viewed from three perspectives that include customer (stakeholder) perspective (i.e., academic achievement), internal processes perspective, and learning and growth perspective.

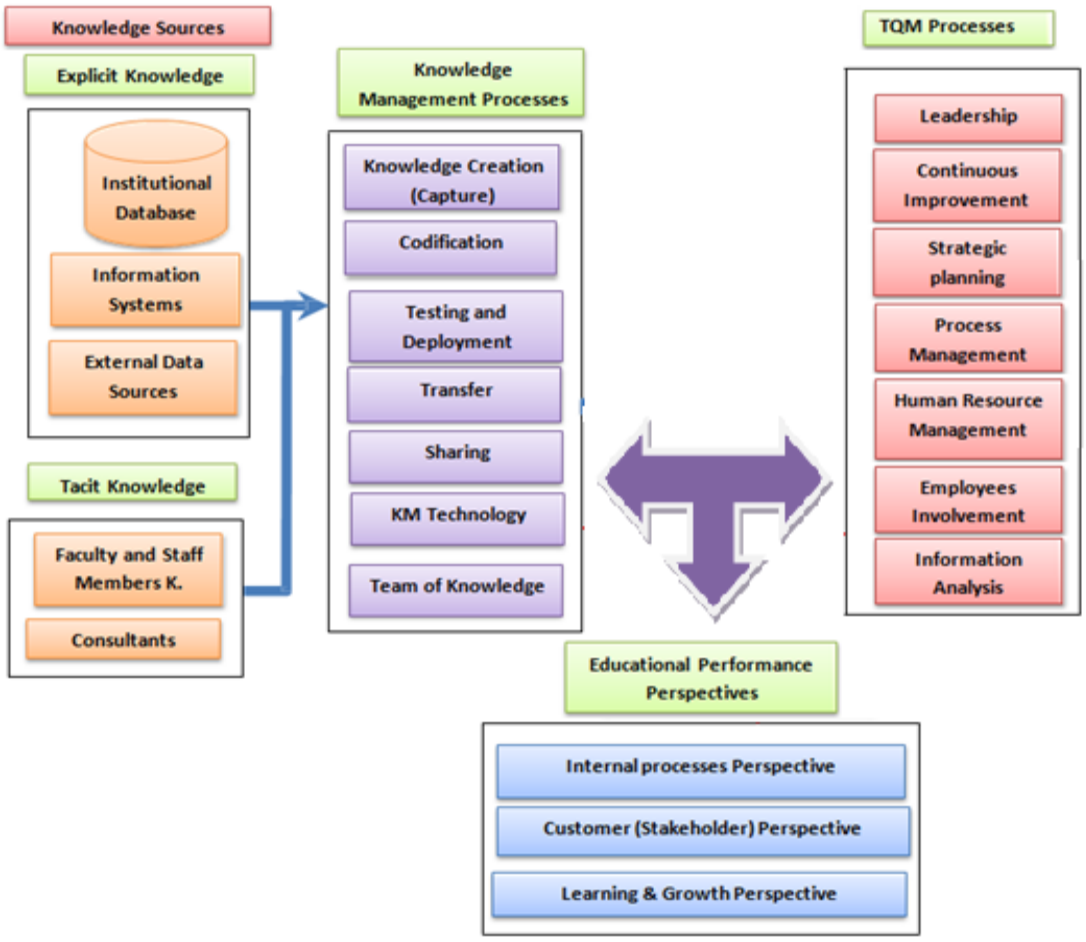

Figure 9. 2 The Revised Framework of the Study

9. 5 Achieving the Aim and Objectives of the Study

The aim of this research was *to establish a framework that represents the integration of KM and TQM to measure the performance of higher education based on improvement of teaching and learning*. The aim has been achieved by addressing the research objectives that follow.

The first objective was to review the relevant literature on the concepts of KM and TQM and their significance for educational organisations and to contribute to their conceptual framing. This objective was achieved by conducting a thorough review of the literature and developing an understanding of KM, TQM, and EP. This understanding has evolved from three main sources, which are experts' experiences and theories concerning the subject, KM, TQM, and EP universal models, and the associated empirical studies. The literature review also covered KM and TQM-related topics within the manufacturing sector and the service sector with a special focus on the HE context (the main focus of this study). Most of the literature related to KM and TQM originated in or referred to Western countries, and only a few studies were

reported from developing economies, with even less having been conducted within the Arab world, which shares the same culture as Jordan (the research context).

The second objective was *to contextualise a framework for the integration of KM and TQM*. The purpose of this was to guide the researcher in conducting the empirical study and data collection. To meet this objective, a number of KM, TQM, and EP elements in academic culture were identified from the earlier literature review. Based on this critical literature review, three elements for each were identified and justified, which were considered variables of this study, in addition to the academic culture element, which formed the context investigated.

The third and fourth objectives were identifying integration and correlation between KM and TQM and its impact on EP and identifying the impact of the integration of the KM and TQM in the EP of organisations. To achieve these objectives, two parts of the case study were selected from Jordanian public and private universities. The questionnaires were carried out to gain an in-depth comprehension of the integration and correlation between KM and TQM and their effect on EP within these institutions and by implication and extension, other Jordanian universities.

The fifth objective was *to refine the framework of scientific methods and techniques to be followed and to take advantage of the integration of KM and TQM in enhancing the competitive advantage through improved EP*. To achieve this objective, nine hypotheses were considered, as subsets of two main hypotheses. Each of these hypotheses are subdivided into different sub-hypotheses depending on the variables of each element of the three main components, which were KM, TQM, and EP. These hypotheses were tested by statistical analysis of each part of the case study.

The method of data collection that was chosen as appropriate was the questionnaire, which enhanced the validity of this research. It should be mentioned that meeting this objective was highly dependent upon accomplishing the first objective. The findings from the case study organisations were compared with the literature to verify whether previous literature predictions were similar or different to the findings.

Finally, by achieving the research objectives, the main aim of this study mentioned above has been successfully achieved.

9. 6 Contribution Knowledge

As indicated earlier, the modern approach to attain quality of performance in academic institutions is associated with KM and TQM. Therefore, many organisations consider

KM and TQM effective approaches for management. Despite the need to improve knowledge quality using enhanced capture activities, Fahey and Prusak (1998) observed that most organisations focus more on the quantity of knowledge captured. Failure to focus on knowledge quality results in reluctance by knowledge workers to use the knowledge stored in repositories (Gray & Durcikova, 2006; Kulkarni, Ravindran, & Freeze, 2007). The problem described above has an impact on knowledge users' enthusiasm to use knowledge repositories because they perceive the knowledge captured to be suboptimal (Gray & Durcikova, 2006). Kulkarni et al. (2007) contended knowledge quality and knowledge use is integral to ensuring the success of KM initiatives.

This study was able to contribute much towards widening the boundaries of knowledge as well as providing more empirical evidence for practitioners as detailed here.

There are many concepts of management models from literature that have been scrutinised and have become general management terminologies. For example, TQM has survived and grown by the efforts of researchers and practitioners. As mentioned earlier, the link between TQM and KM has been recognised, yet the studies have thus far have been few and incomplete (Ju et al., 2006; Ooi, 2009).

The integration of TQM and KM has an influence on EP, especially in the emerging knowledge economy, where all organisations (particularly educational organisations) depend on knowledge. The concept of this study, therefore, has provided an opportunity to investigate this area, striving to link the gap between theory and practice by using empirical methods. However, most of the studies that have attempted to create a link between the two concepts lack empirical evidence, and the results cannot be generalizable. In this study, the researcher uses an empirical approach to investigate the integration and correlation between TQM, KM, and EP, using a quantitative research method. It is believed that the results of this research will contribute to the body of knowledge in this area by arriving at a good model to improve EP.

Although many researchers have individually addressed the proposition of the interrelationship between TQM, KM and performance, few of them have investigated this interrelationship, empirically, in the education sector. The work carried out in this study provides a potential for instrument validation. By testing two kinds of universities (public and private), this study offers a reliable validation of TQM, KM, and EP constructs that is helpful for future research.

Moreover, this study could benefit academic leadership and academics in educational institutions by enhancing their knowledge concerning the elements of TQM and key processes of KM to be considered when implementing these two models (TQM and KM). Hence, the study contributes to the enhancement of the education system. To summarise, the importance of this study stems from the significance of the following:

- In the current ambiguous environment, TQM and KM in business are necessary and critical factors for organizational survival, and
- To obtain and maintain supportable competitive advantage, organizations need a TQM approach that considers KM as a potential source of EP improvement.

Moreover, to the best of our knowledge, this research project is one of the first KM and TQM initiatives for universities in Jordan. Thus, it has adopted a case study strategy in conducting this study. The current study provides an in-depth understanding of the readiness for measuring EP using the integration between KM and TQM in HE institutions in Jordan. As far as the researcher is aware, this is the first study to use this approach and therefore provides a richer appreciation of KM and TQM in EP. In addition, the current study will be a valuable resource for both researchers and practitioners who have a strong interest in understanding the integration of KM and TQM and its impact on EP in HE institutions. It makes a contribution to the literature on TQM and KM integration in the context of developing countries.

The scarcity of empirical studies outside developed economies is a problem given the growing awareness of the importance of TQM and KM around the globe. This study will provide benefits to academics and practitioners in developing economies where there is a shortage of information concerning TQM and KM; hence, the systematic approach adopted in this study and the results obtained from it will offer a new critical mass of TQM and KM knowledge within a different cultural context.

The review of the literature in these fields has revealed gaps and the need for more empirical studies to be conducted; therefore, this study integrates, refines, and extends the empirical work conducted in these fields and fills in some of the gaps in the literature of these fields, such as external stockholders and their influence and effect on encouraging or discouraging universities in adopting TQM and KM.

The MoHESR in Jordan has established quality assurance and TQM programs in all Jordanian HEIs with the objective of achieving better performance. On the other hand, issues and problems related to the performance of Jordanian HEIs as reported in the

UNESCO and Jordan governmental reports indicate the lack of ability of Jordanian HEIs to deliver suitable educational services. By integrating the KM literature together with TQM literature, this study can scientifically influence the decision-makers of Jordanian HEIs that the implementation of TQM is one essential, but insufficient step in gaining high-level performance, unless supported by KM processes. Therefore, the outcomes from this study provide much-needed information regarding the nature of TQM elements of educational institutions and the intervening effect of KM on EP by producing empirical evidence of these relations.

This study has revealed that in the Jordanian context, employee empowerment should be studied as an element in TQM and KM and their effectiveness in EP, unlike other studies in the field of TQM and KM that considered them integrative.

This study gives attention to social responsibility as an important TQM and KM integration; this integration has not been studied in Jordan previously.

It provides empirical evidence of the nature of the impact of TQM and KM implementation on EP as well as competitiveness as a strategic objective in any educational organisation, which assists universities in identifying their approaches in relation to achieving a competitive advantage.

This study recommends that managers give social responsibility (such as ethical responsibility to employees and to the external environment) more attention as part of their university strategies.

This study raises the awareness of the significance of the amalgamation between TQM and KM programmes as important, strategically and philosophically, which could help universities to have a better understanding of how that integration could be effectively approached and implemented.

9. 7 Limitations of the Research

The current study focuses on the integration between KM and TQM and its impact on EP. The results in this thesis can be applicable to Jordanian HEIs. Although KM and TQM have been adopted in particular universities, this study is limited to the study of the association between public and private universities in Jordan.

In addition, the college level varies from an academic leadership perception. Academic leadership may differentiate the implementation of the core elements of TQM and KM

processes among the colleges. For these reasons, the deans or assistants of the deans were chosen as target respondents of the present study.

The researcher in this study focused on the teaching and learning processes, where the HE institutions are established for three main purposes, namely teaching and learning, research, and community services because teaching and learning processes are the main target of the educational system in any HE institution (Venkatraman, 2007).

Jordanian HEIs have been selected as organisations to be surveyed for this study because they are still developing organisations. In addition, there are many issues and problems associated with the performance of Jordanian HEIs. Therefore, it has become necessary to improve the performance of these organisations. In addition, the researcher himself is originally from the third world, and Jordan belongs to the third world as well, which has facilitated working with the people and language. This has facilitated the understanding of research data and information, as the researcher is familiar with the culture and educational environment in Jordan compared to other countries.

9. 8 Suggestions and Recommendations

In view of the results and discussions in the current thesis (Chapters 4 through 6 and the above section), the researcher suggests universities should consider the following issues.

- It is vital to consider each individual in the university a main element for supporting the dynamic pace of the development of intellectual capacity among the members of the university. This will likely improve the experiences of others and derive lessons from successes and failures in order to capture useful knowledge that will enable the university to achieve its objectives with respect to KM and TQM.
- The university should support distinctive staff, those who have a high level of knowledge and experience to ensure that the university achieves a high level of KM and TQM.
- The university should manage a high level of communication between workers to facilitate better understanding of how to achieve better KM and TQM. It should also take advantage of experts and prominent research centres and use modern technologies to increase the university's ability to transfer knowledge to students and others via its services for a better reputation.
- The university should consider removing any obstacle that may stand in the way of maintaining high quality KM for workers. In addition, the university should set up

certain policies for controlling, managing, establishing, and maintaining a high standard of KM and TQM.

- The university should adapt good KM plans and identify the needs that encourage positive interaction among workers via setting up training programmes and using ~~the~~ modern technologies.
- The university should create a knowledge base dedicated to university customers and activate KM to initiate positive interactions with the workers. This will help to encourage making changes that benefit the university educational outcomes.
- The university should adapt a reform strategy for developing better approaches to its KM and TQM.
- The university should include in the reform a modern strategy for improvement of the overall quality of the educational process that leads to recover better outcomes of the university.
- The university should increase the participation of workers in any reform that the university considers. This will help the university to achieve better development in KM and TQM and solve major problems.
- The university should remove the possible barriers between management and academic staff for better engagement in implementing and developing quality for KM and TQM.

The researcher also suggests further points that could improve adapting and developing better concepts for KM and TQM. These issues are as follows:

- Encourage holding seminars, conferences, and workshops with the aim to increase understanding the nature of the current KM and TQM for better strategy implementation and development.
- Activate the assessment approach for KM and TQM to increase and improve the productivity and service of the university.
- Establish comprehensive and precise databases that can be used for developing an internal system to encourage better KM and TQM.
- Invest in areas that improve communication for developing skills and improve the intellectual perspectives of workers for better creativity.
- Conduct comparative studies between community organisations and leading universities in the fields of KM and TQM and assess their quality in comparison with other national or international universities.

- Include the concept of KM and TQM within the university education system and as part of the curriculum.
- Adapt the concept of modern management systems to ensure achieving overall quality in KM and TQM.
- As this study concentrated only on ten public and private Jordanian universities, it is recommended that future should include ten other similar universities in order to learn whether a generalisation of the findings is possible beyond their setting.
- As this study focused on two types of Jordanian universities, it is recommended that the methodology be used with other universities in other countries with a similar culture (i.e. other Arab countries). The findings of the current study may be used in those countries in order to conduct a comparative analysis and facilitate the development of a deeper understanding of the topic in the Arab world.

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- As the governmental policy in Jordan is aimed at enhancing the quality of education, it is recommended to conduct such studies in secondary schools in Jordan because this sector could be considered as a key influencer of quality and is regarded as an input to the higher education sector.
- The list of variables identified by this research could be used by researchers interested in investigating the integration between KM and TQM in other sectors.

9. 9 Conclusion

As a conclusion, issues regarding EP of HEIs will remain a vital agenda for academic leadership, academics, researchers, local governments, and society. The findings of this study strongly suggest that TQM and KM are significant practices for enhancing the EP of HEIs.

This study contributes to the comprehension of the relationship between TQM, KM, and EP. The results of the study indicate that both TQM core elements and KM elements must be implemented holistically not individually. The TQM core elements are related to leadership commitment, strategic planning, continuous improvement, customer focus, process focus, employee involvement, training and learning, rewards and recognition, and management and contribute significantly to KM elements and EP. Most importantly, the evidence indicates that KM fully mediates the effects of TQM on EP.

The findings of this study have theoretical and practical contributions. From the theoretical standpoint, the results acquired from this study were consistent with theories

and earlier literature, which sponsored these theories. The empirical evidence from this study contributes to the body of knowledge in the fields of TQM and KM.

From a practical perspective, the results of this study strongly suggest the establishment of TQM core elements as a solid strategy for EP improvement. On the other hand, TQM has a significant impact on KM, which has a significant effect on organisational performance. Given this important role of KM, the findings of this study also suggest that HEIs that implement TQM must be willing to make improvements in KM elements if they desire to improve the performance of their organisations effectively. In other words, the empirical findings of this study provided evidence that the significant success of implementing TQM core elements comprehensively could be yielded by implementing a holistic approach of KM elements.

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APPENDIX

Appendix.A: Questionnaire

Questionnaire

The Integration of Knowledge Management & Total Quality Management and Its Impact on Educational Performance.

Higher Education in Jordan

SECTION (A): DEMOGRAPHIC INFORMATION

The following are demographic information about you and your University. Please answer by tick (√) in the appropriate bracket below:

Gender	[ ] Male [ ] Female
Age Group	[ ] 24yrs-40yrs old [ ] 41yrs-55 yrs old [ ] >=56 yrs old
Degree	[ ] Bachelor degree [ ] Master Deg [ ] PhD [ ] Other
Your Rank	[ ] Professor [ ] Associate Professor [ ] Assistant professor [ ] Lecturer [ ] Other
How long you are working in this field?	[ ] 1 yr-5 yrs [ ] 6yrs-10 yrs [ ] >=11

SECTION (B): Integration KM & TQM And Its Impact On EP

Please indicate the extent to which you agree or disagree of the following statements regarding factors affecting employees' performance in your university [SD-Strongly Disagree D-; Disagree; N-Neutral; A- Agree; SA-Strongly Agree]:

Variables of Knowledge Management processes:

I: Knowledge Creating: university administration depends on the following to create knowledge.	**Please tick**				
	S				S

1. Individual learning for workers.					
2. Its external environment {Customers (Stakeholder), Equipped, Competitors, etc}.					
3. Contracting with experts from outside the university to work there.					
4. Insight into the experiences of workers and the experiences of others.					
5. Internet, advanced computers' software and advisory research canters.					

II: Store of knowledge: university administration depends on the following to store knowledge:	**Please tick**				
6. Records and written documents.					
7. Computer and other digital information media storage.					
8. Activated incentives (financial and moral) to maintain individuals of high knowledge and talents.					
9. System to control the tangible knowledge assets.					
III: Knowledge Distribution: university administration depends on the following to distribute knowledge:	**Please tick**				
10. Work Teams and regular meetings.					
11. Documents, publications and internal information network.					
12. Training and openness in the exchange of thought and dialogue.					
13. Relations and informal contacts.					
14 The transfer of knowledge to others through lectures and services.					
15. Metaphorical representation and imaging of knowledge.					
IV: Knowledge Applying: to apply knowledge, the university administration should:	**Please tick**				
16. Make sure that faculty members realize the information they hold and feel able to find meaning for them.					
17. Grant faculty members freedom to apply their knowledge.					
18. Hire knowledge managers who urge well application to it.					
19. Remove all Barriers that stand in the way of knowledge access for individuals, experts and administrative units.					
20. Make Rules to control of knowledge.					

Variable of Knowledge Management Technology

	Please tick				

21. your university has intranet (LAN) web					
22. Connect faculty and administrative units in the university with a network of computers.					
23. Update Information system in the university constantly.					
24. Keep pace quickly with changes of technology.					
25. Use virtual reality systems in the work of the university.					
26. Take crucial decisions with the help of decision support systems-based knowledge.					
27. Use of office automation systems (E- mail, automated retrieval of information, word processing, audio-video conferences) to carry out administrative tasks.					
28. Use university artificial intelligence systems.					

Variable of Knowledge Team

I. Knowledge-makers:	**Please tick**				
29. The University has its own qualified Knowledge-makers and relies on them.					
30. University knowledge-makers maintain modernity and advancement of knowledge as well as communicate with the outside					
31. They act as consultants for the University in the field of knowledge.					
II. Knowledge managers: University knowledge managers carry out the following:	**Please tick**				
32. Collection, classification and knowledge transfer to the knowledge base.					
33. Draw results from the knowledge base.					
34. Development of knowledge management programs and its implementation.					
35. Representation and adaptation of Knowledge along with well application of it by university staff					
III. Students' Knowledge Management: student's knowledge management at the university is keen on:	**Please tick**				
36. Collecting a great deal of knowledge about students (their needs, their desires, and the degree of their loyalty to the university).					
37. Linking-up students to student knowledge base at the university.					

38. Linking student to group of experts from the university.					
39. Adapting internal links so that it would become consistent with the student's knowledge base.					
40. Motivating students to submit their suggestions, opinions and ideas.					

Variable of Effective Leadership (TQM Processes)

	Please tick				
	S D				S A
1. The senior administration adopts a strategic plan to achieve a quality in all areas of the university.					
2. University adopts the principle of quality as the responsibility of all sections and parties involved in the university.					
3. University administration puts forward plans for continuous improvement and encouragement of employees to participate.					
4. Communication channels to the market place should be Available at the university to investigate grievances, opinions and suggestions about the value-quality of graduates.					
5. The University has competent research and development units to determine the needs and desires of the market place and exceed these requirements.					
6. Higher administration decisions are made on the basis of facts and data or based on the recommendations of the staff and students.					
7. Do Higher administration a radical changes to makes the quality a part of the organization's systems and operations.					

Variable of Continuous Improvement

	Please tick				
	S D				S A

8. There are teams in university equipped with the necessary supplies with a task to improve quality.					
9. There is a specific and clear-cut program to avoid mistakes					
10. There are statistical methods and tools at the university to test and measure the quality of graduates.					
11. Devise ways and means continuously to help improve the quality of the educational performance of the university and the quality of its graduates					
12. Workers receive training to be aware of the opportunities and improvement targets.					

Variable of Staff Involved:

	Please tick				
13. partake Faculty members in making strategic decisions regarding quality					
14. Faculty and staff are entitled to resolve major problems related to graduates.					
15. Partake Faculty members and staff in solving the main problems at university.					
16. The University has an efficient system to motivate individuals (financially and morally) to participate.					
17. The University system rewards persons showing creativity.					
18. Administration works on removing fears among members of the faculty and staff while doing their job.					
19. Facilitate communication and strengthen links between the faculty and staff and senior management					
20. There are efficient programs that help faculty members get acquainted with the objectives and mechanisms of the university functions.					

Variable Internal Processes Perspective:

	Please tick				
1. There is a continuous increase in the productivity of					

faculty members at the university.					
2. There is a continuous increase in the rate of the production capacity of the administrative system.					
3. There is a continuous increase in the rate of use of educational technology.					
4. There is a continuous increase in the rate of development for curriculum and educational programs.					
5. There is a continuous increase in the rate of development for educational environment.					

Variable of Customers Perspective:

Variable of Customers (stakeholder)' Perspective:	**Please tick**				
	S D				S A
6. Faculty members in the university show a high degree of enthusiasm at work.					
7. Faculty members are never absent unless they have a reasonable excuse.					
8. There is an increase in faculty proposals to develop the university.					
9. There is a constant decline in the rate of violations of faculty members in regard to work behaviourism.					
10. There is a continuous decline in the number faculty member job hoppers.					
11. There is a continuous decline in the rate of complaints of faculty members.					
II. External stakeholders (marketplace):	**Please tick**				
	S D				S A
12. There is a continuous increase in the total number of marketplaces ~~of~~ compared to competitors.					
13. There is great interest of parties offering jobs to submit proposals for the development of the university and its outputs.					
14. There is a continuous decline in the number complaints arising from marketplaces.					
15. There is an increase of loyalty on the part of employment for the company compared to competitors					

Variable of learn and grow perspective:

I. Technological Innovation:	**Please tick**				
	S D				S A
16. The university has initiated the graduation of new batches that suit and the needs of the marketplace.					
17. The university availed itself to local competent personnel in the process of increasing the number of graduates.					
18. University has received patents that enhance its creativity.					
II. Administrative Innovation:	**Please tick**				
	S D				S A

19. The university has pursued new policies in the area of recruitment, bonuses, promotions and training.					
20. University has conducted extensive changes (introduction or cancel sections) in its organizational structure.					
21. University conducted radical changes in the use of computer systems in the administrative processes					
III. Additional Creativity:	**Please tick**				
22. University has conducted amendments to local talent to improve the learning process.					
23. University has introduced new programs to augment student's loyalty.					

Appendix.B: Invitation Letter

Invitation Letter

Dear Sir,

I am currently pursuing a PhD in Integration of Knowledge Management (KM) and Total Quality Management (TQM) and Its Impact on EP, Case Study: (Higher Education in Jordan), at University of Salford (School of The Built Environment) UK.

My dissertation focuses on how universities facilitate the process of documenting mission critical knowledge and total quality to achieve improved performance. Given the seniority of a high percentage of the staff member at Universities of Jordan, this must be an issue of concern to the universities.

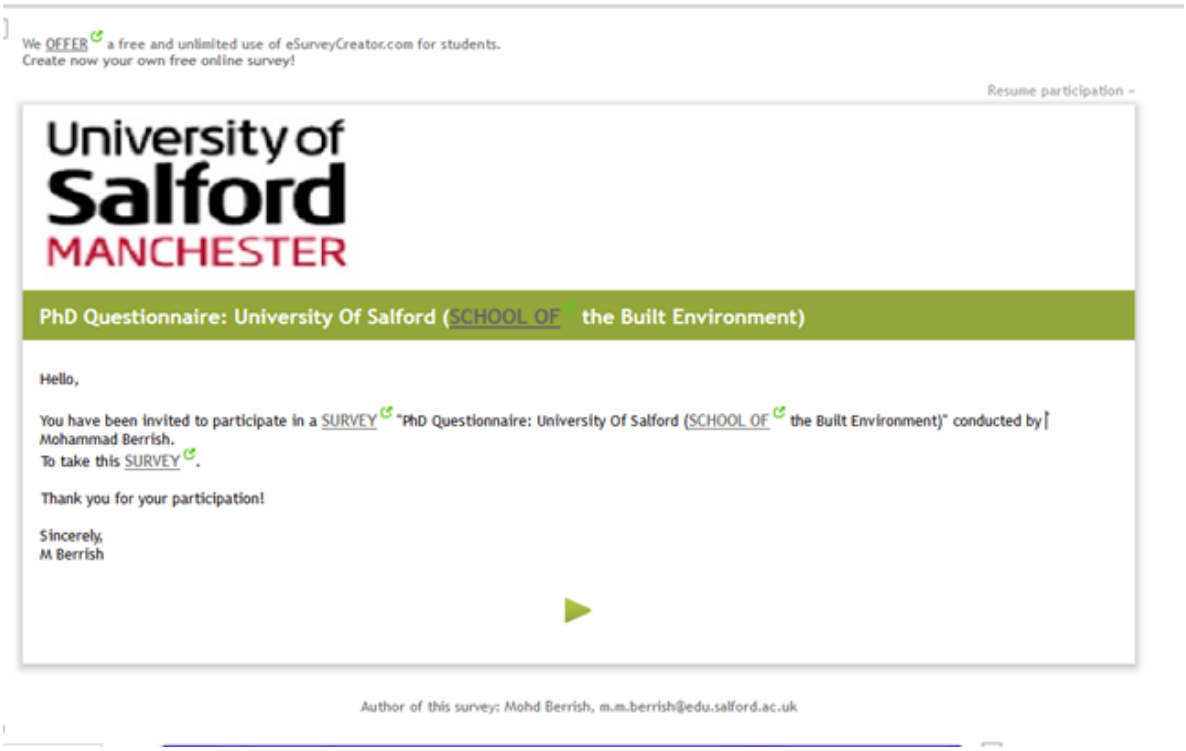
This location was selected for the study because of the uniqueness of the Higher Education in Jordan comparing to the other Arab countries who applied the (TQM) particularly in education and its success in a time when many countries that try to apply (TQM) in their universities.
I plan on administering a survey to about 500 staff members in about ten universities of Jordan with about 5 management level employees. To protect the confidentiality of the respondents, the survey will be administered by an online mode.

I welcome the opportunity to review any available archival records or documents, in order to validate the information obtained through surveys.
And I am available to answer any questions you might have relating to this matter. I can be reached either by email at m.m.berrish@edu.salford.ac.uk.
I would like to thank you in advance for your assistance to let your staff make Participant to help me in my research, and would greatly appreciate your cooperation.

Thank you very much

Yours Sincerely
Mohammad Berrish
PhD student at University of Salford, Manchester UK.

Appendix.C: Copy of samples of online survey steps



University of Salford MANCHESTER

PhD Questionnaire: University Of Salford (SCHOOL OF the Built Environment) 0 %

Integration of Knowledge Management (KM) and Total QUALITY MANAGEMENT (TQM) and Its Impact on Educational Performance as Case study (Higher Education in Jordan - Public and Private Universities)

SECTION (A) : DEMOGRAPHIC INFORMATION

The following are demographic information about you and your university. Please answer by selecting one per statement below:

1. Gender *
   - ○ Male
   - ○ Female

2. Age Group *
   - ○ 24yrs-40 yrs old
   - ○ 41yrs-55yrs old
   - ○ >=56 yrs old

3. DEGREE *
   - ○ Bachelor Degree
   - ○ Master Degree
   - ○ PhD
   - ○

4. Your Rank *
   - ○ Professor
   - ○ Associate Professor
   - ○ Assistant Professor
   - ○ Lecturer

5. How long you are working in this field? *
   - ○ 1 yr-5 yrs
   - ○ 6 yrs-10 yrs

We OFFER a free and unlimited use of eSurveyCreator.com for students.
Create now your own free online survey!

University of Salford MANCHESTER

PhD Questionnaire: University Of Salford (SCHOOL OF the Built Environment) 94 %

You have already participated in this survey. Thank you.

You have completed the survey. Thank you very much for your participation.

You can now close the window.

Appendix.D: SPSS Outputs Public University

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
8. Individual learning of workers.	200	3.86	1.044	.074
9. Its external environment (Stakeholders, Suppliers, Competitors, etc.).	200	3.93	.982	.069
10. Contact with experts from outside the university.	200	3.93	1.032	.073
11. Insight into the experiences of faculty members and the experiences of other workers.	201	3.85	1.129	.080
12. Internet, advanced computer software and advisory research centres.	200	3.85	1.052	.074
13. Records and written documents.	200	3.89	1.038	.073
14. Computer and other digital information media storage.	200	3.91	1.033	.073
15. Activated incentives (financial and moral) to maintain individuals of high knowledge and talents.	200	3.87	1.059	.075
16. System to manage the tangible and intangible knowledge assets	200	3.87	1.088	.077
17. Team work and regular meetings.	200	3.95	.983	.070
18. Documents, publications and internal information network	200	3.96	.968	.068
19. Training and openness in the exchange of thoughts and dialogue.	200	3.78	1.135	.080
20. Relations and informal contacts.	200	3.92	.948	.067
21. The transfer of knowledge to others through lectures and seminars.	200	3.86	.993	.070
22. Metaphorical representation and imaging of knowledge	200	3.98	.908	.064
23. Make sure that faculty members understand the information they have and be able to find meanings for this information	200	3.95	.955	.068
24. Grant faculty members freedom to apply their knowledge.	200	3.96	.876	.062
25. Hire managers who encourage optimal application of knowledge.	200	3.77	.889	.063
26. Remove all knowledge access barriers for individuals, experts and administrative units.	200	3.81	.893	.063
27. Set rules to control the university knowledge.	200	3.72	.926	.066

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
28. Your university has an effective intranet (web LAN)	200	3.80	.846	.060
29. The effectiveness of the connection of colleges and administrative units in the university to a centralized database.	200	3.84	.837	.059
30. Information systems in the university are constantly updated.	200	3.84	.794	.056
31. Keep pace quickly with changes of technology.	200	3.99	.830	.059
32. Use virtual reality systems in the work of the university.	200	3.97	.918	.065
33. Take crucial decisions with the help of decision support systems-based knowledge.	200	3.92	.979	.069
34. Use of office automation systems (E-mail, automated retrieval of information, word processing, audio-video conferences) to carry out administrative tasks.	200	3.99	.899	.064
35. Use university artificial intelligence systems.	200	3.97	.832	.059

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
36. The University has its own qualified Know ledge-makers and relies on them.	200	3.98	.856	.061
37. University know ledge-makers maintain modernity and advancement of know ledge as well as communicating with the outside	200	3.97	.856	.061
38. They act as consultants for the University in the field of know ledge.	200	3.99	.888	.063
39. Collection, classification and know ledge transfer to the know ledge base.	200	4.00	.877	.062
40. Draw results from the know ledge base.	200	4.00	.874	.062
41. Development of know ledge management programs and its implementation	200	4.00	.868	.061
42. Representation and adaptation of know ledge along with well application of it by university staff	200	4.05	.742	.052
43. Collecting a great deal of know ledge about students (their needs, their desires, and the degree of their loyalty to the university).	200	4.05	.721	.051
44. Linking-up students to student know ledge base at the university.	200	4.07	.705	.050
45. Linking student to group of experts from the university.	200	4.00	.777	.055
46. Adapting internal links so that it would become consistent with the student's know ledge base.	200	3.96	.873	.062
47. Motivating students to submit their suggestions, opinions and ideas.	200	3.97	.804	.057

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
48. The senior administration adopts a strategic plan to achieve a quality in all areas of the university.	200	4.03	.740	.052
49. University adopts the principle of quality as the responsibility of all sections and parties involved in the university.	200	4.02	.730	.052
50. University administration puts forward plans for continuous improvement and encouragement of employees to participate.	200	3.95	.828	.059
51. Communication channels to the market place should be available at the university to investigate grievances, opinions and suggestions about the value-quality of graduates.	200	3.93	.826	.058
52. The University has competent research and development units to determine the needs and desires of the market place and exceed these requirements.	200	3.95	.794	.056
53. Higher administration decisions are made on the basis of facts and data or based on the recommendations of the staff and students.	200	3.85	.903	.064
54. The University's administration constantly make changes in its system to improve the quality of its operations.	200	3.97	.835	.059

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
55. There are teams in university equipped with the necessary supplies with a task to improve quality.	200	3.95	.794	.056
56. There is a specific and clear-cut program to avoid mistakes	200	3.86	.786	.056
57. There are statistical methods and tools at the university to test and measure the quality of graduates.	198	3.83	.837	.060
58. Devise ways and means continuously to help improve the quality of the educational performance of the university and the quality of its graduates	198	3.82	.869	.062
59. Workers receive training to be aware of the opportunities and improvement targets.	200	3.82	.890	.063

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
60. Faculty members are involved in making strategic decisions regarding quality	200	3.90	.823	.058
61. Faculty and staff are entitled to resolve major problems related to graduates.	200	3.94	.831	.059
62. Involve Faculty members and staff in solving the main problems at university.	200	3.96	.795	.056
63. The University has an efficient system to motivate individuals (financially and morally) to participate.	200	3.95	.822	.058
64. The University system rewards persons showing creativity.	200	3.82	.935	.066
65. Administration works on removing fears among members of the faculty and staff while doing their job.	200	3.95	.800	.057
66. Facilitate communication and strengthen links between the faculty and staff and senior management	200	3.85	.955	.068
67. There are efficient programs that help faculty members get acquainted with the objectives and mechanisms of the university functions.	200	3.96	.876	.062

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
68. There is a continuous increase in the productivity of Faculty members at the university.	200	3.93	.877	.062
69. There is a continuous increase in the rate of the production capacity of the administrative system.	200	3.87	.928	.066
70. There is a continuous increase in the rate of use of educational technology.	200	3.94	.866	.061
71. There is a continuous increase in the rate of development for curriculum and educational programs.	200	3.90	.910	.064
72. There is a continuous increase in the rate of development for educational environment.	200	3.96	.890	.063

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
73. Faculty members in the university show a high degree of enthusiasm at work.	200	3.95	.809	.057
74. Faculty members are never absent unless they have a good reason.	200	3.92	.890	.063
75. There is an increase in faculty proposals to develop the university.	200	3.88	.911	.064
76. There is a constant decline in the rate of violations of faculty members in regard to work behaviourism.	200	3.97	.888	.063
77. There is a continuous decline in the number of faculty members who quit their jobs.	200	3.92	.853	.060
78. There is a continuous decline in the rate of complaints of Faculty members.	200	3.83	1.080	.076
79. There is a continuous increase of employers who offer jobs to university's students compared to those offered to students of other universities.	200	3.74	1.095	.077
80. There is great interest of parties offering jobs to submit proposals for the development of the university and its outputs.	200	3.75	1.056	.075
81. There is a continuous decline in complaints made by employers who hired the university's students.	200	3.81	.969	.069
82. There is an increase of loyalty on the part of employment for the company compared to competitors	200	3.76	1.030	.073

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
83. The University has started and graduated new programmes that suit the needs of the marketplace.	200	3.74	1.063	.075
84. The University availed itself to local competent personnel in the process of increasing the number of graduates.	200	3.79	.982	.069
85. the University has received patents that enhance its creativity.	200	3.76	1.014	.072
86. The University has pursued new policies in the area of recruitment, bonuses, promotions and training.	200	3.73	1.060	.075
87. College has cconducted extensive changes (introduction or cancel) in its organizational structure.	200	3.78	1.005	.071
88. University conducted radical changes in the use of computer systems in the administrative processes.	200	3.74	1.053	.074
89. University has conducted amendments to local talent to improve the learning process.	200	3.80	.951	.067
90. University has introduced new programs to augment student's loyalty.	200	3.73	1.012	.072

Correlations

Correlations

		mq1 Knowledge Management processes	mvci Continuous Improvement
mq1 Knowledge Management processes	Pearson Correlation	1	0.234**
	Sig0. (2-tailed)		.001
	N	200	200
mvci Continuous Improvement	Pearson Correlation	.234**	1
	Sig. (2-tailed)	.001	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mq1 Knowledge Management processes	mvsi Staff Involved
mq1 Knowledge Management processes	Pearson Correlation	1	.368**
	Sig. (2-tailed)		.000
	N	200	200
mvsi Staff Involved	Pearson Correlation	.368**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mvkmt Knowledge Management Technology	mtqm Effective Leadership
mvkmt Knowledge Management Technology	Pearson Correlation	1	.383**
	Sig. (2-tailed)		.000
	N	200	200
mtqm Effective Leadership	Pearson Correlation	.383**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mvkmt Knowledge Management Technology	mvci Continuous Improvement
mvkmt Knowledge Management Technology	Pearson Correlation	1	.341**
	Sig. (2-tailed)		.000
	N	200	200
mvci Continuous Improvement	Pearson Correlation	.341**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mvkmt Knowledge Management Technology	mvsi Staff Involved
mvkmt Knowledge Management Technology	Pearson Correlation	1	.398**
	Sig. (2-tailed)		.000
	N	200	200
mvsi Staff Involved	Pearson Correlation	.398**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		mvkt Knowledge Team	mtqm Effective Leadership
mvkt Knowledge Team	Pearson Correlation	1	.390**
	Sig. (2-tailed)		.000
	N	200	200
mtqm Effective Leadership	Pearson Correlation	.390**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mvkt Knowledge Team	mvci Continuous Improvement
mvkt Knowledge Team	Pearson Correlation	1	.301**
	Sig. (2-tailed)		.000
	N	200	200
mvci Continuous Improvement	Pearson Correlation	.301**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mvkt Knowledge Team	mvsi Staff Involved
mvkt Knowledge Team	Pearson Correlation	1	.354**
	Sig. (2-tailed)		.000
	N	200	200
mvsi Staff Involved	Pearson Correlation	.354**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		mq Knowledge Management	mtq Total quality
mq Knowledge Management	Pearson Correlation	1	.574**
	Sig. (2-tailed)		.000
	N	200	200
mtq Total quality	Pearson Correlation	.574**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		mq Knowledge Management	mvip Internal Processes Perspective
mq Knowledge Management	Pearson Correlation	1	.451**
	Sig. (2-tailed)		.000
	N	200	200
mvip Internal Processes Perspective	Pearson Correlation	.451**	1
	Sig. (2-tailed)	.000	
	N	200	200

Correlations

		mq Knowledge Management	mvip Internal Processes Perspective
mq Knowledge Management	Pearson Correlation	1	.451**
	Sig. (2-tailed)		.000
	N	200	200
mvip Internal Processes Perspective	Pearson Correlation	.451**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mq Knowledge Management	mvcp Customers (stakeholder)' Perspective
mq Knowledge Management	Pearson Correlation	1	.279**
	Sig. (2-tailed)		.000
	N	200	200
mvcp Customers (stakeholder)' Perspective	Pearson Correlation	.279**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		mq Knowledge Management	mvlg learn and growperspective
mq Knowledge Management	Pearson Correlation	1	.150*
	Sig. (2-tailed)		.033
	N	200	200
mvlg learn and growperspective	Pearson Correlation	.150*	1
	Sig. (2-tailed)	.033	
	N	200	200

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Correlations

		mq Knowledge Management	mtqe total quality management in educational performance
mq Knowledge Management	Pearson Correlation	1	.371**
	Sig. (2-tailed)		.000
	N	200	200
mtqe total quality management in educational performance	Pearson Correlation	.371**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

Regression

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.421[a]	.177	.169	.29825	.177	21.229	2	197	.000

a. Predictors: (Constant), mtq Total quality, mq Knowledge Management

b. Dependent Variable: mvcp Customers (stakeholder)' Perspective

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.838	.391		4.704	.000
	mq Knowledge Management	.087	.119	.058	.730	.466
	mtq Total quality	.427	.087	.385	4.881	.000

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.251[a]	.063	.053	.35706	.063	6.623	2	197	.002

a. Predictors: (Constant), mtq Total quality, mq Knowledge Management

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.251[a]	.063	.053	.35706	.063	6.623	2	197	.002

b. Dependent Variable: mvlg learn and growperspective

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.499	.468		5.342	.000
mq Knowledge Management	.016	.143	.010	.114	.910
mtq Total quality	.305	.105	.245	2.913	.004

a. Dependent Variable: mvlg learn and growperspective

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change

1	.508[a]	.258	.251	.23087	.258	34.266	2	197	.000

a. Predictors: (Constant), mtq Total quality, mq Knowledge Management

b. Dependent Variable: mtqe total quality management in educational performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.719	.303		5.681	.000
	mq Knowledge Management	.157	.092	.127	1.696	.091
	mtq Total quality	.383	.068	.424	5.659	.000

a. Dependent Variable: mtqe total quality management in educational performance