Faculty Attitudes toward Deming’s Fourteen Principles of Total Quality Management in Higher Education at the King Abdulaziz University College of Education

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This dissertation titled
Faculty Attitude toward Deming’s Fourteen Principles of Total Quality Management in
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Abstract

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Faculty Attitudes toward Deming’s Fourteen Principles of Total Quality Management in Higher Education at the King Abdulaziz University College of Education

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This study explored the attitudes of faculty members at the King Abdulaziz University College of Education (Saudi Arabia) toward Deming’s fourteen principles of Total Quality Management. The study focused on two independent variables, including gender and professional hierarchy. A total of 61 (34.6%) faculty members out of 176 from King Abdulaziz University College of Education responded to the e-survey located at Google.com. Male faculty members made up 54% (33) of the participants and female faculty members were 45.9% (28) of the participants in this study. The statistical methods used in this study were ANCOVA and descriptive method to answer the study questions.

The study found that the attitudes of the target faculty members toward Deming’s 14 principles are generally positive. Findings also showed that the independent variables, gender and professional hierarchy, did not statistically influence the attitudes of faculty members towards Deming’s 14 principles. However, findings indicated that faculty had a negative attitude towards Deming’s (2000) principle eight – “Drive out fear” – because, based on Likert scale, the mean for female faculty was 3.80 and the mean for male was 3.57. Also, a smaller mean based on department or office occupation – close to neutral – came from the Dean’s office. In addition, findings also showed that leaders at the College of Education, the dean office, had less motivation to apply Deming’s 14 principles.
Finally, findings are strongly promoting and reinforcing the need to apply TQM in
general and Deming’s 14 principles of TQM in particular. The positive findings about the
application of Deming’s 14 principles and the success in their application in education
have been confirmed in several studies (Bonstingl, 2001; Leonard, 1996; Miller, 1991;
Warwick, 1995). The fact that this research focused on faculty member attitudes toward
Deming’s 14 principles is opening a window on the need to conduct more research to
explore other stakeholders at KAU College of Education. Focusing on KAU College of
Education staff, students in KAU College of Education, and leaders in KAU will bring
new knowledge to researchers. Also, conducting studies that examine and investigate the
policies and the procedures in KAU are useful.
Dedication

This work is dedicated to my loving family, especially my supportive wife, Eman, who accompanied me in the US all the way from Saudi Arabia. Never did she give up on me, regardless of how challenging my aspirations have been. She has been there to motivate me to write, even at moments when I lacked energy to do so.

I dedicate this work also to my kids, Mamdouh, Albaraa, Battal, and Yousef, who an encouragement to me to do my best research and develop on my writing. Despite the challenges of their integration in the US, they have been very cooperative. By fully committing themselves to studying in American high school, they have made it easier for me to focus on my doctoral coursework, and later on my research. For now, I can only wish them a similar chance to pursue their studies to the doctoral level.
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First of all, I would like to acknowledge the crucial support and assistance of my chairwoman, Dr. Dwan Robinson. I have known her since I began my doctoral coursework back in 2011. Her insights have always been resourceful, even in as I worked on my final research papers. When I began writing and researching for my dissertation, her guidance became significant, especially in reading and providing feedback on the most important section of my present text. Indeed, Dr. Robinson put her high academic experience and skills toward the service of my success. Also, I would like to extend my gratitude to Dr. William Larson who has been for me like a father. His classes as well as his academic advice have always been helpful.

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Chapter One: Introduction

Background of the Study

A significant number of researchers have examined various issues that plague institutions of higher education in the world (Alhwairini & Foley, 2012; Bonstingl, 2001; Miller, 1991). As Chaffee and Sherr (1992) note, in the last decade, many leaders of institutions of higher learning began advocating for Total Quality Management (TQM) in response to a number of criticisms that targeted shortcomings in the field. Most of these criticisms relate to the increase of organizational and practical deficiencies in the field of higher education (Delavigne & Robertson, 1994). In addition, not only do these challenges relate to a decline in student achievement, but they are also manifested through a lack of a productive educational leadership (Deming, 1994; Miller, 1991). In response to this educational pattern, there has been an increase in TQM-based educational research in an attempt to eradicate the challenges related to student achievement and quality education.

In the case of Saudi Arabia, these problems are numerous and diverse and are often identified as relating to the training of Saudi students towards the acquisition of professional skills that would allow them to be more productive and functional in the immediate society (Al-Turkestani, 1998). Another deficiency in Saudi higher education consists of several shortcomings in planning and standards towards helping to implement a more effective form of management and leadership where decision-making is made collaborative by providing data, while including both educational leaders and educational actors in the institution (Alnaweigah. 2013).
While these educational challenges may seem peculiar to the Saudi context, TQM-based attempts to solve similar issues have been formulated in the broader literature of educational organization and leadership. This is true particularly with the studies focused on education-applied strategies of TQM. In this context, TQM, for instance, has been viewed as a management tool which helps set up a form of leadership geared towards more collaborative work (Aljudee, 2005). Along the same lines, since it has been argued that the application of TQM in higher education helps produce a productive educational change, if based on key organizational components such as commitment to surpassing customer demands, ensuring continued improvement, and a productive and decentralized organizational leadership (Deming 1994; Seymour, 1993). Additionally, quality education, in this context, is understood as the academic preparation that assists students in becoming easily functional in society and in contributing to their human development. Thus the production of a quality-oriented change in higher education remains tied to the implementation of meaningful adjustments with respect to organizational leadership (Bonstingl, 2001; Delavigne & Robertson, 1994).

Linking TQM to quality education has led to the establishment of a more specific connection between educational research and Deming’s philosophy of management. As argued by several researchers, the application of TQM, and particularly Deming’s strategy, endows educational leaders with a productive vision that leads to a multidimensional and transformative change in the educational system (Bonstingl, 2001; Leonard, 1996; Miller, 1991; Warwick, 1995). In his conceptualization, Venkatraman (2007) understands the application of Deming’s management strategy in higher education
as a two dimensional philosophy of management where, on one hand, continuity is aimed at making improvements in a particular system of management. Also, there are concerns with regard to the means and techniques that need to be utilized for the realization of those objectives. Thus, to eradicate the challenges of higher education through Deming’s TQM where an organization must produce quality, while seeking to reach educational management goals based on collaborative work and a greater student achievement. In a broad sense, this paradigm has been perceived as conducive to quality education based on organizational collaboration and student improvement (Walton, 1986; Bowles & Hammond, 1992).

The connection between educational leadership and the production of quality is where Deming’s philosophy of management, particularly the system of profound knowledge and his fourteen principles, comes in full force. According to Deming (1994), the system of management helps optimize the educational organization, while building a decentralized democratic and transformational leadership corps geared towards involving the educational components community. Thus, according to Deming, the production of quality education necessitates that the institution builds a type of leadership that not only remains in constant contact with all its employees, but also commits itself to a collaborative form of decision-making (2000). This study is specifically framed in this research framework and problematizes the implication of faculty attitudes and beliefs in understanding Deming’s fourteen principles in higher education, especially in Saudi Arabia.
In the last several decades, a lot of research has sought to examine the implications of the application of TQM strategies in Saudi Arabia in general. However, there has been little coverage as to how TQM strategies, especially Deming’s fourteen principles, could facilitate finding durable solutions for Saudi organizations and educational institutions. In this study the attempt is to fill this research gap by collecting data from King Abdulaziz University (KAU) in order to analyze how educational faculty members, through their pedagogical attitudes, inform the researcher about the possible impact of the application of Deming’s principles.

**Statement of the Problem**

This study is undertaken in response to three major issues that showcase weaknesses in the educational system in the Kingdom of Saudi Arabia. As discussed by Al-Sulimani and Sharad (1994) and Alhwairini and Foley (2012), the Saudi educational system suffers, in part, from a lack of implementation of TQM strategies, which would help create positive change through collaborative work, productive knowledge, and educational collective efficacy. The first problem relates to the outcomes of the current educational system in relation to the students. Two issues are particularly considered in this instance. One, at the cognitive level, students do not acquire enough knowledge from the existing programs. Many educational researchers have related this issue to the absence of Deming’s TQM strategies. Al-Sulimani and Sharad (1994), for instance, perceive application of TQM as a practical tool for Saudi institutions to achieve quality. Two, the insufficient knowledge that students receive from educational institutions fails to satisfy the expectations of the job market. Alharbi (2009) has raised this issue in
relation to the absence of Deming’s TQM principles and he notes that the Saudi institutions are lagging behind Western counterparts because there is less institutionalization of TQM-related educational organization. The second problem is at the administrative level, especially the board of education that is in charge of designing school programs. A salient deficiency, at this stage, is that the programs that are offered fail to fit the needs of the students as well as the society. It is possible that this leadership problem can be tied directly to the absence of Deming’s fourteen principles. In fact, Aljodea (2012) notes, in that sense, that in the few Saudi institutions where TQM strategies have been implemented, there have been positive results. The third major problem is pedagogical and consists of the lack of sufficient teaching competence of most faculty members that affects the quality of the teaching-learning process. Al-Sulimani and Sharad (1994) also note this issue of teacher’s competence in Saudi institutions as it relates to a lack of appropriate training. In Deming’s fourteen principles of TQM, such a lack of teaching competence is condemned and Deming (2000) argues that competence and efficiency depend highly on instituting training. In short, these problems, many of which relate to the absence of the application of TQM, especially Deming’s fourteen principles, constitute a set of issues that fundamentally challenge educational development in Saudi Arabia.

Statement of Purpose

Conducted in the context of a multitude of educational problems, this study aims to produce an in-depth examination of the attitudes of Saudi faculty members, especially with regard to Deming’s fourteen principles at the KAU College of Education. Through
this specific focus on faculty attitude, the research seeks to offer a new understanding of how educational problems in Saudi Arabian higher education system, can be better understood and assessed. At the same time, this could provide key information that might help in thinking about how educational issues can be solved for good. More specifically, by focusing on faculty members at the KAU College of Education, the research seeks to find whether the inability to produce a quality education is related to a lack of pedagogical competence that might originate from the attitudes of the faculty members, the research’s target group. According to previous observations and secondary sources, Deming’s principles seem to be ignored or, at least, undermined by the educational system at KAU as a whole. Also, based on the limited research that examines TQM in Saudi institutions of higher education, it is assumed that Deming’s principles are hardly known to be implemented.

In this context, the research seeks to make a new contribution to the applicability of Deming’s TQM strategy in Saudi Arabia, a field that remains poorly explored. An additional research objective is to explore how the assessment of Deming’s principles in relation to KAU faculty members could provide some leverage towards creating positive change in Saudi higher education. This line of thought is inscribed in the dynamic that Deming’s TQM strategy, especially the fourteen principles, has already created greater student achievement through decentralized democratic leadership in several institutions in Japan, the United States (Walton, 1986; Shonebarger, 1991; Bostingl, 2001; Warwick, 1995; Medkiff, 1991; Meiners, 1991; May, 1991; Leonard, 1996). Based on this perspective, the implementation of Deming’s fourteen principles will help decentralize
educational leadership and increase students’ achievement as well as the job-market competence of students, when placed in educational standards targeted by Deming’s TQM strategies. Finally, the research is also framed with the assumption that a functional incorporation of Deming’s TQM strategy in faculty attitudes might be propitious for creating a greater student achievement at the KAU College of Education.

**Significance of the Study**

This study was undertaken in a context (Saudi Arabia) marked by three major research gaps. First, there was a significant lack of research regarding the application of TQM in Arab countries in general, and Saudi Arabia in particular. Second, the literature showed a significant lack of research that dealt with the implementation of Deming’s fourteen principles in higher education in Saudi Arabia. Third, the researcher also found that there was little research that evaluated the attitudes of higher education faculty members with regard to Deming’s principles, especially in the Saudi educational system. This state of affairs not only highlights why the study needs to be done in order to contribute to making up for a crucial research gap, but it also shows the significance in providing a better assessment of attitude-related educational issues in KAU, and Saudi Arabia. In addition, the study serves as foundational research as it investigates the implications of attitude in applying Deming’s principles in King Abdulaziz University. Also, it will open research avenues for future researchers, especially in investigating the possible links between the weaknesses of higher education in Saudi Arabia and the implementation of Deming’s TQM strategies.
In addition, the research also builds a specific research framework as it closely draws aspects of TQM strategies between Saudi Arabia and some western institutions as presented in the literature (Alharbi, 2009; Alhwairini & Foley, 2012). The focus on Deming’s fourteen principles is, here, one way to examine the link between educational success and TQM (Leonard, 1996; Bostingl, 2001; May, 1991). As widely argued in the literature, developed countries (in the West) have the best and most successful higher education systems owing to the fact that they have institutions of higher education that provide strong training for faculty. This emphasis on preparation and professional development for faculty cultivates a world-renowned workforce and higher educational system. In this study, the reference is made to these leading institutions and individuals in order to assess the implications of Deming’s TQM. In brief terms, quality education, as an aim in the KAU educational system, is placed within the research frame. Quality in all its forms whether it is in the outcomes, processes and procedures of teaching and learning is the backbone of any successful higher education institution. In this respect, this study provides resourceful and quantitative outcomes in the application of Deming’s TQM principles in Saudi Arabia.

**Variables of the Study**

**Independent Variables.** In this study, the researcher focused on two independent variables that include gender on one hand, and professional hierarchy on the other.

**Gender.** The importance of gender as a variable stems from the uniqueness of the Saudi educational context. The Saudi educational system is structured in such a way that pedagogical experiences are divided according to gender. As such only male faculty
teach male students while only female faculty members are allowed to teach female students. Based on this arrangement, gender emerges as a key factor that the researcher believes plays a determinant role in shaping the attitudes of faculty members in both sexes. In the Saudi context, the classroom setting is organized based on gender distributions.

**Professional Hierarchy.** In this study, professional hierarchy is used in reference to the rank, or professional position, of a given faculty member. Professional hierarchy is also based on qualifications (e.g.: Teaching Assistant, Assistant Professor, Associate Professor, and Full Professor). The reason why professional hierarchy is used as an independent variable is that it influences inter-relations between faculty members. The researcher believes that the educational qualifications, training and experience have an influence the faculty’s attitude.

**Dependent Variable.** The dependent variables in this study include Deming’s 14 principles of TQM.

**Attitude: A Conceptual Analysis**

The focus on attitude in this research stems from the fact that it constitutes a key element in understanding human behavior. To begin with, it is important to offer a definition of attitude or, at least, to attempt to identify the concepts that are usually associated with it. There are often differences in defining attitude, but still there is a set of elements that together can be used to come up with one definition. In their definition of attitude, for instance, Eagly and Chaiken understand it as a psychological pattern that is articulated through judgmental evaluation of a given situation (1993). Along the same
lines, Mueller (1986) perceives attitude as something psychologically imbedded in the subject. In his perception, Mueller persists that attitude shapes people’s emotions, judgments, and the way people evaluate different things psychologically. In so framing the concept of attitude, one understands that the two authors perceive its effect on education as essentially psychological.

For Oppenheim (1992) attitude can be defined as a state of mind or a given posture through which one reacts to a given situation in a particular way. The model offered by Fishbein and Ajzen(1975) propose another alternative based on a dichotomy. The dichotomy they establish resides in the relationship between attitude and behavior. In their model, attitude as shaped by beliefs is sometimes a response to behavior itself. By the same token, attitude remains then determinant in how professors as well their learners engage in the teaching-learning process.

The importance of attitude in higher education has led researchers like Hunt to further elaborate the definition of attitude. Hunt (2009) argues that “attitude is everything” (p. 19). This brings one to wonder what is exactly meant here by “everything.” In his assertion, Hunt means that the attitude of the faculty member from is a perfect reflection of the training that one can obtain from the institution where he or she belongs (2009). A relationship between the faculty’s attitude and quality in education is thus established. Other researchers argue that attitude is related to an individual’s background and thus concludes that a person’s attitude is shaped and consolidated by beliefs (McGuire, 1985; Oppenheim, 1992).
From this standpoint, attitude, as shaped by both beliefs and the psychological background of the subject, emerges as a key element in the framing of the conduct of the faculty, especially with regard to TQM strategies, namely Deming’s fourteen principles. Such perception of the importance of attitude in education has motivated the researcher’s choice to focus on instructors’ pedagogical attitudes in order to examine the applicability of Deming’s principles in Saudi Arabia in general and KAU’s College of Education in particular.

**Research Questions**

The research is guided by the questions below and the responses of which (as presented in chapters 4 and 5) are quantitatively based on the target group’s attitudes as essentially framed by their beliefs and psychological backgrounds:

- Q1: What is the nature of the attitudes of faculty members at the KAU College of Education towards Deming’s fourteen principles?
- Q2: What is the nature of faculty attitudes based on demographics, age, years of experience, department, and nationality?
- Q3: To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by gender?
- Q4: To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by professional hierarchy?

Ho: \( \mu = 0 \)

HA: \( \mu \neq 0 \)
Delimitations of the Study

This research project is delimited in a number of points. First, the target research participants include faculty members at the King Abdulaziz University College of Education, in Saudi Arabia. For this reason, the results of the study may be generalizable to other Saudi institutions. Second, in terms geography, KAU is located in Jeddah, a city that is situated on the Red Sea on the Saudi coastline in the western part of the kingdom (Saudi Arabia). Third, the sample used includes deans, vice-deans, department chairs, full professors, associate professors, assistant professors and teaching assistants. Fourth, this research focuses on evaluating the attitudes of faculty members at the College of Education towards Deming’s fourteen principles. For this purpose, the study may be generalized to other higher education settings. Fifth, the study’s independent variables include gender and professional hierarchy and the dependent variable is the faculty’s attitude. These are the only variables considered for the purpose of this study. Finally, during the academic year 2013-14, the researcher made plans to accomplish the study.

Limitations of the Study

This study is also confronted with a number of limitations. First of all, apart from a few studies, most of the literature consulted in this research applies to Western situations, which is significantly different from the culture in Saudi Arabia. Nevertheless, at the theoretical level, one must highlight that KAU, like other Saudi institutions, applies Western sources of documentation. Similarly, some faculty members at KAU’s College of Education graduate from Western institutions as well as Saudi universities. For this reason, even though educational contexts differ, similarities at the theoretical level may
be present. The gap between the two educational experiences is not fully bridged but yet the researcher thinks that the context-related difference will only have a limited effect on the faculty’s attitude towards Deming’s principles.

Second, gender distribution in the colleges of education play an important role in the entire educational process in Saudi Arabia. As noted earlier, at the KAU College of Education, male faculty members teach male students while the same rule applies to the other sex as well. The uniqueness of this gender distribution is such that it significantly differs from educational institutions in other countries. As a result, it is often difficult to make comparisons between KAU’s faculty and other Western universities.

The third limitation relates to the survey as a form of collecting information given that, for data collection purposes, the researcher created his own survey. Data obtained from this survey constituted the primary source of information of this research and the conclusions that were made. The researcher anticipated that the use of the survey might create limitations regarding the understanding of faculty attitudes towards Deming’s principles. Given that a good number of participants engaged in the research, this made an impact on the generalizability of findings. Additionally, the researcher anticipates that his relationship with the target population – new colleague – may affect the quantity and quality of information to be provided. For example, the participants may respond differently because he is a new colleague. In other words, target faculty members may give less attention to responses that they provide.

The last limitation of this study is the time that is allocated to fulfill this study. The time identified for this research was the spring and summer semesters of 2013-14.
The research required that the researcher spend a period of time to screen and run survey-generated data by using the SPSS program in order to assess the research question. Also, the researcher anticipated that some participants needed more time to complete the survey no matter how many times they are reminded. Although this was anticipated as a challenge when trying to reach the target findings, an adequate number of participants responded to the survey.

**Definition of Terms**

A number of technical terms are used in the formulation of the research and the literature reviewed in Chapter 2. For this reason, brief definitions of those concepts are provided to help contextualize the meanings and references.

**Total Quality Management (TQM):** In this study, TQM, as a concept, is used as commonly defined in the writings by a number of theoreticians referenced in Chapter 2. TQM is thus regarded as a set of management strategies – both at the theoretical and practical levels – that are geared towards the creation of quality products (Deming, 2000; Seymour, 1992; Vankatraman, 2007).

**Attitude:** In this context, attitude is defined as the mindset – as shaped by background beliefs, morals, and social codes – with which the target individuals, especially the faculty members, conduct their teaching tasks (Hunt, 2009; McGuire, 1985; Oppenheim, 1992).

**System of Profound Knowledge:** This is Deming’s theorization of his new philosophy of management which essentially aims to produce a positively transformative change which, in the end, will lead to the production of quality (Deming, 2000).
Deming’s fourteen principles: These can be understood as the practical application of Deming’s theory of management. The fourteen principles are step-by-step procedures that guide organizations through the practical stage of transformational change. Deming originally focused on the management of industries. However, many attempts have been made by educational researchers to transpose the principles in education. In this study, the principles are applied to higher education to assess the attitude of faculty members at the KAU College of Education in relation to Deming’s principles.

In an attempt to give an idea about Deming’s philosophy, it is important to cite the principles as they appear in Out of the Crisis (2000). The fourteen principles are as follows:

• Principle 1: “Create constancy of purpose for improvement of product and service” (p. 24).

• Principle 2: “Adopt the new philosophy” (p. 26).

• Principle 3: “Dependence on mass inspection” (p. 28).

• Principle 4: “End the practice of awarding business on the basis of price tag alone” (p. 31).

• Principle 5: “Improve constantly and forever the system of production and service” (p. 49).

• Principle 6: “Institute training” (p. 52).

• Principle 7: “Adopt and institute leadership” (p. 54).

• Principle 8: “Drive out fear” (p. 59).
• Principle 9: “Break down barriers between staff areas” (p. 62).
• Principle 10: “Eliminate slogans, exhortations, and targets for the work force” (p. 65).
• Principle 11: “Eliminate numerical quotas for the work force” (p. 70).
• Principle 12: “Remove barriers that rob people of pride of workmanship” (p. 77).
• Principle 14: “Take action to accomplish the transformation” (p. ).

**Professional hierarchy:** In this research, professional hierarchy is used in reference to the professional position of the faculty member, including the *teacher assistant*, *assistant professor*, *associate professor*, and *full professor*. Professional hierarchy often depends on the faculty member’s experience and academic accomplishment (publications, research experience, teaching experience, etc.).

**Background about the College of Education’s Departments**

The King Abdulaziz University College of Education was founded by the Saudi Ministry of Education in 1988 and only recruited male students initially. In 2009, the college became officially an integral part of the KAU while welcoming both male and female students (King Abdulaziz University website, 2014). Since its foundation, the college has held an important role in education in Saudi Arabia, including women’s education as well. It matters, at this point, to note that the KAU two parallel administrative boards, one is male and another is female. The present study focuses on this institution and investigates the attitudes of the college’s faculty members towards Deming’s fourteen principles.
The research population includes 167 faculty members from eight departments and two administrative offices – Dean and Vice-Dean (see appendix E). According to the KAU website, consulted in 2014, all the above departments, except Qur’an Studies, Special Education, and Physical Education provide diplomas and MA degrees. The Educational Psychology department provides courses about current knowledge and subjects in psychology. Educational Foundation covers theories about Islamic knowledge in education based on the Holy Qur’an and the tradition of Prophet Muhammad. Educational Administration and planning delivers courses related to educational leadership, leadership styles, and related theories. Curriculum & Instruction prepares students to develop effective teaching techniques and educational pedagogy. Special Education is designed to prepare teachers who will serve individuals with special needs. The future teachers are expected to provide an appropriate knowledge so as to ensure social integration through education. Physical Education provides training to future physical education teachers in public schools. Art Education specializes in art aesthetics and art history in relation to local and global life. Educational Technology prepares student in the use of new technology to improve teaching-learning processes and pedagogies. Qur’an Studies remains an important department in the distribution of the foundational knowledge of Islam as based on the Holy Qur’an and the tradition of Prophet Muhammad.

Summary

As an introduction to the study project, this chapter lays out the foundations of the researcher’s intentions. It provides a clear overview of the context within which the
research is configured. For this purpose, the chapter formulates the major research question that guides the investigation process as well as the essence of the procedures that make the project unique in its thematic target and methodological approach. More importantly, the chapter also situates the target location for the research and anticipates the difficulties that might be encountered.

**Organization of the Study**

This researcher organized this study into five chapters. The first chapter provides an introduction to the research project. It is the stage where the researcher situates the study both thematically and geographically.

The second chapter presents a critical review of the literature pertaining to the research question. This chapter includes an introduction, a critical analysis of the concepts of TQM, Leadership, TQM challenges, TQM in education, TQM in the Saudi setting, Deming’s theory, Deming’s fourteen principles and finally a summary of the chapter. The third chapter provides an itemized presentation of the methodological procedures. In chapter four, the research presented the research findings in the following labels: percentage of faculty responses, demographics of target faculty, procedures of data screening, and the research results.

Finally, in chapter five, the researcher discusses the findings reported in chapter four. The researcher discusses the relationship between the study’s finding and literature explored in chapter two. Finally, the chapter presents conclusions from the study, also in relation to the literature reviewed in chapter two.
Chapter Two: Literature Review

The increased challenges in the production of quality education have encouraged educational leaders to invest in finding new solutions. In this sense, innovative educational researchers have found it useful to implement Total Quality Management (TQM) in the management of educational institutions. However, application of TQM methods has not always been successful because, as discussed in the following pages, these are a number of problems often related to the way TQM is implemented. This study contextualizes the application of TQM specifically at King Abdulaziz University, in Saudi Arabia and focuses on Deming’s philosophy of management, especially his fourteen principles. In this review of literature, an attempt is made to situate the research in the broader literature related to Total Quality Management (TQM), and Deming’s fourteen principles.

The chapter is structured into eight sections. The first section provides an overview of leadership as a concept and its general implications in relation to TQM, especially in Deming’s theory. The second section focuses on TQM in order to provide a general background about the TQM schools of thought. The third section gives a picture of Deming’s theory of TQM and discusses how it relates to the production of quality so as to understand Deming’s philosophy of quality that relates to TQM. In the fourth section major TQM theories and strategies are discussed, and more attention is given to the applicability of TQM in higher education. The fifth section explores a number of challenges that often arise in the application of TQM, especially in higher education, which leaders must be aware of for the sake of success. In the sixth section, the research
examines the implications of leadership within TQM as a broader field to show the importance of leadership in TQM. The seventh contextualizes TQM in Saudi Arabia and explains a number of issues related to the difficulties in the application of TQM in the kingdom, which provides a picture about the ups and downs of the application of TQM. Finally, the eighth and last section discusses the implementation of Deming’s fourteen principles in higher education. This is mostly a discussion related to what educational researchers understand about how Deming’s principles might be useful to higher education.

Leadership

Defining leadership is not an easy task, in part, due to its numerous implications and relativities. In this study, however, the attempt is to briefly discuss the general meanings associated with leadership as a concept. As cited in Hoy and Miskel (2005), Martin M. Chemers defines leadership as follows, “…a process of social influence in which one person is able to enlist the aid and support of others in the accomplishment of a common task” (p. 375). In these terms, Chemers emphasizes leadership as governed by a social mechanism in which the relationship between the “leader” and the “follower” is defined by the entire community, and not, for instance, by force. Hoy and Miskel (2005) suggest that there is a need to define leadership, in a broader sense, as “a social process” in which the members of a particular society or community influence decision-making in all its implied dimensions (p. 377). In both definitions, leadership is perceived as an organizational process that guides the human society and helps generate a developmental social order. Speaking about leadership in this framework implies talking about various
styles of leadership. Yet, in the context of this study, a greater emphasis is laid on leadership styles that relate more to Deming’s fourteen principles, especially transformational. In his study, Bass (1998) cites up to three types of leadership, including the *laissez-faire*, the *transactional* and the *transformational*. A fourth type of leadership was also identified by Robert Greenleaf in 1770’s and is known as *servant-leadership* (Williams, 1996).

The phrase *laissez-faire*, in French, means “leave it be,” which, as a result, implies the leader providing the workers with a certain degree of freedom in the accomplishment of their tasks. This type of organizational leadership can be successful and effective, especially when the leader maintains strong communicational relations with the entire team. In the implementation of the *laissez-faire style*, the majority of the workers develop a sense of commitment and motivation to the work; and, at the same time, they feel they are important individuals in the performance of tasks (Hoy and Miskel, 2005). In other sources, implications of *laissez-faire* leadership echo what others like Burke (2011) call *democratic leadership*. In democratic leadership, the final decision obviously belongs to the leader, or manager, but he or she does not impose himself or herself on the body of workers. This allows the development of a sense of professional freedom among all employees (Burke, 2011). In sum, one sees that *laissez-faire leadership*, similar to democratic leadership, has its own benefits if applied appropriately, mostly because it cultivates a productive sense of freedom in the worker’s mind and actions.

Through transactional leadership, the leader of the particular institution motivates his or her “followers exchanging rewards for services” (Hoy and Miskel, 2005). Such a
definition of this form of leadership is repeated in Burke (2011) who argues that transactional leadership is framed on the grounds that the followers are in full agreement to fully obey orientations as dictated by the leader. Financial compensation, thus, results from an obedient execution of the tasks assigned. As a result, the leader emerges with the power that allows him or her to punish the follower, or worker, in case of failure to fulfill the required tasks.

Additional aspects of transactional leadership have also been identified by other scholars. For instance, Antonakis et al. (2003) identify three components of transactional leadership. One is contingent reward in which the leader follows by constantly seeking to clarify the roles of the followers, or workers. The second is management-by-exception-active in which the leader is vigilant and makes sure that work standards are met. The third type is management-by-exception-passive. This one differs from the second in the sense the leader fails to follow up in ensuring those work standards are met. The three components of transactional leadership that Antonakis et al. identifies increase one’s understanding of the importance of the leader, or manager, in reaching organizational objectives.

Additional aspects of transactional leadership appear in what others have termed, for instance as, autocratic leadership and bureaucratic leadership. Autocratic leadership, for instance, suggests that the leader employs a significant amount of power over the workers, or followers. This leadership type is even perceived as an extreme version of transactional leadership (Bothwell, 1983; Hersey, 1984). In addition, with this type of leadership only a few followers are included in the decision-making process. Aspects of
transactional leadership are also present in bureaucratic leadership. In this bureaucracy-oriented type of leadership, one important task of the leader consists of making sure that the followers work in accordance to the prescription. In other words, the worker’s, or the follower’s, actions are guided by the book used as guide (Bothwell, 1983). It is argued that this type of leadership is usually appropriate for works that involve important risks of danger and the mobility of important amounts of money.

In the end, one understands that transactional leadership is mostly restrictive and authoritarian. In transactional leadership, the followers, or workers, are condemned not to take much independent action in the work process. The fact that an important amount of authority is centralized on the leader inhibits the followers who care much about their salaries or losing their jobs in case disobedience. The very structure of bureaucratic leadership, which implies strong levels of authoritarianism and centralization of leadership discourages action among followers. In almost the same way, transactional leadership discourages workers and may lead into many absences among followers. At the same time, although transactional leadership may be thought useful in terms of instilling commitment to work, it does not at all support teamwork, which remains important to build successful leadership.

The third style of leadership relevant to this study is servant-leadership, which, according to Williams (1996), echoes an inclination to characteristics of a democratic organization given that it espouses the value that the followers take part in how decisions are made. Servant-leadership, to some extent, reminds us of what has been termed people-oriented leadership, in the sense that it mostly focuses on organizing, developing
and supporting the team in the production of the objectives (Bass & Bass, 2008). Both servant- and people-oriented leadership are participative styles of leadership.

Thus, in servant leadership, the leader becomes an individual whose role follows the needs of the people. According to Hawkins (2009), “servant-leaders focus on the needs of their employees” (p. 40). One implication of such definition of leadership is that the leader, or manager, develops an attitude which allows the followers, or the people, to not only gain control over the tasks, but also to be actively part of the decision-making process. Servant-leadership, at this point, differs significantly from transactional leadership.

Another type of leadership is transformational leadership. Bass (1998) perceives transformational leadership as a theoretical offshoot of transactional leadership. As stated by Hawkins (2009), transformational leadership was initially coined in 1978 by Burns before it became “refined” following the contributions by Roueche et al. in 1989 (p. 40). Transformational leadership is more inclusive and, as a concept, incorporates what Antonakis et al. (2003), have called the “four I’s” (p. 265). The four I’s include “idealized influence, inspirational motivation, intellectual simulations, and individualized consideration” (p. 273).

Idealized influence builds an organizational platform where the leader and the followers, or subordinates, maintain a collaborative relationship given that the system which is created “builds trust and respect” within the group (Hoy and Miskel, 2005, p. 397). According to Hoy and Miskel (2005), recent formulations have subdivided the concept of idealized influence into two sub-components: attributed idealized influence
and idealized influence as behavior. While the first implies the worker’s perception of the leader as “charismatic” and as individuals who facilitate the entire work process, the second creates an inspirational motivation through which the collective believes that all challenges can be overcome (2005, p.398).

Inspirational motivation comes from a leadership that adheres to the idea that the difficulties of the organization are solvable. In this form of transformational leadership, leaders energize people mostly by developing a belief in a better organizational future (Hoy and Miskel, 2005, p. 398). In intellectual stimulation, the transformational leader instills in the worker a lasting sense of innovation, which brings the worker to take active responsibility in the work process. Finally, individualized consideration comes to mean the type of transformational leadership in which the leader cares about the individual needs of the workers (Hoy and Miskel, 2005). In this particular context, transformational leadership bears a number of functional similarities with what has been theorized in the literature as democratic leadership.

According to McCombs and Quiat (2002), democratic leadership is a leadership type that empowers everyone to voice their respective viewpoints but also to negotiate differences in building a coordinated work. Democratic leadership as defined is conducive to the building of a more productive collaboration between educational organization and community. Arguing on the benefits associated with democratic leadership, Reitzug and O'Hair (2002) argue that the ability of the leader to bring together all stakeholders to an understanding helps map out and understand the resources within the surrounding and which can enrich the teaching-learning process. Further, they argue
that creation of an educational environment that meets the expectations of all students requires the establishment of democratic leadership in the community schools. Thus, democratic leadership opens the way for two organizational features that favor the development of a socially integrated education based on partnership between educational school and community. One is the development of a shared organizational leadership that encourages the active participation of the society in the educational process. Another feature is the creation of decentralized teaching-learning environments that help provide greater hands-on experiences for learners.

In addition, one must note that transformational leadership is not simply based on the arrangement of exchange between the team and leader, but also it implies the leader’s attitude as an exemplary individual whose model attitude inspires the rest of the group from whom he or she is also inspired. Writing in that sense, Hawkins (2009) insists that the transformational leader is primarily a bearer of vision and also serves as a role model. He adds that the transformational leader creates an organizational environment that facilitates and aids the followers in their tasks. Thus transformational and democratic types of leadership are oriented towards preparing an organizational ground that remains propitious for a future development and that targets collective efficacy. This form of educational organization, as exemplified by both transformational and democratic styles of leadership, remains, in many ways, a good fit for the King Abdulaziz University. In fact, not only would it be ideal for destabilizing the traditional form of centralized leadership, but also it would help involve the community in creating greater student achievement.
Further, this leadership model is widely inspired in Edward Deming’s idea of an effective organizational leadership. In his 2000 *Out of the Crisis*, Deming argues that a successful leadership is one that strives to create an organization based on collaborative decision-making which, he believes, leads the employee towards developing a greater self-efficacy geared towards increasing quality in production (p. 54). Walton supports the same understanding of leadership in relation to the creation of efficacy. He argues that leadership, as the manager’s task, also means an ability to improve collaborative work, which ultimately helps suppress the obstacles to the effective participation of the employee in the work process (1986). In sum, Deming’s and Walton’s arguments come to reinforce the contention that leadership, as an institutional body, bears an important role in the creation of the environmental conditions which help build self-efficacy in the employee. One also retains that for such leadership type to have be effective, it needs to orient itself towards a constructive and productive collaborative work.

In this respect, both transformational and democratic types of leadership encourage organizational features that help reflect organizational effectiveness in a number of ways. These aspects of effective leadership are probably why educational researchers believe that educational challenges can be overcome, especially when educational leaders are in a position to develop what Budge (2006) refers to as a “critical leadership of place”. Applying this to the rural educational context, Budge (2006) argues that such leaders situate rural schools in a wider rural community with whom their respective interests are intertwined and interdependent. A major achievement in school leadership and partnership with communities is the production of the revised version of
Interstate School Leaders Licensure Consortium standards that provide clear guidelines for effective leadership (Jauch, 2009, p. 1). These guidelines include the insistence of policy documents on school leaders to collaborate with faculty and community members so as to mobilize community resources to provide academic services. In this way, the success within rural schools cannot be dissociated from the success of the local community. As such, the notion of “leadership of place” reflects the idea of educational democratization as embedded in both transformational and democratic types of leaderships. As advocated by Budge (2006), this leadership type considers rural places as specific contexts whose realities must be taken into account in order for educational leaders to come up with effective leadership that links school and community together. In the Saudi context, and KAU in particular, this style of leadership is relevant, specifically because the university administration and the board of education tend to operate in total disconnection from community input. In other words, one can assume that a productive implementation of a decentralized form of educational leadership, as promoted in Deming’s TQM strategies, would facilitate quality education through collaboration.

In the same sense of school-community partnership, Budge also regards the duty of rural school leaders as a moral imperative because of the consideration of rural communities as “endangered species.” According to Budge (2006), the importance of school leaders promoting what fits to call transformational-leadership pedagogy of place in rural communities and schools is that the dissociation of rural schooling from rural context has negative effects on students and their attitudes towards their communities. Thus one understands that this type of leadership plays an instrumental function in
creating conscious citizens that are able to challenge the political, social, economic, and environmental issues that plague the community. By extension, such importance in the implementation of transformational and democratic leadership types also speaks to the ethical obligation of the leaders towards the institutions. Arguing in this sense, Fullan (2003) states that the moral imperative of the leader operates both at the micro and macro levels in school and community. Further, Fullan argues that school leaders can make a difference in the life of students. He points out, however, that for a long-term change to emerge, there must be an effective partnership between community and school in order to establish a culture of continuous improvement that makes it natural for teachers, students, parents to work to ensure school and community success. In fact, Deming’s philosophy of management, as expressed in his fourteen principles, encourages both transformational and democratic types of leadership. In the field of education, as contextualized in this study, Fullan’s idea of a decentralized form of community-based educational leadership becomes important for a successful implementation of Deming’s principles in education. The existence and development of such an educational culture and system depends highly on both a decentralized leadership and partnership with the community, which, in fact highlights the positive qualities in both transformational and democratic forms of leadership.

As developed in the literature, the relationship between such leadership types and educational success relates to the fact that they facilitate enriching the educational environment by drawing from the community that remains immensely rich in educational resources. In a sense, this is what makes the particularity of community schools where the
democratic and transformational leaders associate the community in the educational process. This successful particularity of democratic leadership, as suggested in Deming’s principles, can make higher education more productive, especially when community resources are integrated in the higher education process. In the end, one obtains a type of Community University. In brief terms, Community University, as a mode of educational organization, implies simply a decentralization of decision-making in an attempt to create more room for developmental change in higher education.

Basically, one can identify up to three major resources within this type of educational organization that facilitates the realization of collaboration. First, the fact that education is based on a strong and active collaboration between the community and the educational board facilitates the mapping of community assets in supporting the teaching-learning process in the school. When implemented in a university, such community-university collaboration provides the same results as in community schools, especially in terms of creating a rich higher education environment that opens to the community. The second resource relates to the fact that community school operates also as social institutions where collaboration and partnership between school and community create a democratic platform for educational development (Starrat, 2001). Starrat’s idea of partnership will echo itself in a successful implementation of Deming’s principles in higher education where educational leader partner with the surrounding community. The third resource relates to the one previously cited. In fact, community schools, if effectively functioning in such democratic grounds, have greater chances to implement a teaching-learning process which not only aims at satisfying the community’s immediate
concerns, but also creates opportunities for students to benefit, for instance, from easily-accessed practical training. Writing in that sense, Potapchuk (2013) states that the community’s direct and active involvement in the school environment helps towards “a smooth transition between classroom learning and extended day programming” (p. 7). Similarly, a university that functions with support from community is more likely to develop an educational environment that would be more likely to develop a richer teaching-learning environment.

Thus implementation of community-based learning in institutions of higher education will help generate greater resources that facilitate a richer and more practical teaching-learning process. In this study, the appeal to this form of teaching and learning seeks to contextualize the educational environment of the target institution, KAU, in relation to the general goals of Deming’s fourteen principles. Further, as areas of partnership between the educational institution and community, this type of higher education appears better equipped for the democratization of the educational process. Ruffin and Brooks (2010) support the same argument and sustain that democratic educational leaders who have the possibility to approach “community-based organizations” are more likely to generate a more successful community school (p. 243). This attempt to implement community school strategies at the university levels remains feasible at the KAU, for instance, even though in the United States it is more commonly applied to K-12 levels. As a result, democratic and transformational forms of leadership emerge as faster ways for an educational organization to build a success-driven educational environment. This type of democratic and integrative educational leadership
speaks directly to Deming’s philosophy of management as embodied in his fourteen principles (2000). In fact, the emphasis on the notion of collaboration, sharing, and quality are broadly replicated in democratic and transformational leadership.

Transformational and democratic leadership types reiterate the fact that the educational environment and the surrounding community are essentially connected, hence the need for the educational leader to manifest that link in education. In their study, for instance, Harmon and Schafft (2009) show that rural schools are not entities separate from the community and that they are spaces which contribute to creating cohesive communities through school events, including sports, theater as well as meetings between faculty and parents. These patterns of educational organization speak to aspects of leadership decentralization and social integration as prioritized by the democratic and transformational types of leadership. In this sense, and at the university level, school is also transformed into a world in miniature where outside realities are emphasized in the higher-education teaching-learning process.

Thus, compared to the above-discussed leadership types, transformational leadership appears more propitious for the implementation of productive relations between leading officials and subordinates by way of organizational collaboration and cooperation. Different from transactional leadership which seeks motivation by means of “the carrot” and “the stick,” transformational leadership makes room for a cooperative negotiation of developmental solutions.

As mentioned earlier, transformational leadership as a concept is dates back to 1978. However, a strong relationship emerges between transformational leadership as a
concept and Deming’s philosophy or management, or leadership. Following Deming’s publications, one can only note that Deming has made a significant contribution in conceptualizing transformation and in giving it a greater meaning, especially in the field of management and leadership. In Deming’s thought, especially in his fourteen principles, transformation and change are key concepts with applications that remain necessary for the building of a successful platform for leadership. Transformational leadership, in its various implications, strongly echoes Deming’s theory of quality. In this study, positive aspects of transformational leadership are discussed in relation to Deming’s philosophy of management so as to evaluate the role of the leader in the production of quality.

Total Quality Management (TQM)

Definition. A number of researchers have formulated frameworks with regard to how quality in production can be improved (Aljudee, 2005). Different names have been given to these frameworks. These names include, for example, “Total Quality Control” (TQC) or “Total Quality Management” (TQM) (Bowles & Hammond, 1992, p. 28). Although differences might exist in terms of how quality management is called from one place to another, TQM appears to be of more general use in capturing the essence of the systems geared towards the improvement of quality. One can identify different definitions of TQM. Seymour and Collett (1991), for instance, argue that “TQM is a ‘thought revolution’ that requires a rather dramatic shift in the culture of an organization” (p. 6). This definition emphasizes the idea of rupture, meaning a break with the traditional systems, but geared towards ensuring the survival of business. In this sense,
Seymour and Collett’s perception seems to be echoed in Seymour’s (1992) understanding of TQM when he states that TQM holds an important function in establishing the values in which development and “survival” remain the primary concerns of businesses and organizations (p. 3). For these researchers, the idea of creating rupture, or break from the traditional system, becomes thus central in their definitions of TQM as both a concept and an instrument of management.

According to Venkatraman (2007), TQM can be understood as a two dimensional philosophy of management. On one hand, it represents continuity in making improvements in a particular system of management. On the other hand, it concerns a number of means and techniques that are utilized in order to reach a particular set of objectives. Writing from quite a different sociocultural background, Aljudee (2005), as the researcher translates, defines TQM as a set of processes that are based on the commitment of the leadership to create a climate full of confidence, which supports collaborative work, and which also provides workers with a larger opportunity for participation. This, according to Aljudee, will ensure innovation and the continued improvement of the services and products that satisfy the needs of both internal and external customer needs. Although Aljudee seems to emphasize commitment and collaboration, his definition of TQM suggests different definitional points of convergence with Seymour and Collet (1991), Seymour (1992) and Vankatraman (2007). In other words, they all have some elements in common and imply the idea of commitment to the philosophy of work along with determination and collaboration with regard to the execution of the managerial tasks. In the 1990 Handbook of the Federal Quality Institute
(FQI), TQM is defined as the proper performance of a work at the very first time with
to adherence to approaches that are scientifically informed which, according to the FQI, sets
the ground for a continued improvement of quality in work. Like an addition to the
viewpoints discussed above, FQI’s definition emphasizes statistical data as a reliable
source of improvement and which can finally lead to the satisfaction of the customer
needs. This leads directly into Deming’s definition of the meaning of quality.

In his famous *Out of the Crisis*, Deming (2000) associates quality with the ability
of a particular product to meet the needs of the customers as well as their expectations in
both the present and the future (pp. 167-170). In the case of higher education, both
students and community become customers to the educational institution. In this respect,
collaboration between school and community helps educational leaders better identify
educational expectations. As largely discussed in the following pages, the singularity of
Deming’s understanding of quality emanates from his adoption of a quite synthetic
definition of quality which, later, came to be understood as part of TQM. In his triangular
itemization of the meaning of quality and its implications, Deming argues that the quality
of a product includes “(1) the product itself; (2) the user and how he uses the product”
and “(3) the instructions for use, training of customers, and training of repairmen…” (p.
176). Thus Deming defines quality in relation not only to the immediate expectations of
the customer, but also in relation to how the same product enters both short-term and
long-term phases of consumption. In short, one understands that, according to Deming,
the ways to quality – or TQM for others – is based on ensuring the longevity can be
facilitated by knowing customer expectations which, in the case of higher education, include community, parents, and students.

From this definition, one immediately understands that many industrial companies, at least those that are exclusively interested in maximizing their sales may be less interested in capitalizing on how a sold item should be repaired because it does not favor the increase of their sales. As a result, just as Deming seems to have predicted, in today’s world, many companies have ventured to engage themselves in increasing the quantity to the detriment of quality. To avoid this in the field of higher education, one understands that it is important to emphasize quality-based student achievement rather than focusing on just maximizing registration. However, while this may generate reluctance in implementing Deming’s definition of quality in industries, this may not always be the case with higher education where the training of the student, for instance, requires patience and good timing. In the context of this study that focuses on higher education, TQM provides a set of tools that lead to the creation of a successful educational environment based on collaboration between all the institutional bodies and components. Not only will this lead towards quality as understood by Deming, but this also facilitates the satisfaction of the society’s needs and expectations, the students and the institution itself.

**Deming’s and Major TQM Theories and Strategies.** Three interconnected elements compose Deming’s system of profound knowledge. These include the following. One, system appreciation, that is formed of the rules and purposes through which an organization functions and to which all members adhere. Two,
related variation, which is the range in which something or a process goes along and which determines the specific attention needed for a particular task, or department. Three, the theory of knowledge that embodies Deming’s idea that a theory is necessary for guiding practice (Deming, 1994). In the field of education, a variety of studies support Deming’s principle in this sense. They include, for instance, research from Jenkins (2003), Warwick (1995), and Delavigne and Roberston (1994). In his theory of profound knowledge, however, Deming (1994) argues that the system of profound knowledge creates an organizational environment that allows the identification of practical means to create quality improvement. Yet, while one could go on to list a number of supportive studies in the field of education that are compatible with education, others highlight slightly different remarks. For instance, Pedró (2009) argues that, at the present time, it remains difficult to always relate an increase in “performance excellence or in exemplary quality assurance” to a simple application of Deming’s principles (p. 13). However, based on the literature, one can only note that a strategic and appropriate application of Deming’s principles remains a productive way towards organizational success.

Over the past decades, a number of schools of TQM thought have emerged. The most famous TQM theoreticians include, among others, Crosby, Juran, Ishikawa, W. Edwards Deming and Armand V. Feigenbaum. One can refer to them as the “TQM fathers” in reference to the important contribution they have made towards the improvement of quality in management systems and philosophies of leadership. There are a good number of commonalities as well as differences in the theoretical approaches employed by these five thinkers.
Crosby (1979) understands quality as excellence, or zero defects, in production. In Crosby’s analysis, quality is the standardized instrument for measuring quality in the product and how it meets the desired expectations of the customers. Additionally, Crosby’s model entails that quality implies the product’s conformity with the established quality requirements. Watson (2005) understands Crosby’s model on the same lines, as based on the quest for excellence in the product. Watson (2005) reiterates that Crosby proceeds with an emphasis on “zero defect” in a proposition of a quite perfectionist approach of the system of management and in seeking quality (p. 52). In his study Crosby’s (1979) famous statement, “Quality is free. It’s not a gift, but it is free. What costs money are the non-quality things – all the actions that involve not doing jobs right the first time” (p. 1). The idea Crosby has of quality in the product emphasizes timesaving for the production as well. For him, a job well done the first time, not only saves time for the company but also helps produce more income and save money. Probably, one minor difference between Crosby and Deming is the link between their understanding of the relationship between quality and time. In his thought, Crosby emphasizes time-saving production, while Deming seems to be interested in the production of quality for the company’s future no matter how long it takes. In other words, Deming is more interested in developing long-term quality for the future, as opposed to whether the production is fast or not. Also, Deming’s theory of the management system encompasses variation as a reference to quality achievement. In this context, variation refers to relativities in the different ways individuals respond to their organizational responsibilities. Given that variation exists in services, people and
industrial products, Deming suggests that it is necessary for the manager or leaders, for instance, to understand the working environment and process as well as the individuals working in it (Jenkins, 2003; Warwick, 1995). According to Deming, as cited in Delavigne and Roberston (1994), a variation is perceived to be the framework within which one thing or one process operates in its various ways. According to Deming, organizational environment, in this sense, becomes a variation given that all the operations within it occur in a systematically organized process that holds a number of different sources. Yet it is not easy to grasp the intricacies of variations, mostly because their sources occur randomly.

Feigenbaum (1991) built his philosophy of management based on the capitalization of the organizational structure. In this model, Feigenbaum (1991) believes that quality cannot be reached by focusing on some individual aspects of the organization, but rather by proceeding in such a way that quality is created through the entire whole of the organizational body. In other words, quality in the product emanates from a collective working that puts together organizational departments, all workers, and all chains of production. Thus like Crosby (1979) and Deming (2000), Feigenbaum (1991) also argues that quality is measured by meeting the standardized expectations that are created and agreed upon by the organization’s collective. Further, in addition to this thought, Feigenbaum (1991) also emphasizes the cost of poor quality that he sees as an indicator and a tool for measuring business. Also, Feigenbaum’s model implies that the cost of poor quality determines whether a product meets the requirements of the customer or not. In the end, Feigenbaum’s itemized definition of quality in relation to management
echoes many points highlighted in Deming’s fourteen principles. Like Deming (2000), Feigenbaum (1991) emphasizes managerial values such as collectivism, inclusiveness, and continued improvement in the production of quality.

Ishikawa (1985) believes that TQM not only means the department of quality, but involves all the departments of the institution. Many scholars of Ishikawa’s insisted on this aspect. Kruger’s (2001) argument about Ishikawa informs that Ishikawa also developed a philosophy oriented towards quality. Taken as whole, the philosophy of Ishikawa (1985) on quality capitalizes on an organizational orientation towards satisfying the customer needs based on the customers’ various needs. Thus the customer’s expectations and needs frame the organization’s inspiration and source for modeling quality. Scholars like Watson (2004) have written about Ishikawa’s model. Watson (2004) understands Ishikawa’s definition of quality in this sense and suggests that Ishikawa believes that the body of the management needs to allow the employees to “self-regulate their own work” (p. 54). Thus Ishikawa promotes the production of quality through aspects of transformational leadership, including namely collaboration, a strong sense of collectivism, and inclusiveness. Thus Ishikawa’s theory of TQM is, in many ways, influenced by Deming. For instance, Ishikawa’s insistence on the question of continued training to help ensure sustained improvement of quality in production echoes most of Deming’s principles whose main purpose was, first of all, to help guarantee quality through regularly updating and re-training the workforce. In addition, quality in the product is another aspect in Deming’s philosophy. TQM is generally associated with Deming who is usually perceived as the precursor of the theory of quality in management.
(Bowles and Hammond, 1991; Walton, 1986). The aim in the strategy adopted by Deming involves producing quality in both services and products through an attempt to limit variation possibilities during the process of production.

In the case of Juran, one thing that marks his particularity is that he was the first to implement a quality-oriented approach in his study of the system of management (Kruger, 2001). His observation of the post-industrial developments revealed to him that large companies continued to function in segmented ways despite their growth. Further, Juran (1988) suggests the idea that controlling quality needs to be conducted as a strictly integral part of the work of the management. This implies that control of quality is made important and involves the leading role of the organizational manager coordinated with the collective towards identifying and solving issues that hinder quality in production. Juran (1988) argues for the establishment of a quality policy that not only creates departmental collaboration, but also ensures quality in production. Unlike Deming who was trained as a statistician, Juran was trained a lawyer. This difference in training patterns seems to be slightly reflected in their approaches to their studies of quality in management. In fact, Deming’s approach is more oriented towards statistical control, while Juran seems to focus on the management of finances (Watson, 2005, p. 54).

Now, in order to go in-depth in discussing TQM theories, one can elaborate on the singular particularities of Deming in terms of his specific contribution to identifying the components of quality-related information. The latter is garnered from the theory of sampling and from his promotion of certain principles of quality that are geared towards helping managers achieve what Deming terms profound knowledge for the development
of managerial skills through the use of scientific tools of measurement (Watson, 2005). It also matters to point out some concerns in terms of its application. As discussed below in detail, Deming’s philosophy of management as expressed in his fourteen principles can lead to success in business management, or simply leaders in general. There is, however, one concern that needs to be raised. As noted by Miller (1991), it is important to highlight that Deming’s principle may encounter resistance from, for instance, those overprotective business managers that Miller identifies as other types of leaders who are rather afraid of change. This opens the way to a new discussion on how Deming’s philosophy of management is embedded in his fourteen principles and how his views differ from other TQM theories.

The argument about the relationship between Deming’s philosophy and organizational success is even more relevant in the sense that application of TQM, in a broader sense, calls for willingness to engage with change. It is more so because, as many researchers argue, TQM emphasizes the establishment of systems which facilitate easier and productive decision-making which involve all the bodies of the institution without exception. In fact, Deming’s fourteen principles are largely based on the necessity to create an organization that seeks efficacy through continued evaluation, cooperation, and a shared vision (2000). Writing in that sense, Pedró (2009) brings in “variation” as a key element and argues that it remains crucial for one to know variation causes that are at the basis of building distinct procedures of standardization. These procedures often indicate how decisions are made so that people know why those decisions are made. Further, Pedró (2009) expresses this emphasis on variation in these terms, “rather than assigning
blame, the focus should center on fostering improvement.” (pp. 11-12). In highlighting these few points, the attempt, here, is to show that application of TQM theories in general, and Deming’s in particular, requires, as mentioned earlier, a total break from the traditional system, which makes it an even more challenging task accomplish.

Now, coming to the application of TQM theories and strategies in the field of higher education, especially in terms of leadership and the production of quality, one can only see that TQM fits for many reasons. In most cases, and as is logical, most strategies employed in educational leadership are geared towards the improvement of quality in the teaching-learning process. As Seymour (1992) suggests, quality can be judged through accountability efforts (Seymour, 1992). One understands that accountability, in this sense, calls for the fact that both faculty members and the institutional managers become equally more actively involved in the production of a quality education. Such a managerial approach is again echoed in Deming’s principles when he argues that the institution of leadership also means the management’s ability to include the body of workers, or associates, in the decision-making process (Deming, 2000). Arguing in this sense, Hyson (1991) believes that faculty members, for instance, are in a better position to detect problems related to teaching compared to, for instance, the chairperson of their departments. This implies that inclusion of faculty members in leadership motivates them to be more active in voicing their opinions, and thus helps them find productive solutions.

Implementation of TQM techniques in higher education institutions has, in fact, yielded many positive results as field studies have shown. For instance, Seymour and Collett (1991) write that the application of TQM facilitates the “interacting with peer
institutions” which “was the key” to successful teaching and learning (p. 15). TQM in higher education also gives people a voice and helps society improve the educational environment (Seymour and Collett, 1991, p. 20). Another positive aspect in the application of TQM is it facilitates change in climate. Again, Seymour and Collett (1991) argue TQM creates “a belief among the participants of this study that attitudes change as a result of quality improvement efforts” (p. 20). Application of TQM also provides a common language, which Seymour and Collett see as follows, “A common language is emerging out of the implementation of TQM. The common language assists in the normal confrontational situations that arise between various departments and individuals” (p. 21).

This is, indeed, a short list of benefits generated from implementation of TQM at the level of higher education institutions. For this reason, implementation of TQM in post-secondary education and its anticipated positive results to the educational institution and to the students. Nevertheless, one must not also ignore the application of TQM strategies in post-secondary educational institutions faces many challenges.

Further, it must be noted that discussing Deming’s fourteen principles also require seeking to understand his conception of the meaning of the organizational system. For him, a system is composed of interconnected elements that work in a coherent way in an attempt to achieve the objectives of a particular system (Leonard, 1996; Maguad, 2011; Walton, 1986). Also, this means that one element fails to help reach those objectives unless it is operationally connected to other elements within the system. Further, this relates to Deming’s theory of profound knowledge. Deming (1994) perceives the latter as a concept which is needed for channeling knowledge and that those are not totally and
always based on experience but also on the theory of knowledge. In his further discussion, Deming suggests that a rational way to predict the future occurs through the availability of concepts and also a system which is continuously revised and which is based on productive observation and comparison between past and present information (Deming, 1994).

Finally, the fourteen principles come to close Deming’s theory of management. These principles that hold a great significance in Deming’s philosophy are implemented in the areas of industry, governmental institutions, and lately in education. Application of Deming’s fourteen principles of management is meant to help transform the modern style of management in the West into one that would be more highly optimized and applicable to the needs of the current society (Bonstingl, 2001; Deming, 2000; Walton, 1990). The fourteen principles can be applied to both small-scale and large-scale institutions that are built for the manufacture or the production of services, or any other company-related aspect. Some of the principles referring to quality and leadership insist on the institution of leadership, creation of consistency in the improvement of quality in both services and products, ensuring a continued training of professionals, suppression of fear to encourage a stress-free work space, and finally the emphasis on the role and responsibility of individuals in the attempt to positively transform the organization (Deming, 2000; Leonard, 1996; Walton, 1986). Also, as discussed above, application of Deming’s TQM principles has been productive in the field of education. Yet, there are challenges to the processes of implementation, which needs to be overcome for a greater success.
**TQM Challenges.** TQM here, as a holistic and quality-driven system of management and institutional leadership is not without challenges. In his 1986 *The Deming Management Method*, Walton discusses some of those challenges in relation to Deming’s revolutionary philosophy of leadership. Walton highlights seven challenges in TQM. In the following section, Walton’s seven “diseases” are discussed in relation with other perspectives that also highlight the same challenges in the implementation of TQM (p. 89).

The first challenge, “lack of constancy of purpose,” is concerned with an organization’s need to adopt a certain degree of constancy in the establishment of its programs and objectives. Walton believes that programs and objectives of a particular organization should change constantly as based on the change of organizational leader (Walton, 1986, p. 89). Arguing in conjunction with this challenge, Almuderes (1999) asserts that, in Saudi Arabia, the “lack of constancy of purpose” is accentuated by the resistance of traditional leaders to change. Arguing along the same line, Venkatraman (2007) emphasizes that resistance to change complicates the implementation of new TQM strategies and renders it almost impossible (p. 97).

Walton’s second disease in the implementation of TQM is “emphasis on short-term profits” (p. 90). In this challenge, Walton argues that manipulation of company figures – data – by those he calls “wizards” and “lawyers” may lead into an untrue and opportunist interpretation of the company’s progress. For him, this is nothing less than simply wasting the company’s financial resources. Langbert (2000) echoes this challenge in the implementation of TQM. In his discussion of the transitional and transformational
forms of leadership, Langbert argues that the selection of employees also needs to take into account the employee’s actual adaptability with regard to the company’s long-term needs.

Walton’s third disease is summarized as “evaluation of performance, merit rating, or annual review” (p. 91). Walton believes that this challenge bears similarities with Deming’s idea “management by fear.” Like Deming, Walton argues that such methods that focus on short-term results are unproductive and de-emphasize the company’s long-term objectives. In many cases, this tendency reduces or hinders the chances for the implementation of new TQM strategies that forbear change.

“Mobility of top management” is the fourth disease that Walton argues weakens the company in general. He believes that the constant changing of a company’s top leaders will repeatedly destabilize the company and reduce its chances to reach its long-term objectives.

The fifth disease is summarized as follows, “running a company of visible figures alone (counting the money).” Walton argues that figures do not always provide all the information needed to measure a company’s progress and how much it satisfies its clientele (p. 35). Looking into the field of higher education, the lengthy discussion by Eagle and Brennan (2007) on whether students are customers or not provides an interesting example about how to understand that figures do not always provide answers to questions that higher education managers pose to themselves. They suggest that, in the case of education, satisfaction of the students – customers, in part – cannot always be determined by, for instance, the payment of tuition. Removing such a challenge would
thus require going beyond mere figures and implies that a company gets involved in more direct conversation or relationship with its customers.

On the sixth disease, Walton mentions “excessive medical costs” as a sixth challenge to TQM because it financially ruins the company (p.93). Importance of criteria that do not fit in figures is highlighted in Meyrovich and Romar (2006) when they assert that knowing both the teachers’ and students’ emotions in engaging in decision-making matters (p.338). Walton’s statement in this challenge seems quite obvious and applies to almost all institutions, including higher education.

“Excessive costs of warranty, fueled by lawyers that work on contingency fees” is the seventh and last challenge that Walton mentions (p.93). Eagle and Brennan (2007) seem to stress on the same concerns that Walton highlights in this disease. For them quality matters in avoiding certain unproductive costs, especially when, for instance in the case of education, those costs can be avoided.

Beside Walton’s seven diseases, other TQM researchers, especially in the field of higher education, have highlighted additional challenges that also hinder the production of positive results through application of TQM strategies. In his study of Saudi systems of management, Derbass (1994) mentions two TQM-related challenges. One is in reference to the excessive centralization of decision-making that traditionally characterizes management in Saudi Arabia. As a result, argues Derbass, centralization causes the monopolization of information and hinders the emergence of coordinated and collaborative leadership, the kind often associated with transformational leadership. The second challenge results from the first and relates to the lack of information exchange
between the different segments, or departments, which compose the broader educational institution. In considering the contextualization of these challenges in higher education, it is also argued that faculty members may be reluctant to engage in new changes. This skepticism by faculty often causes them to be reluctant from relinquishing the individualism they usually have (Seymour and Collett, 1991; Venkatraman, 2007). In brief terms, faculty members who do not welcome change may be a challenge to the implementation of the new organizational system.

In the light of this review of literature, it matters to note that leadership requirements differ between business and education. What, in terms of TQM, may be a challenge in the industrial sector may not pose problems in higher education and vice versa. However, as outlined in this study, such relativity in the challenges associated with TQM between business and higher education are not always exclusive. This does not mean that the challenges in the application of TQM in post-secondary education are not real; they are. It also matters to mention that for the implementation of TQM in institutions of higher education, specific challenges need to be identified and neutralized by managers first in order to set up functioning and successful doctrines of operation. In this sense, it becomes the task of the leadership in higher education to ensure that employees are continuously trained and engaged in both stages of policy design and production.

**TQM and Leadership.** According to Deming (1994), the system of management – often referred to as TQM – serves in the *optimization* of the organization. In the way Deming puts it, optimization as a notion embodies continuity in cultivating the values of
excellence in all the components of organization – workers as well as educational administrators and teachers. Deming’s position reiterates the manager’s role as a leader, someone whose role is not simply supervising, but more importantly leading. In this sense, leading implies the manager’s ability to provide a vision that is conducive to quality. In this context, what seems nuanced between manager and leader is that while the first may be confined within supervising, the second implies a broader sense of producing a vision that motivates a collective action. Deming (2000) insists on the same argument in his *Out of the Crisis* and asserts that successful leadership is the one that strives to break all obstacles to the worker’s effective engagement in the production of quality (p. 54). Walton (1986) supports the same understanding of leadership in relation to the manager’s constant quest of quality. Walton argues that leadership as the manager’s task means his or her ability to suppress what Deming called “barriers” which prevent the worker from directly and actively involving themselves in framing the philosophy which guides the company, the institution towards development (p.70).

Such a perception of leadership as the kernel that inspires the guiding vision of a company is reiterated by Delavigne and Robertson (1994). Like Deming (2000) and Walton (1986), Delavigne and Robertson explain the essence in relation to vision through what they call the “leadership’s bottom line” (p. 187). They make an argument that is based on four points. First, they affirm that the manager, as the leader, remains the one who frames the expectations of the organization – the institution. In the second point, they state that the leader also bears the significant role of leading into defining what the organization intends to do and what it does not. They argue on the third point that the
manager is also the one who invests significantly in providing the means needed by the organization. In the fourth and last point, they present the leader as a mature person, which should allow the understanding that some important things (to the organization) may not remain unknowable.

Delavigne and Robertson (1994) present an itemized meaning of leadership in relation to vision by providing a useful understanding of the leader’s role and place in the successful application of TQM as a path towards quality. The leader’s role is thus perceived as more an active one and which requires dynamism and creativity. One also understands that, for a successful application of TQM as a set of management strategies towards the acquisition of quality results, the leader ceases to be a mere passive supervisor. In this case, the leader is not leader in name only but also acts as such. Thus as successively argued by Deming (2000), Walton (1986) and Delavigne and Robertson (1994), a leader embodies the vision that upholds the constructive managerial values which help to successfully lead the company – the institution – reach its objectives. Such an objective perception of the meaning of leadership is certainly the reason why the Malcolm Baldrige National Quality Award (MBNQ) is based certain leadership-related values for its award criteria. MBNQ takes leadership as the first criterion which precedes other criteria – including data and its analysis, strategic planning of quality, use of human resources, assurance of quality services and results (Bowles and Hammond, 1992). For the MNBQ, leadership is viewed as a clear and visible value system that guides the organization’s activities in accordance with a supporting objective system of leadership geared towards achieving quality. Bowles and Hammond (1992) point out that the
MNBQ criteria are not intended to measure “the overall competitive health of a company” (p. 144). Yet MNQB’s emphasis on leadership that is inclusive of vision as a key element in defining leadership provides useful insights about the importance of leadership in the application of TQM in a given institution. Again, as already stressed previously, the role of the manager – the leader – becomes a crucial one in the success of the application any constructive philosophy of work and in the production of quality.

Also, Bowles and Hammond (1992) themselves do discuss a similar relationship between TQM and what they call “a strong leadership” (p. 119). For them, strong leadership is essentially formed by “a chief executive who leads the charge emboldened by an unshakable belief in quality” (p. 119). The quest of quality – as a criteria and an objective – plays a determinant role Bowles and Hammond’s statement. Thus, they seem to determine the competency of leadership according to the leadership team’s ability to achieve the company’s objectives in relation to the end-quality. In this particular context, one also understands quality not only as the guiding principle of leadership, but more importantly as a key element in understanding the relationship between TQM and leadership.

Thus, in such observations and discussions of the relationship between TQM and leadership, vision is considered a central element in the functioning of any company that hopes to apply TQM in its quest for quality in production. Furthermore, the emphasis on vision to explain the role of management in the implementation of TQM also favors the production of change in the organizational system. Sashkin (1986) speaks about the production of quality in relation to the leader’s commitment to the implementation of
change in the functioning of the institution. He identifies various levels of leadership. One of those is transformational leadership. Sashkin argues that, for the implementation of a positively transformative change in an institution, the leader must bear and put to work a vision that promotes a coordinated action based on the collective philosophy of work. In his line of thought, Sashkin emphasizes the specificity of transformational leadership as inclusive of the importance of the leader’s vision. In his understanding, as it unfolds in his argument, vision is not simply a drawing of abstract ideas, but rather a guiding thought which materializes in collective action driven by the leader.

Thus, it becomes clear that vision is embedded in the philosophy of work guides the particular company. Further, the vision becomes established in the essence of the organization by a continued integration of the vision in all aspects of production. As Sashkin suggests, the leader who promotes positive change must bear a vision oriented towards the satisfaction of long-term objectives. This meaning and importance accorded to vision is largely reflected in Deming’s fourteen principles as discussed in the following pages. In fact, Deming (2000)’s insistence that “managers be leaders” implies that managers should be bearers of a creative, innovative and thus fruitful vision for their company (p. 54). Moreover, in terms of knowledge acquisition, Deming (2000) argues that there is often little problem with the learner. In Deming’s psychological analysis of the learner’s attitude, he states that the learner – here, learner could refer to employees – is inclined to learn and remains motivated to do so (1994). In other words, what Deming suggests is that, in a company, for instance, the leaders are the ones responsible for creating a propitious environment which facilitates an environment for the workers (or
learners) to actively engage in the learning process, meaning the implementation of 

*positive change* in the organization. Thus given that Deming identifies no problem with the employee, then the problem resides within the leader whose primary role is to make the work environment attractive and motivating for everyone.

**Applying TQM in the Broader Saudi Context**

The kingdom of Saudi Arabia is mostly famous for its rank as the first oil exporting nation in the world. Over the last several decades, the government has managed to expand its industries beyond the oil sector in order to diversify its resources and avoid an exclusive focus on just one natural resource – oil (Al-Sulimani & Sharad, p. 1994). Such management-related efforts with regard to the exploitation of industrial resources appear to be of great usefulness in forging a better future for the country. However, there is a lot more that needs to be achieved in terms of management in Saudi Arabia. In fact, as Almuderes (1999) argues, the persisting issues related to productivity and development calls for the implementation of TQM strategies in the Saudi system as a whole.

Why TQM? As framed in his philosophy of management, Deming (2000) argues for a quality-based managerial strategy as an element of reference in defining the roles of both organizational leaders and their employees. In his philosophy of management, especially as itemized in the fourteen principles, Deming calls for the creation of a more democratized collaborative leadership whose inclusion of the employees in the decision-making process will help ensure the production of quality. This philosophical orientation remains central to why the implementation of Deming’s TQM strategies can lead to a positive change in Saudi Arabia, a country where culturally rooted aspects of
gerontocratic organizational leadership continues to make leadership a matter of age. In this sense, gerontocracy (or leadership by elders) refers to the fact that leaders are chosen, not forcibly because of their intellectual capacities, but because of their age that tends to be associated with ‘wisdom’. As a result, Saudi Arabia remains a society where centralized leadership is part of general norms (Alamri, 2011, p. 90).

In many instances, the recent efforts to apply TQM in Saudi Arabia seem to emanate from a desire to promote competition in global markets. This led the government and private institutions to make a few attempts towards enhancing quality in organizations (Alhwairini & Foley, 2012). This includes the establishment of funding geared towards motivating organizations to promote quality and to diversify resources. One of those is the King Abdulaziz Quality Award.

Despite these efforts, however, the generation of quality remains a challenge in the broader Saudi context. Several challenges, plague the implementation of TQM in Saudi institutions, ranging mostly from problems related to tradition, culture, and, more critically, to the making of wrong choices. Describing the challenges to the application of TQM in Saudi Arabia, Al-Qahtani (1993) highlights facts such as the frequent changes of managers (or leaders, in general) and the shortcomings in the training of workers. He also adds the shortcomings in individual performance, the diversity in customer needs, lack of helpful finance-related information, and finally a lack of a productive structure within which the tasks of all the company’s departments operate in coordination.

Furthermore, systems of management in Saudi Arabia are predominantly based on traditional paradigms of leadership that are mostly characterized by centralized leadership
(Derbass, 1994) and/or top-to-bottom types of management (Alhwairini & Foley, 2012). In many instances, this status quo has mostly resulted in various managerial failures, which, to some extent, seems to impose the Saudi state to seek solutions through the implementation of new management systems, especially TQM. In the field of education, implementation of TQM strategies helps make room for transformational and democratic styles of leadership to help overcome chronic educational challenges, namely limited student accomplishment, centralized leadership, and collective efficacy in education. At the level of higher education, Saudi institutions are lagging behind when compared to, for instance, Western universities (Alharbi, 2009). There is little implementation of TQM strategies in Saudi institutions, at both the educational and non-educational levels. Application of TQM strategies has been noted in, for instance, the Saudi University of Dammam (Rubaish, Wosornu, & Dwivedi, 2012). An example of non-educational settings is discussed by Al-Sulimani and Sharad (1994) who explore the application of TQM strategies by the Saudi government, especially in the Chambers of Commerce in Jeddah and Riyadh.

In the few institutions where TQM strategies have been implemented, positive results have been noted in terms of helping institutions reduce the amount of waste and also to cut down on the prices of costly operations (Aljodea, 2012). According to Alhwairini and Foley (2012), production of quality in the Saudi context through application of TQM strategies compels leadership to consider certain important values such as culture and religion. Alhwairini’s and Foley’s research investigated about how quality is achieved in a Saudi medical not-for-profit organization whose major tasks
consist of “control and testing” (p. 193). Their findings inform that the achievement of quality in the services provided to Saudi patients requires a primary adoption of certain key pre-requisites among which is the local culture – including religious values.

Overall, Saudi Arabia remains a country where the application of TQM strategies is still problematic due to resistance to change, persistence of traditionally centralized leadership styles, and so on. In most cases, the necessity to implement TQM strategies stems from a need to respond to the needs of an increasingly globalized world. New conditions such as doing business in Saudi Arabia impose themselves on the organizational structure of Saudi institutions. According to Alhwairini & Foley (2012) and others, leadership in a TQM context should provide a mission, vision and motivation, which he believes facilitates productive and inclusive decision-making. They also argue that it engages the willingness of employees to share their viewpoints towards building the working conditions in the organization and which are propitious for positive change.

In brief terms, the need for implementing TQM strategies in Saudi Arabia not only stems from the necessity to undo traditional forms of unproductive centralized leadership, but also from a need to generate quality in a context of a globalized economy that requires fast adaptability. Writing in this sense, Al-Sulimani and Sharad (1994) perceive application of TQM strategies as a practical tool for Saudi institutions to achieve quality. Along the same lines, this study contends that the implementation of TQM strategies in Saudi Arabia would help to provide a positive response to both national and international necessities. The implementation of TQM helps decentralize leadership and increase creativity as a pathway towards the generation of quality. In the field of higher
education, in particular, the implementation of TQM strategies remains crucial to creating a more productive educational leadership.

**The Importance of TQM in Saudi Institutions of Higher Education**

Unlike, for instance, in the United States where several institutions of higher education are private, higher education in Saudi Arabia is public and under the administration of the Ministry of Higher Education. Thus access to higher education is free for Saudi nationals. As a historical background, the Saudi Ministry of Higher Education was established in 1975 and was assigned the responsibility of overseeing the planning and coordination of higher education. Leaders of the ministry provide Saudi Arabian cadres specialized in different areas in order to fulfill Saudi Arabian development objectives (Ministry of higher education, 2014). Higher education in Saudi Arabia covers a variety of scientific areas. Today, one can count up to twenty universities each equipped with different departments with an institutional capacity to respond to the kingdom’s educational needs.

From its ongoing efforts to modernize Saudi higher education, one can say that the Saudi Ministry of Education is open to change, especially through the implementation of TQM strategies. However, the major challenges to implementing those changes seem hindered by third-age faculty and staff members who tend to resist change. Additionally, on limited occasions, the Ministry of Higher Education also collaborates with research institutes and centers to organize seminars and scientific conferences to allow faculty members to update their knowledge in their fields of specialization (Ministry of higher education, 2014). King Abdulaziz (KAU), the target location of this study, is one of those
higher education institutions under the supervision of the above named ministry.

According to the KAU website (2014), the institution was founded in 1967 and is currently hosting a number of 82,152 students of both genders. This number is separated in two campuses, one for males and another for females. Additionally, based on the same source, there have been efforts towards implementing Total Quality Management (TQM) in the institution and this ensured by an accreditation department lodged inside KAU. However, there is no mention that Deming’s principles are concerned with this TQM orientation.

However, despite the existence of this powerful institutional apparatus, there are many challenges that plague the structure and organization of the Saudi higher education. A number of studies have shown, for instance, that there is a lack of efficacy and efficiency in the Saudi higher education, especially when it comes to student achievement and motivation (Alamri, 2011, p.90). This state of affairs that, according to Alkarni (1999) relates to several shortcomings at the practical level. For instance, Derbass (1994) notes that the problem also stems from the lack of decentralization in the educational system and a lack of data. Talking about the same challenges in the Saudi higher education, Al Rubaish et al. (2012) remarks that there is also a problem related to a lack of a functioning and adequate organizational body.

In response to these higher education challenges, a few educational researchers have discussed TQM as a potential solution (Bonstingl, 2001; Leonard, 1996; Miller, 1991; Warwick, 1995). In the educational context, for instance, Deming’s (2000) philosophy also entails focus on instituting motivational activities and organizational
traditions that actively integrate both faculty and students in crucial matters such as decision-making. Thinking on these terms, Alnaweigah (2013) produced a study that presents TQM as the source of remedy against Saudi educational failures. More specifically, Alnaweigah’s assertion is framed on the argument that there is a parallel between the implementation of TQM and development, in general. Similarly, others have perceived TQM as a strategy to help resolve the Saudi chronic issue of centralized educational leadership and decision-making. In fact, Deming’s philosophy of management, especially his fourteen principles, promotes the creation of a more decentralized leadership that helps ensure a greater quality in education by making it more inclusive. The same approach can be noted in Seymour (1992), although his model refers to a much larger educational context in the West. According to Seymour, the eradication of several challenges in the institutions of higher education necessitates the implementation of TQM strategies geared towards evaluating the quality of education, and more specifically the quality of educational services provided to students. Seymour’s approach, in this sense, speaks directly to Deming’s (2000) model of management that is essentially based continuity in the production of quality.

In short, despite the availability of governmental institutions, higher education in Saudi Arabia is suffering from chronic challenges – such as student achievement, centralized leadership, resistance to change, incompatibly with the demands of the job market, etc. – to quality education. This mostly related to a lack of a productive organizational system which Deming’s philosophy of management seems capable of solving. This assumption is central to this study and is based on the fact that Deming’s
strategies of TQM, especially his fourteen principles, aim for a decentralized leadership and the creation of a collective decision-making. Today, these two patterns of educational organization are lacking in Saudi institutions of higher education, especially in King Abdulaziz University.

The Impact of Gender and Professional Hierarchy on Applying TQM in Education

For the sake of objectivity in this research, two variables are considered. One is gender, and the other is the faculty’s professional hierarchy. The choice of gender as an independent research variable is motivated by the fact that it bears a strong influence in the distribution of educational roles in Saudi Arabia, given that male teachers teach male students while female students are also taught by female faculty. Importance in the gender variable has also been highlighted in the educational literature as well. For instance, Kalso (2008), through the use of two-tailed t-tests, identifies gender as one of the elements that can help to determine the degree of mean satisfaction of educational quality services among higher education students. Similarly, Thor (2012), in his examination of emotional intelligence as a source of motivation, argues that emotional intelligence is a factor capable of identifying between faculty members with regard to the achievement of quality education. He makes the gender variable a priority in that sense and argues that gender, unlike age, bears an important effect on emotional intelligence. Similarly, Lian (2001) has findings that speak to the gender variable in the same sense. Lian’s study focuses on the implementation of TQM in Malaysia and covers a wide range of variables including gender (especially male). His research findings show that gender, particularly the male, is associated with a productive implementation of TQM strategies,
especially because male faculty are depicted as more active and motivated in implementing TQM strategies. Interestingly, this contrasts the gender-based findings as presented by Githendu (1996) in a study based on the Iowa 4-H’ers (leaders for the youth organization), 4-H being a US multi-segment organization aiming at preparing young individuals to create a positive impact in the surrounding communities and in the world they love in. Yet unlike in Lian’s (2001) gender-based perspective, Githendu (1996) found that the females are more committed to implementing TQM strategies than the males, given that they provided much higher rating compared to males, particularly in terms teacher’s individual efficacy as correlated to student achievement.

On the other hand, there have been researchers whose findings denote little effects from the gender variable. For instance, Alnaweigah’s (2013) study conducted in the Saudi Taif University examines the role of TQM in organizational change. In his findings, he notes that there is no gender-based significant difference when it comes to understanding the teacher-student relationship on one hand; and the teacher-administrator on the other. Further, a similar note is made by Huey Wu (2004) in his research examining the relationship between TQM and the improvement of selected technological institutions in Taiwan. Huey Wu specifically examines the relationship between quality in administration and service and the implementation of TQM strategies. While his findings are based on a three-part survey made on 512 participants, he concludes that the gender variable, along with other variables, is less impacting on quality production compared to the demographics of the broader institution. Moore (2000) further supports this claim on the gender variable. In his study, he investigates the perceptions of
institutional leaders in relation to quality improvement strategies in public schools. Most of the research participants perceived that the current quality of education is lower than what they had expected with the application of TQM. After a simple method of data collection consisting of sending mail to participants, findings inform that gender, along with other variables, have no significant effects on the participants’ perceptions.

The second independent variable in this research is professional hierarchy. Professional hierarchy, in this research, refers to the academic title that is held by a faculty member and which often speaks to his/her teaching and research experience. The researcher assumes that, in the specific Saudi context, this variable will affect faculty members’ attitude towards Deming’s fourteen principles. In this sense, one must note that, like the gender variable, researchers have also different views about the impact of the professional hierarchy. In this study, this variable – professional hierarchy – is used in reference to educational background, degree, title, position, level of knowledge, and so on. Among those who argue for the impacts of professional hierarchy, one can cite Alnaweigah (2013). In his study, Alnaweigah uses two-way ANOVA to determine the importance of professional hierarchy in the target departments. Based on a total of 159 samples of research participants at Taif University, he concludes that, for the role of TQM in organizational change, there are no significant statistical differences among participants in terms of “degree” and “scientific experience.” These findings in Alnawaigah’s research refer to professional hierarchy as an independent variable. Kim (1995) examines factors favorable for the implementation of TQM in Korea. Kim makes the point that the professional hierarchy variable bears a strong impact on, for instance,
how employees react to the implementation of TQM strategies. Further, in a field work conducted by Hurst (2002), a faculty member’s classroom management skills are considered one pedagogical element that ties itself to the professional hierarchy variable. In Hurst’s qualitative research findings based on interviews and observations, he argues that teacher skills in classroom management, which speak to the latter’s educational background, play a significant role in a successful implementation of TQM principles.

However, like in the paradigm of the gender variable, research findings have also showed that the professional hierarchy variable does not always generate greater effects on research findings. The research by Huey Wu (2004) is an example that illustrates this instance. In his study, the degree and title variables mean teacher’s position, in this study, refers to professional hierarchy. For Huey Wu, the two variables speak to the faculty member’s hierarchical position in the department in reference to title, makes the same argument that this variable and others (like age, degree, and period of employment) bear a lesser impact on how quality of services is produced in the broader institution. The perception about the professional hierarchy variable is made by Moore (2000) who refers to this variable in his research as position and years of experience. As mentioned above, his research examines the perceptions of educational leaders regarding quality improvement principles in public schools. Moore’s findings show that professional hierarchy, along with other variables, has no major effects on the perceptions of the research participants. Consistent with Moore’s observations, the same perception of the professional hierarchy variable is made by Lian (2001) who is cited previously. Professional hierarchy, in his study, is represented as the faculty member’s educational
background. In the findings, it is surprisingly showed that the subject’s education does not forcibly support a better implementation of TQM strategies.

Finally, it can be noted that the set of different research perspectives about the two research variables – gender and professional hierarchy – speak to the relative aspects associated to the two concepts. As it can be seen, most of the differences seem based on the orientations of the research topic, or the researcher’s focus, and by extension, it is also determined by the social and cultural context of a particular community. This situation leads to the researcher to the assumption that the social and cultural backgrounds might play an important role in determining the relativities of the two variables. Speaking about the Saudi context this may be even more interesting, given that the organization of the kingdom’s educational system is fundamentally gender-based.

**Deming’s Fourteen Principles**

In *Out of the Crisis*, Deming (2000)’s entire introductory section to his fourteen principles is composed of different elements of response to the management-related crisis in many Western companies. In the beginning, he makes the statement that production and quality can work hand in hand. He further argues that *transformation* is the master word, and is what the Western management system needed in order to overcome the crises of that time.

Each of the fourteen principles that are elaborately discussed in the first chapter of Deming’s *Out of the Crisis* are geared towards creating change in management as well as in the relationship between a group-leader and the body of employees, or associates. As detailed in the following pages, change in leadership attitudes, according to Deming,
is a radical one, in that everything needs to be completely changed. Thus Deming’s principles are interconnected as they promote the emergence of a positively transformative system of management and leadership.

**Principle 1: Create Constancy of Purpose for Improvement of Product and Service**

Deming’s (2000) first principle reads as follows, “Create constancy of purpose for improvement of product and service” (p. 24). In introducing this principle, Deming makes a brief presentation of the difficulties that Western companies are facing and which concern the present and the future. In his understanding, solutions to these imminent problems need to be considered on a long-term basis, not on a short-term one. Deming (2000) insists on this aspect on these words, “allocate resources for long-term planning” (p. 25). Arguing along the same lines, he believes finding long-term solutions depends significantly on the “constancy of purpose.” In this sense, Deming (2000) suggests that companies be innovative on a consistent basis so as to meet with the changing needs of society.

Relevance of this principle to education has been pointed out by Dye (1991). In his analysis of Deming’s Principle One, Dye makes the argument that for more success in leadership and management duties, leadership requires flexibility and adaptability both of which can be achieved through “innovation,” through “constantly improving the design of both product and services” and through the association of research to the policy-making process (p. 10). According to Bonstingl (2001), the practical application of this principle comes down to the educational leadership focusing on continuity in improving
coordinated work between teachers and students. In his application of Deming’s first principle, Leonard (1996) finds it useful that institutions clarify the educational objectives to the students in order to ensure that they can objectively and pragmatically follow the entire teaching and learning process.

Research, in this particular case, includes work conducted by the leadership body in order to identify the ups and downs of the system and help improve it. In this sense, Dye’s last element, which supports validity in Deming (2000)’s Principle One, is crucial, for instance, in postsecondary education for two main reasons. On one hand, research facilitates discovery of what the institutions needs to innovate or change in order to make its product, curriculum, more effective to the students. On the other hand, research also helps design and implement attractive and efficient programs.

**Principle 2: Adopt the New Philosophy**

The second principle, “Adopt the new philosophy,” invites American companies as well as the government to follow the Japanese model that has been successful (Deming, 2000, p. 26). This principle suppresses any form of tolerance of weaknesses in leadership management and invites an immediate correction of mistakes in order to bring positive change to the structure of the organization. Deming (2000) also stresses that workers need to be assigned tasks. This philosophy, in this sense, is proposed to suppress “commonly accepted mistakes, defects” and some existing practical malfunction (p. 26). In education, the practical implementation of this principle “creates communication networks” and also helps leaders engage objectively in the new transformative philosophy (Warwick, 1995, p. 173). Leonard (1996) reiterates the same emphasis.
Deming (2000) made on the establishment of the new philosophy and also implies that the teacher invites the students to cooperate and actively participate in the production of a quality education.

One must acknowledge the interconnection between this principle and the first one in the sense that they both promote the implementation of leadership policies based on inclusive decision-making and meaning made by all actors in the system. In Fain’s (1991) analysis of Deming’s Principle Two, Fain suggests that implementation of “new philosophy” implies two major establishments. One is that the educational institution needs to believe in its people – the actors – and, at the same time, it is the role of the people to believe in the collectively established philosophy of work that governs the institutions. Two, the philosophy must be directly connected to the objectives of that particular institution (Fain, 1991, pp. 21-22). The essence of this principle resides in the fact that resistance to change can hinder access and production of quality. Thus, as argued in this principle, for change to effectively occur, leaders need to believe and commit to change.

**Principle 3: Cease Dependence on Mass Inspection**

Deming’s (2000) third principle states, “Cease dependence on mass inspection” (p. 28). Deming addresses the shortcomings that occur with a simplistic and superficial adoption of general inspections of an organization. In this principle, inspection is not forcibly rejected. Instead, Deming suggests that it needs to account for all the stages of the production system rather than just focusing on the final stage of production. This is emphasized when he asserts that, “inspection does not improve quality” (p. 29). In such
suggestion, Deming seeks quality through a procedurally holistic approach such that all stages of production need to be subject to inspection (Deming, 2000).

In his interpretation of Deming’s third principle, Heady (1991) supports Deming’s argument that mass inspection bears a significant number of negative impacts on postsecondary education such as the reduction of freedom in individual creativity. One example of mass inspection in post-secondary education that Heady highlights is “increased graduation requirements.” For him, the latter increases requirements on students by unproductively elevating the standards, which may result in de-motivating and, sometimes, discouraging learners (pp. 32-33). In his perspective, Leonard (1996), on the other hand, understands that emphasis on grades is even limited in terms of evaluation. According to Leonard, certain tests fail to evaluate key educational aspects such as “emotional development” or “interpersonal skills” (p. 196). In a particular sense, Bonstingl (2001) believes that this principle translates into the fact that students need to be made responsible and active enough to take part in the educational process (p. 96). In sum, Deming’s principle, as strongly supported in the preceding examples above, contributes to building a quality-oriented educational system.

**Principle 4: End the Practice of Awarding Business on the Basis of Price Tag Alone**

Deming’s (2000) fourth principle, “End the practice of awarding business on the basis of price tag alone” addresses the relationship between quality and the price of the product” (p. 31). He argues that the cheapest product does not equate to the best quality and that basing competition on lowest prices ultimately leads towards a drop of quality in
products. This is certainly what brought Deming (2000) to add, “anyone that engages in
teaching by hacks deserves to be rooked” (p. 33). In other words, Deming urges
companies to invest in creating quality-driven long-term relations with customers instead
of simply relying on low prices as standards of doing business (Deming, 2000). Again,
Leonard (1996) provides a practical example as to how reliance on cheap prices can
negatively affect quality in education. For him, educational institutions should not focus
on cheap curriculum material – textbooks, equipment, supplies, etc. – and neglect the
objectivity in the choice of material. Warwick (1995) seems to speak in the same terms.
In his thought, practical application of this principle means assessing “total system costs”
as well as the establishment of “priorities for school” in ways that avoid extra expenses
(p. 174).

In his study, Hogan suggests that low prices do not always ensure quality in a
system. In applying this principle to the field of postsecondary education, Hogan (1991)
believes that long-term costs in higher education systems result generally from a
continued lack of sufficient training of the student to reach the stage of trained citizen. He
insists that an educational shortcoming incurred at the high-school level affects training at
the college level and, in return, causes a long-term loss where the student fails in his path
towards becoming a trained citizen. In response to this management-related problem, and
as a solution, Hogan suggests that the postsecondary institutions develop an effective
collaborative relationship with high schools (p. 45). As advanced by Hogan, there is a
need for postsecondary institutions to collaborate with secondary schools in order to
increase student achievement.
Principle 5: Improve Constantly and Forever the System of Production and Service

“Improve constantly and forever the system of production and service” is what Deming (2000) states in his fifth principle (p. 49). This principle raises a concern that is repeated in most of Deming’s principles. In this principle, Deming lays emphasis on the collective body and he insists, “improvement of the process includes better allocation of human effort” (p. 51). For example, he suggests in this principle that the manager, or the leadership, in general, should be the steward in the creation of desired results in the company. At the same time, Deming (2000) insists that the constant need for improvement in the system requires that managers collaborate with workers.

From his perspective, Hughes (1991) insists on Deming’s argument that there is always room for improvement and that no system is totally perfect. According to Hughes, in the field of education, managers, or leaders in general, should endeavor to provide leadership that ensures all personnel in their institutions remain up-to-date with current advances in research (p. 52). In conjunction with this support of Deming’s principle, Hughes believes that each improvement needs to be based on statistics gathered from the comparison of data related to the performances of “traditional classes” and new ones (p. 54). In the same way, Bonstingl (2001) argues that an application of this principle helps “create and maintain the context in which teachers are empowered to make continued progress in quality” (p. 97). Leonard (1996) emphasizes the same importance in the continuity of professional training. He insists that when faculty members are constantly working on updating their professional skills, this helps improve the educational system.
and impact on the attractiveness of the institution to students. In sum, these arguments all in support of Deming’s principle emphasize consistency in training as a means to perpetuate and improve the production of quality.

**Principle 6: Institute Training**

Deming’s (2000) sixth principle is “Institute training” (p. 52). According to Deming, company leaders need to establish an environment for the workers that are propitious for continued training. He discusses the differences in the ways people learn and how peoples’ learning techniques differ from one individual to another. Deming’s focus on training aims at making corrections and is the impetus for his critique that, “the greatest waste in America is failure to use the abilities of people” (p. 53). Thus Deming’s position remains connected to his argument that managers need to take these different learning patterns into account such as a managerial attitude that would help facilitate an integrated and inclusive training for all the workers on a continued basis.

Deming’s (2000) sixth principle has been applied to management in higher education. In his analysis, for instance, Hunt (1991) finds the relevance of this principle in education in the sense that faculty members as well as staff need excellent training in their tasks of teaching and administration in order to be more productive (pp. 61-62). Hunt (1991) further argues that it is the responsibility of the leader to ensure the continued training of both faculty and staff members until “statistical control” is reached (p. 62). In a sense, this suggestion implies the leader having high competence in the field and in making it a priority to remain up to date in order to lead others in needed changes and training. Applying this principle means creating the means for the staff’s
“professional development” as well as establishing different programs of monitoring which can facilitate access to “feedback” which is conducive to quality improvement in education (p. 174).

In support to these arguments and in relation to continued training among workers in the institution, Deming (2000) praises the Japanese model of economic management. He says it should be mandatory that workers have the opportunity to acquire a strong professional experience, as a result of extended years in an internship. When applied to the field of higher education, this principle is more than relevant. Although one may not expect internships for all workers referred to in this context; in the case of faculty members, the implementation of this principle would imply that professors engage in continued research through various means.

**Principle 7: Adopt and Institute Leadership**

Deming’s (2000) seventh principle reads, “Adopt and institute leadership” (p. 54). In this principle, Deming seeks to redefine the role of the leader not just as supervisor, but as an individual who must, first and foremost, know the professional area in which s/he is appointed as a manager. In having a strong command of the area of professional practice, the manager emerges as the primary facilitator of the organization and, for this reason, Deming believes that the leader “must know the work that they supervise” (p. 54). According to Deming, the manager’s knowledge of the field facilitates and smoothens his/her collaboration with the body of workers in an organization. Further, Deming suggests means that the more the leader knows the practical field, the better s/he is equipped in helping lead the collective towards more
productive action. This collaboration is manifested at different levels in the processes of production and also at the level of policy design that guides the company’s functioning.

Writing in conjunction with Deming’s seventh principle, Hyson (1991) states that “management by walking around” is not enough as the sole approach to help identify problems and find solutions. In his interpretation of how to “institute leadership,” he believes that every employee – faculty and staff members – needs to be included as part of the leadership, which helps to motivate them to actively participate in detecting problems and finding solutions (pp.63-66). In other words, all the members of the educational organization need to be actively involved in the decision-making process. In his own perception, Bonstingl (2001) puts the practical level of this principle in simple and concise terms. For him, the meaning of the principle is that leadership means being hands on and “helping, not threatening or punishing” (p. 98).

Writing along the same line, Kelly (2011) believes that effectiveness in leadership also resides in certain patterns pertaining to the distribution of leadership roles. Kelly suggests that the larger the group to be managed, the harder the managing task becomes. Coming down to the management of schools, he argues that educational leadership’s tendency to seek solutions monetarily is not always the best idea. He proposes, instead, that leadership roles in schools, at the school level, be decentralized at the “building level,” which would help reduce the number of subjects in each group (of teachers) to be supervised and thus facilitate the management of personnel (pp. 15-16). According to Kelly, not only does this save money, but it is more effective in instituting leadership.
Principle 8: Drive out Fear

“Drive out fear” is Deming’s (2000) eighth principle (p. 59). Deming perceives fear as a negative factor that paralyzes the worker in different ways. He mentions that a worker who is not placed in a position to express freely his or her ideas related to the job will not be able to fully engage himself or herself in the actual functioning of the company. This, Deming argues, results from the fact that, in the end, employees show “a widespread resistance of knowledge” (p. 59). Furthering his argument, Deming maintains that such a fear must be eliminated so as to allow the worker to be more creative both at the practical level and at the level of leadership participation.

In this principle, Deming (2000) warns against building obstacles that hinder the employee’s active involvement. In education, the same barriers need to be suppressed for greater student participation. In his application of this principle in education, Leonard (1996) argues that fear can be paralyzing, for instance, in student involvement in classroom activities. He also believes that the use of grades to frighten students – “rocking the boat” – may lead to discouraging them as they seek to produce significant efforts in the class (p. 207). In almost the same way, as this principle, Warwick (1995) believes that the principle means elimination of “end-of-the-year review” which, for him, means evaluating “the service process” on a continuous basis (p. 175).

In reading this principle, one identifies a connection between Deming’s (2000) seventh and eighth principle in the sense that both are geared towards facilitating active participation among workers, or employees. In his analysis of Deming’s (2000) eighth principle, Smith (1991) provides another example about fear arguing that it can hinder
productivity among employees. For him, despite the fact that fear may be useful in stabilizing productivity among employees, it may also hinder their concentration on the tasks that are assigned to them. The example that Smith provides can be related to American faculty members most of whom are usually required to publish so as to get promoted or tenured. This also applies to the Saudi context, especially because among Saudi faculty members promotion also depends on publication. The resulting consequence, for Smith, is that professors may end up focusing more on completing publications, which may negatively impact the quality of the education that students receive.

Smith’s argument is interesting and the example he provides may be testable with some American professors. However, the flip side of it is that, in some instances, when faculty members are not encouraged to publish, they may end up being disinterested in research. This leaves us with a dilemma as to whether education quality or research should be prioritized. In the end, this raises the question of the professor’s ability to balance between research and teaching duties, which is his/her own responsibility. In other words, requiring research and quality from the professor, at the same time, is possible. Also, this means that the presence of the leader should always influence the group towards a more constructive action.

**Principle 9: Break Down Barriers between Staff Areas**

“Break down barriers between staff areas” is what Deming (2000) announces as his ninth principle (p. 62). The master concept in this principle is teamwork. Deming believes in a holistic approach when it comes to finding solutions to existing problems.
In his discussion of this principle, he provides an example of a supervisor – “president” – who noticed that the leaders of the different segments of the institution reported positively in terms of how well they do their jobs (p. 62). Yet this did not exclude the existence of problems within the functioning of the broader institution. To reinforce this line of argument, Deming reiterates that, “people in design worked with people” (p. 63). Deming concludes that these problems emanate from a lack of coordination between the different departments that compose the company, or the institution. In his study of the applicability of TQM in Saudi educational institutions, Derbass (1994) highlights similar issues, especially power centralization, which characterizes most Saudi institutions in general. A possible solution to this issue that both Deming (2000) and Walton (1986) suggest is the suppression of centralized forms of leadership. In his descriptive analysis, Derbass argues that the centralization of authority undermines teamwork within the institution and discourages problem solving from a collective approach. Likewise, in emphasizing teamwork, Deming’s (2000) ninth principle puts forward the idea that collaboration between the institution’s departments, or segments, is key to the production of quality.

When applied to higher education, principle nine raises the question of teamwork and organizational leadership geared towards the improvement of production and quality. Writing in this sense, May (1991) states that communication between different departments facilitates the identification of organizational challenges and helps provide collective solutions. Speaking about the application of the ninth principle in the breaking of barriers, Leonard (1996) regrets the fact that (non-tenured) administrators face barriers
because it is sometimes easy to fire them for any reason. Also, as May (1991) mentions, it is the responsibility of the manager – the educational institutional leader – to ensure that all segments of the institution are coordinated. Just as to reveal a connection with preceding principles, Deming’s (2000) ninth principle also emphasizes collective action centered on the active participation of everyone in both processes of problem identification and problem solving.

**Principle 10: Eliminate Slogans, Exhortations, and Targets for the Work Force**

Deming’s (2000) tenth principle is, “Eliminate slogans, exhortations, and targets for the work force” (p. 65). According to Deming, slogans, exhortations, and targets place the blame on the employees rather than on the actual individuals who represent the defect, meaning the problem. “Exhortations and posters,” writes Deming, “generate frustration and resentment” (p. 67). Thus, for Deming, the actual responsibility should be placed on the system that, in its structure as a whole, has generated the blame. In application of Deming’s tenth principle in education, Warwick (1995) believes that to eliminate slogans at school, there is a need to respect and trust workers so as to “improve process with a clear aim” (p. 175). In the educational context, to suppress certain forms of discriminatory award that may create differences between students. Almost similarly, Bonstingl (2001) insists that a well-organized distribution of revenues leads “teachers, students, administrators and families” to be consequently positively rewarded (p. 99). Also, Deming (2000) believes that such a system is first created by the managerial body. In this principle, and for Deming, management is responsible for improving the system.
In addition, Deming believes that informative posters, rather than exhortations would demonstrate responsible leadership.

According Meiners (1991), application of this principle is limited in terms of higher education compared to its application to business although it is still relevant in higher education management. For him, principle ten is more directed towards workers, rather than the managers or leaders, and is geared towards instilling a philosophy (or belief) in work that helps develop the name of the institutions and bring prestige to it.

With regard to the application of this principle and how the resort to slogans de-emphasizes quality, one may wonder what would be the result of an institution not putting forward some slogans that, sometimes, help express or represent the philosophy of work of that particular institution. It seems that the issue becomes more related to whether a slogan is relevant to instilling certain positive values in the worker or not. In case it does, one may argue that a slogan may be useful and becomes part of the argument raised in Deming’s principle 2, which consists of adopting and spreading a new philosophy to help all the workers – faculty members in case of higher education – keep up with the philosophy of work. Otherwise, any slogan is, indeed, useless and must be discarded as principle ten suggests.

**Principle 11: Eliminate Numerical Quotas for the Work Force**

Deming’s (2000) eleventh principle is, “Eliminate numerical quotas for the work force” (Deming, 2000, p. 70). In this principle, Deming de-emphasizes numerical quotas that are usually established by management and that are to be reached by the workers. Productive management, according to Deming (2000), should immediately “eliminate
work standards, rates, and piece work” (p. 72). Deming believes that numerical quotas need to be replaced by studies that would provide statistical data with regard to how production can be improved in conjunction with quality. For managers, Deming also argues that they should abandon the use of artificial improvement targets and he recommends that focus on outcomes should be adjusted so as to expand the production process (Deming, 2000).

Many researchers have written about the applicability of this principle to higher education. One of them is Medkiff (1991). In his study, he believes that the establishment of numerical quotas for student recruiters in higher education may pose challenges regarding the effectiveness of their job. According to Medkiff, the obligation on recruiters to reach a particular number of contacts may turn out to centralize the recruiters’ attention on simply contacting as many prospective students as possible rather than considering other intensives that may convince the candidates to actually register. Additionally, at the practical level of the application of this principle, the usual resort to numerical objectives, for instance grades, is believed to generate a decline of interest in the student (Bostingl, 2001; Warwick, 1995). This, indeed, is a practical example that explains the limits of the effectiveness of management-established numerical quotas.

**Principle 12: Remove Barriers that Rob People of Pride of Workmanship**

“Remove barriers that rob people of pride of workmanship” is what Deming (2000) announces as his twelfth principle (p. 77). In this principle, Deming makes recommendations to both the workers and to the managers regarding the fact that
feelings of pride must positively be instilled in the workers so as to free them and facilitate their involvement in the production process in a more active way. The employee’s lack of pride in the work causes them to “have plenty to worry” (p. 77). Deming insists that numerical quotas be suppressed and that workers be acquainted with all the objectives that the company expects to reach. Thus Deming recommends for knowledge of what constitutes the core in everything that the company targets. Thus, in the educational setting, pride becomes an important factor in instilling motivation among both faculty members and students (Shonebarger, 1991; Bonstingl, 2001).

In his review of Deming’s twelfth principle, Shonebarger (1991) argues that barriers that suppress motivational pride among faculty members include “annual performance appraisals” (p. 110). For him, just as expressed in Deming’s own argument, the performance of faculty members could be raised when, for instance, the management provides them with “direction” and “open attitude” that help generate self-motivation (p.110). Open attitude, in this sense, refers to the individual’s willing to accept change. In educational leadership, there are numerous barriers to the achievement of quality result. One barrier that Kelly (2011) points out is “bureaucracy.” As he express in his own words, bureaucracy “tends to become its own reason for existence” and not forcibly serve in creating an effective result in the educational system (p. 15). One challenge from increased bureaucratic practices is that, for instance, they narrow down the space of creativity for teachers as well as students. As a result, and as Kelly does suggest, increased bureaucracy prevents the involvement of both faculty and students in how decisions are made. One way bureaucracy hinders greater student creativity is most
commonly the paperwork involved in completing scholarly projects such as research
grants. In the case of faculty members, one relevant example in that sense is the
advancement in professional hierarchy. In fact, as mentioned earlier, the requirement that
professors publish before advancement impacts on their efforts on students. In fact,
while, for instance, publication is necessary for career advancement, it may force
teachers to neglect student progress. Thus creation of a stress-free work environment
facilitates greater active engagement of the employee in the work process and creates a
greater chance for teamwork collaborations to emerge.

Additionally, according to Warwick (1995), when practically applied at school,
this principle helps suppress the “merit system” which can sometimes paralyze student
progress in class (p. 176). In this context, merit system refers to the school’s standardized
reward system for students – prizes, grades, etc. – which, although encourages some,
may also discourage others. At the same time, as suggested by Bonstingl (2001), this
helps preserve the student’s pride in the teaching and learning process, specifically
through attempts to create “collaborative efforts” (p. 66). In the end, it becomes quite
obvious to note the relevance of this principle in postsecondary education. In a sense,
whatever reduces a paralyzing stress and preserves self-motivation among faculty
members with regard to producing quality teaching should be encouraged. In the specific
case of Shonebarger’s (1991) reference to annual performance appraisals, one may
inquire about the importance of student evaluations on generating quality in teaching.
**Principle 13: Encourage Education and Self-Improvement for Everyone**

Deming’s (2000) thirteenth principle is “Encourage education and self-improvement for everyone” (p. 86). Deming argues that companies need more than just “good people.” He even makes the claim that companies do not usually lack competent personnel but that the difficulty resides in the employee’s ability to keep up with self-training and to maintain himself / herself up-to-date in a constant basis. The emphasis on constancy is reiterated in these words, “Management must go through new learning” (p. 86). Deming calls for a continued improvement of the worker’s training, or the worker’s educational capabilities in terms of how to constantly adapt to the changing environment of the workplace and the realities of evolving societies (Deming, 2000).

Deming’s (2000) thirteenth principle is in connection with principles five and six in the sense that they all encourage the promotion of continued training among the employees. For instance, Warwick (1995) gives a practical implementation of this principle in education, he argues that its application occurs through rewarding of “any and all programs” and that this principle provides “on-site educational opportunities” and also improves the learning process (p. 176). In his application of principle thirteen to higher education, Miller (1991) states that it is of the educational management’s responsibility to ensure that the faculty members are well trained and up-to-date in their disciplines in order to ensure that their colleges and universities respond to the constantly changing needs of the societies.

As already discussed in the fifth and sixth principles, the responsibility to ensure the continued training of faculty members is, indeed, shared (between the leadership
management and the faculty members themselves). What is meant here is that the faculty members, for instance, need to keep themselves up to date in their disciplines through, for instance, reading, doing academic research and publishing. As an example, for the leadership management could assign them the role of providing financial support for the faculty members to successfully reach their above-named objectives.

**Principle 14: Take Action to Accomplish the Transformation**

The fourteenth and last of Deming’s (2000) principles is “Take action to accomplish the transformation” (p. 86). Deming perceives this principle as an announcement of the last step in the application of his fourteen principles that behold the new philosophy, as represented by Deming’s 14 principles. He sees application of these principles as an uneasy but crucial task. For him, this is the stage when change is needed, and that requires breaking with the old traditions of unproductive management. This need for an immediate change is reflected in these words, “a group, a team, should have an aim, a job, a goal” (p. 90). Additionally, Deming also makes the note that application of this set of principles not only needs courage and determination from the managers – or leader, in general – but also commitment.

Implementation of this principle at the practical level implies the serious and productive establishment of previous principles as well. In that sense, applying this idea comes down to making sure that managers establish the institution’s clear aim which channels the transformative action (Leonard, 1996; Warwick, 1995). In addition, according to Moser, the fourteenth and last principle is an overarching principle whose execution depends, in part, on the execution of the other principles. In Moser’s (1991)
perspective, this principle is based on a “PDCA system,” meaning Planning, Doing, Checking and Acting) (p. 124). However, the PDCA system, as embodied by Deming’s last principle, seems easier said than done. In part, it is because not only does it require one’s – the manager as well as the body of employees – knowledge of the entire compliment of principles, but also a firm determination to establish a system of management which promotes the implementation of these principles.

Throughout this chapter, the broader concern has been to situate this study within related literatures concerning TQM, especially Deming’s theory, and analyze the applicability of those theories in the broader context of higher education. More specifically, the literature review provides a useful understanding of how TQM, and Deming’s fourteen principles in particular, can help create a positive change in higher education. The major objective that guides this research consists of analyzing the attitudes of faculty members at King Abdulaziz University (KAU) with regard to Deming’s fourteen principles of management. For this purpose, the researcher found it useful to first contextualize TQM theories and strategies in the context of higher education in Saudi Arabia. The sources explored herein show a number of challenges faced in the application of TQM, including namely Deming’s theory, in Saudi institutions. Also, although through the review of literature, the researcher becomes informed of those challenges, there is nothing that convinces us that such barriers are unbreakable. Thus in the following methodology section, the emphasis will mostly consist of examining the applicability of Deming’s principles of TQM and describing
the processes of research to be undertaken in order to analyze the attitudes of KAU faculty members with regard to Deming’s fourteen principles.

**Summary**

As shown in the review of literature, TQM has been applied in the Saudi context but has not successfully created the transformational change that Deming talks about in his philosophy of management. Deming’s fourteen principles are geared towards the production of quality. When contextualized in the field of higher education, Deming’s principles aim at the production of an educational system whose foundational philosophy emanates from coordinated decisions coming from a collective effort of all the educational bodies – leaders, faculty, and students. For that to happen, however, Deming’s philosophy suggests that there is a need to capitalize on the role of the institutional leader who bears the responsibility to facilitate that collective efforts take place.

This means that the educational leader – president, department chair, etc. – needs to invest in ensuring that the institution has a productive group by, for instance, encouraging faculty members to actively participate in the decision-making process in various ways of ways. The necessity to involve all members of an educational organization in the decision-making process is due to the fact that teachers may be, for instance, in better positions to identify educational problems. In the same way, they may be in a far better position to help overcome educational challenges such as student passivity, faculty members’ resistance to change, etc. Additionally, the review of literature provides clarifications as to how new ways can be utilized in approaching the
attitudes of Saudi faculty members’ attitudes towards TQM, especially Deming’s fourteen principles of management. As discussed above, Deming’s principles are a combination of different processes through which educational leadership implements a quality-based educational system. In that sense, implementation of these principles in the Saudi context, especially in KAU, can be a great contribution to making education more objective and productive as well.
Chapter Three: Methods and Procedures

Introduction

This study mainly examined the attitude of faculty members in the King Abdulaziz University (KAU) College of Education towards Deming’s fourteen principles of TQM. For this purpose, the researcher investigated the effect of gender and professional hierarchy on faculty members’ teaching attitudes. Another objective in this study was to explore how the interaction between these two independent variables – gender and professional hierarchy – participates in shaping the attitudes of faculty members.

Reasons for framing this study around the faculty’s attitudes was based on the hope that such an approach would facilitate access to useful data that will serve as a guide in the applicability of Deming’s principles in KAU’s College of Education. In this sense, the researcher hopes that findings will help in formulating productive decision-making at two levels. On one hand, findings can serve the college institution itself, meaning KAU. On the other hand, results could also be of great support to the Saudi Ministry of Higher Education.

This chapter discusses the methodology and procedures employed by the researcher to reach the major objectives. The chapter provides a picture of the research design, covers the independent and dependent research variables, the research questions and null hypotheses, the study population, the research plan for sampling, research instrumentation, pilot study, issues related to reliability and validity, instrument’s translation, and finally the procedures of data collection and analysis.
Research Design

This researcher used a quantitative methodology for the research. This means that the design was a *correlational approach and not an experimental one*. To meet the planned research objectives, the researcher decided to use a descriptive non-experimental quantitative design. A survey was used to collect pertinent data from faculty members in the KAU College of Education. In using a descriptive non-experimental quantitative design, the researcher means that there was no manipulation of the sample in order to impact results. In an attempt to investigate to what extent the attitude of faculty members towards Deming’s principles might be affected by gender and professional hierarchy, the researcher worked with faculty members at the KAU College of Education. At the time of this study, there were a total of 176 faculty members at the studied college of education. Out of those, 89 were female while 87 were male (see Appendix E).

Procedures of data collection included an online survey. As an instrument, an e-survey located at http://www.google.com was utilized to gather data in more secure and faster way. All the responses to the online survey were gathered online at google.com. A list of email addresses of the target faculty members was collected by the researcher to use as the group that received the survey. The researcher sent two additional e-mails to the research participants in order to remind them about completing the e-survey – one on March 15, 2014 and the second was on 24\textsuperscript{th} of the same month.

There were two parts of the survey (see Appendix A). Part 1 (from 1 to 5) included questions aimed at collecting demographic data, the items display the demographics of the participants including the two independent variables – gender and
professional hierarchy. Part 2 (items 1 - 42) provided the researcher with data related to
the attitude of faculty members at KAU’s College of Education towards Deming’s
fourteen principles. The researcher used a Likert scale to measure attitude. The
categories on the scale included SA that means strongly agree, AG which means agree, N
which means neutral, DS which means disagree, and SD which means strongly disagree
(Oppenheim, 1992).

Variables of the Study

Independent Variables. In this study, the researcher focused on two independent
variables that includes gender on one hand, and professional hierarchy on the other.

Gender: the importance of gender as a variable stems from the uniqueness of the
Saudi educational context. The Saudi educational system is structured in such a way that
male faculty teach male students while only female faculty members are allowed to teach
female students. As a result, gender emerges as a key factor that the researcher believes
plays a determinant role in shaping the attitudes of faculty members in both sexes.

Professional Hierarchy: In this study, professional hierarchy is used in reference
to the rank, or professional position, of a given faculty member and which is based on
qualifications (e.g.: Teaching Assistant, Assistant Professor, Associate Professor, and
Full Professor). The reason why professional hierarchy is used as an independent variable
is that it plays an important role as it influences inter-relations between faculty members.
The researcher believes that the educational qualifications, training and experience
influence the faculty’s attitude in general.
**Dependent Variable.** The dependent variable in this study is Deming’s fourteen principles of TQM.

**Research Questions**

The research was guided by the following questions:

- Q1: What is the nature of the attitudes of faculty members at KAU’s College of Education towards Deming’s fourteen principles?
- Q2: What is the nature of faculty attitudes based on demographics, age, years of experience, department, and nationality?
- Q3: To what extent are the attitudes of faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by gender?
- Q4: To what extent are the attitudes of faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by professional hierarchy?

**Ho:** $\mu = 0$

**HA:** $\mu \neq 0$

**Ho:** The independent variables, gender and professional hierarchy, are not statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.

**HA:** The independent variables, gender and professional hierarchy, are statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.

**Target Population**

As noted earlier, the target population for this research included 176 faculty members based at the KAU College of Education. This group was composed of 89
female faculty members and 87 male faculty members (see letter from KAU College of Education, Appendix E). The target population also included the Dean of the College of Education, the three Vice-Presidents, the Chairs of the eight educational departments, and the following professional groups according to hierarchy, including: Teaching Assistants, Assistant Professors, Associate Professors, and Full Professors.

**Sampling Plan**

For the sake of objectivity, the researcher decided to use the entire target population of the College of Education by sending e-mails to 176 faculty members in the KAU College of Education. The researcher is himself a faculty member in the Department of Educational Administration and Planning. The researcher assumed that faculty members in the different departments of the College had a wide range of similarities, especially in terms of cultural background, pedagogy, etc. The same assumptions were envisaged in terms of the services that departments provided including documentation, research and supervising. This also results in similarity in the climates and environments within which education is structured in those departments. Launching from these points, the researcher considered that the sampling from the KAU College of Education would be useful for generalizing his research findings to other institutions in Saudi Arabia.

**Sample Size**

To assign the size of the study sample, the research used G*Power 3.1.9. The program indicated that a successful analysis of data required a sample size of no less than
55 participants. The sample size is calculated by using the following parameters (Cohen, 1988; Faul, Erdfelder, Lang, & Buchner, 2007; Light, Singer, & Willett, 1990).

1. Power = 0.80
2. $\alpha = 0.05$
3. Effect size $f^2 = 0.40$

**Approvals**

To ensure ethical standards and as required by the academic research ethics, this research was approved by the Institutional Review Board office (IRB) at Ohio University, Athens, Ohio. After having passed the online research certification evaluation, the researcher was informed of all the implications of research on human subjects (see Appendix D). The principles of do-no-harm were fully respected by the researcher, and privacy was preserved as required by the IRB office that authorized this research project.

The research was also approved by the destination institution – KAU’s College of Education – that provided a full agreement and willingness to help the researcher to successfully conduct his investigation (see Appendix E).

**Instrumentation**

The researcher prepared the instrument of this research based on the review of literature that also informed some of the research orientations. The survey of this study was made up of two parts. Part one was composed of demographic information related to the target sample of faculty members, which also included the two independent variables – gender and professional hierarchy. Part Two was composed of 41 items that cover the
attitude of the sample’s components with regard to Deming’s (2000) principles of TQM. The items used were as follows:

- Principle 1: Create constancy of purpose for improvement of product and service: items 1 to 3 were used to assess the attitude of faculty members towards principle 1.

- Principle 2: Adopt the new philosophy: items 4 to 6 were used to assess the attitude of faculty members towards principle 2.

- Principle 3: dependence on mass inspection: items 7 to 9 were used to assess the attitude of faculty members towards principle 3.

- Principle 4: End the practice of awarding business on the basis of price tag alone: items 10 to 12 were used to assess the attitude of faculty members towards principle 4.

- Principle 5: Improve constantly and forever the system of production and service: items 13 to 15 were used to assess the attitude of faculty members towards principle 5.

- Principle 6: Institute training: items 16 to 18 were used to assess the attitude of faculty members towards principle 6.

- Principle 7: Adopt and institute leadership: items 19 to 21 were used to assess the attitude of faculty members towards principle 7.

- Principle 8: Drive out fear: items 22 to 24 were used to assess the attitude of faculty members towards principle 8.
• **Principle 9:** *Break down barriers between staff areas:* items 25 to 27 will be used to assess the attitude of faculty members towards principle 9.

• **Principle 10:** *Eliminate slogans, exhortations, and targets for the work force:* items 28 to 30 will be used to assess the attitude of faculty members towards principle 10.

• **Principle 11:** *Eliminate numerical quotas for the work force:* items 31 to 33 will be used to assess the attitude of faculty members towards principle 11.

• **Principle 12:** *Remove barriers that rob people of pride of workmanship:* items 34 to 36 will be used to assess the attitude of faculty members towards principle 12.

• **Principle 13:** *Encourage education and self-improvement for everyone:* items 37 to 39 will be used to assess the attitude of faculty members towards principle 13.

• **Principle 14:** *Take action to accomplish the transformation:* items 40 to 42 will be used to assess the attitude of faculty members towards principle 14.

• The research participants answered the e-survey by using the Likert scale. This code was used: (SA which means strongly agree = 5, AG which means agree = 4, N which means neutral = 3, DS which means disagree = 2, and SD which means strongly disagree = 1). Finally, a low mean-less than 2.5- indicates to a negative attitude towards Deming’s principles. Also, a high mean- more than 3.5- indicates to a positive attitude towards Deming’s principles.

**Pilot Study**

Two issues were explored as far as the pilot study was concerned. First, the researcher shared his survey with four faculty members at Ohio University and to the
faculty members who make up his dissertation committee. Those faculty members reviewed the survey and provided meaningful feedback that helped the researcher make necessary adjustments. The researcher considered that such corrective suggestions from experienced faculty members helped increase objectivity in the research survey.

Secondly, after the process of data collection, the researcher used the estimates of the Cronbach Alpha to investigate the reliability of data as well as the validity. For this purpose, 31 participants from the College of Education were used as Johanson and Brooks (2010) recommended for the sake of effectiveness. The Cronbach Alpha showed that the credibility of principles and items was more than 0.65. The researcher used an E-Survey, hosted by http://www.google.com. Survey participants had the opportunity to read the survey in the language of their preference, Arabic or English, given that some of them graduated from Anglophone universities.

**Reliability and Validity**

Educational research, in general, required prioritizing validity in data. For this reason, validity was made an important concern in this research. In this context, validity consisted of evaluating to what extent the research survey measured what it had been designed for. One understands that validity is relative. This means that the validity of a measuring unit in a particular study may not apply to a different research context, for instance, because of major differences in culture, climate and social values. In this study, the researcher ensured that the 42 research items accurately measured the faculty attitudes with regard to Deming’s principles, which fell into measuring validity as conceptualized by Light et al., (1990).
In addition, reliability and validity of research were also considered in terms of designing the research survey. Preparation of the survey was guided by an intensive review of literature focused on Deming’s fourteen principles of TQM. The use of a Likert scale facilitated obtaining exact answers, which, to Oppenheim, reinforces reliability and validity in the research (1992).

The Cronbach Alpha coefficient was used to determine Deming’s 14 principles for consistency. The Cronbach Alpha coefficient for the faculty attitude toward Deming’s fourteen principles of total quality management in higher education at the KAU College of Education was 0.895 (42 items), which showed a high reliability of the items consistency (Cohen, 1988; Oppenheim, 1992). In addition, Table 1 showed the Cronbach Alpha coefficient for the 14 principles (see appendix C to more information).

<table>
<thead>
<tr>
<th>Deming’s 14 Principles</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle 1: “Create constancy of purpose for improvement of product and service”</td>
<td>.899</td>
</tr>
<tr>
<td>Principle 2: “Adopt the new philosophy”</td>
<td>.890</td>
</tr>
<tr>
<td>Principle 3: “Dependence on mass inspection”</td>
<td>.890</td>
</tr>
<tr>
<td>Principle 4: “End the practice of awarding business on the basis of price tag alone”</td>
<td>.885</td>
</tr>
<tr>
<td>Principle 5: “Improve constantly and forever the system of production and service”</td>
<td>.885</td>
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</table>
Table 1: continued

<table>
<thead>
<tr>
<th>Principle</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle 6: “Institute training”</td>
<td>0.885</td>
</tr>
<tr>
<td>Principle 7: “Adopt and institute leadership”</td>
<td>0.890</td>
</tr>
<tr>
<td>Principle 8: “Drive out fear”</td>
<td>0.890</td>
</tr>
<tr>
<td>Principle 9: “Break down barriers between staff areas”</td>
<td>0.888</td>
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<tr>
<td>Principle 10: “Eliminate slogans, exhortations, and targets for the work force”</td>
<td>0.886</td>
</tr>
<tr>
<td>Principle 11: “Eliminate numerical quotas for the work force”</td>
<td>0.900</td>
</tr>
<tr>
<td>Principle 12: “Remove barriers that rob people of pride of workmanship”</td>
<td>0.878</td>
</tr>
<tr>
<td>Principle 13: “Encourage education and self-improvement for everyone”</td>
<td>0.880</td>
</tr>
<tr>
<td>Principle 14: “Take action to accomplish the transformation”</td>
<td>0.886</td>
</tr>
</tbody>
</table>

Translation of the Survey

Given that the target sample was primarily Arabophone, the researcher created an Arabic-based survey. However, an English translation was provided to those who preferred to read the survey in English. This was based on the fact that some of the target faculty members were bilingual due to the fact that they graduated from English-speaking institutions. To ensure accuracy in translation, the researcher also performed back-and-forth translations to make sure that the content of items was not compromised.
Data Collection Procedures

As Light et al. (1990) noted, one reason why researchers in education need to make great efforts in data collection is because their findings play a vital role in reinforcing quality in pedagogy. In this research, strong and productive procedures of data collection were used for the sake of quality, and this helped the researcher obtain the desired research objectives. The collection of data was done through E-Survey located at http://www.google.com. E-mails containing the link to the website were sent to faculty members who constituted the sample size. Data was automatically collected online right after research participants answered all questions. To ensure that research participants answered the questionnaire, the researcher sent two additional e-mails to remind them of the e-survey that was previously sent.

Conducting this research necessitated approvals from IRB (Institutional Review Board) office at Ohio University and King Abdulaziz University College of Education. It was only after having secured these authorizations that the online survey was forwarded to the sample size. Consent of research participants was obtained electronically. Prior to access to the electronic survey, each participant had to sign the consent agreement form before accessing the survey. After survey e-mails were sent to the research participants, the research allowed two weeks for access to his online survey and before collection of data. Then the researcher began screening the data that was generated by E-Survey (at www.google.com) and that was presented in a format that could be read by SPSS 18 statistical software program.
**Data Analysis Procedures**

This section is devoted to discussing the procedures employed by the researcher to analyze the data. To answer the study questions, the researcher decided to use two methods of data analysis. First, for demographic information – such as departments, years of experience, age, etc. – the researcher used descriptive statistics. For this purpose, the researcher compared minimum and maximum values by measuring the means of the findings. Second, for the research question, the researcher decided to use a two-way ANCOVA by using Statistical Package for Social Science (SPSS). Using ANCOVA is an excellent way to test the difference between means for gender and professional hierarchy and attitude towards Deming’s fourteen principles. In the same sense, it tested the interaction between independent research variables and dependent variables. Additionally, the researcher also used histograms and kolmogorov-smirnova and shapiro-wilk tests of normality in order to ensure that data was normally distributed. Also, Descriptive statistics (e.g., mean, frequencies and standard deviation) were used for the demographic information (e.g., nationality, experience). In addition, Descriptive statistics (e.g., mean, frequencies and standard deviation) were used for the first part of the research question (e.g., attitude towards Deming’s fourteen principles).

To examine the differences between gender-based attitudes of faculty members towards Deming’s fourteen principles, the researcher used descriptive statistics (e.g., mean, frequencies and standard deviation) and ANCOVA. Also, to examine the attitude of faculty members towards Deming’s fourteen principles in relation to professional hierarchy, the researcher used descriptive statistics (e.g., mean, frequencies and standard
deviation) and ANCOVA. Finally, to examine the interaction between faculty members’
gender and professional hierarchy (independent variables) and their attitude towards
Deming’s fourteen principles (dependent variable), the researcher used ANCOVA and
descriptive statistics (e.g., mean, frequencies and standard deviation) to analyze the
results.

Summary

In this chapter, an effort has been made to itemize the different steps that the
researcher followed for his research methodology. First, the research design, which is
essentially quantitative, is discussed. Then, the researcher discusses the research variables
including both independent and dependent. The research questions and null hypotheses
are tackled next. Then, the researcher discusses the target population that is also the
research sample. While waiting on the future IRB approval, the approval from the target
institution – King Abdulaziz University College of Education – was already obtained and
is presented below. Reliability and validity issues are discussed next. Then the researcher
discusses the implications of the translation of research materials and instruments.
Finally, a presentation of the procedures of data collection and analysis follows.
Chapter Four: Results of the Study

The study examined faculty attitudes at the King Abdulaziz University (KAU) College of Education towards Deming’s fourteen principles of TQM. For this purpose, the researcher explored the impact of gender and professional hierarchy in faculty members’ teaching attitudes. Another objective in this research was to explore how the interaction between these two independent variables – gender and professional hierarchy – participates in influencing the attitudes of faculty members at KAU College of Education. In this chapter, the research presented the research findings in the following labels: the percentage of faculty responses, demographics of target faculty, procedures of data screening, and the research results.

The Percentage of Faculty Responses

For the sake of objectivity, the researcher used the entire target population by sending e-mails to 176 faculty members the KAU College of education. The collection of data was processed through E-Survey located at http://www.google.com. E-mails containing the link to the website were sent to faculty members who constituted the sample size. The number of faculty members who participated was 61, representing a 34.65% response rate. The response rate was more than 10.90 % what the G*Power 3.1.9 requested (no less than 55 participants). Data was automatically collected online right after research participants answered all questions.

Faculty’s Demographic Information

The faculty members in this study were 61 participants who work in KAU College of Education in Jeddah, Saudi Arabia. The demographic information of faculty
members included gender, age, nationality, department or office occupation, years of teaching experience in higher education, and professional hierarchy. In this study, Saudi faculty members were 73.8% (45) of participants, while non-Saudi faculty members were 26.2% (16).

In Table 2, male faculty members made up 54% (33) of the participants and female faculty members were 45.9% (28) of the participants in this study. In professional hierarchy, faculty members who were full professors comprised 9.8% (6), while those who were associate professors were 23% (14) of the participants. In addition, 26.2% (16) of the participants were assistant professors, while teaching assistants made up 41% (25) of the participants.

As shown in Table 2, the researcher decided to group faculty members in three groups based on their age. However, this way of grouping faculty members in three groups facilitated the analysis of the attitudes of faculty members with regard to age and in relation to Deming’s fourteen principles. Table 2 showed that 39.3% (24) of faculty members were between 27-39 years, while faculty members who were between 40-49 years were 39.35 (24). Faculty members who were more than 50 years old constituted 21.3% (13) of the participants in the study.

In addition, based on the years of teaching experience in higher education, the researcher classified faculty members into three groups that made it easier to report the data. Table 2 shows that 37.7% (23) of faculty members had between 0-10 years in teaching experience, while 32.8% (20) of faculty member were between 11-20 years. In
In this study, faculty members who had more than 21 years in teaching experience in higher education were 29.5 (18).

Finally, in the department or office occupation of faculty members, Table 2 shows that 3.3% (2) of faculty members were in the dean’s office, while the largest number of the respondents in this research came from the department of curriculum and instruction that was 26.2% (16) of faculty members. A total of 23% (14) of faculty members were in Special Education department, while faculty members who participated from the physical education department were 13.1% (8) of participants. Also, the participants from the educational administration and planning department were 6.6% (4) and the same rate of 6.6% (4) of faculty members were from the educational technology department. From the art education department, the faculty members who participated in this study were 4.9% (3), while there were 6.6% (4) of participants from the educational foundation department. Unfortunately, the researcher did not get any response from Qur’an Studies department and Vice-Dean’s office.

Table 2: Faculty members’ demographic information

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>28</td>
<td>45.9</td>
</tr>
<tr>
<td>Male</td>
<td>33</td>
<td>54.1</td>
</tr>
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Procedures of Data Screening

It is important to mention that there were no missing data in this study because the researcher used Google Survey that does not allow any participant to submit their responses in case data was incomplete. Additionally, in order to check the normal distribution of the data, the researcher used histograms, (or a graph showing a display of the frequency of data) of the total score of faculty attitude, box plots of outliers for faculty, attitude scores in general and by gender and professional hierarchy, and Kolmogorov-Smirnova and Shapiro-Wilk tests of normality for faculty members attitude by gender and professional hierarchy which showed that data was distributed normally and that there were no outliers which may influence the study findings.

![Histogram Chart of the Total Attitudes of Deming's 14 principle](image)

*Figure 1. Histogram Chart of the Total Attitudes of Deming's 14 principle*
As shown in Figure 1, it was clear that the histogram chart showed that the total attitudes toward Deming’s 14 principles were close to a normal distribution. In addition, boxplot chart of the outliers for attitudes toward Deming’s 14 Principles by professional hierarchy in figure 2 and q-plot chart of the attitudes toward Deming’s 14 principles in figure 3 showed that there were no outliers in the data of this study.

Figure 2. Boxplot Chart of the Outliers for Attitudes toward Deming’s 14 Principles through Professional Hierarchy
In table 1 and 2, the researcher decided to use kolmogorov-smirnova and shapiro-wilk tests of normality to assess the attitude of faculty members towards Deming’s 14 principles through gender and professional hierarchy variables in order to ensure that data was normally distributed and that nothing would affect the study finding. Obviously, as in table 1 and 2, the kolmogorov-smirnova test as well as shapiro-wilk test of normality showed that the data were distributed normally.

Figure 3. Q-Plot Chart of the Attitudes toward Deming’s 14 Principles
Table 3: Kolmogorov-Smirnova and Shapiro-Wilk Tests of Normality for Faculty members’ attitude towards Deming’s 14 principles by gender.

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*p< .05

Table 4: Kolmogorov-Smirnova and Shapiro-Wilk Tests of Normality for Faculty members attitude toward Deming’s 14 principles by professional hierarchy.

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<td>.176</td>
<td>25</td>
<td>.043*</td>
<td>.889</td>
<td>25</td>
<td>.010*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Assistant Professor</td>
<td>.276</td>
<td>16</td>
<td>.002*</td>
<td>.822</td>
<td>16</td>
<td>.005*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate Professor</td>
<td>.204</td>
<td>14</td>
<td>.119</td>
<td>.875</td>
<td>14</td>
<td>.050*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Professor</td>
<td>.407</td>
<td>6</td>
<td>.002*</td>
<td>.640</td>
<td>6</td>
<td>.001*</td>
<td></td>
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</tr>
</tbody>
</table>
Table 4: continued

<table>
<thead>
<tr>
<th>Principle</th>
<th>Teaching Assistant</th>
<th>Assistant Professor</th>
<th>Associate Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>.247</td>
<td>.250</td>
<td>.249</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>.000*</td>
<td>.009*</td>
<td>.018*</td>
</tr>
<tr>
<td></td>
<td>.803</td>
<td>.802</td>
<td>.828</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>.000*</td>
<td>.003*</td>
<td>.011*</td>
</tr>
<tr>
<td>14</td>
<td>.295</td>
<td>.238</td>
<td>.249</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>.000*</td>
<td>.016*</td>
<td>.018*</td>
</tr>
<tr>
<td></td>
<td>.799</td>
<td>.819</td>
<td>.828</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>.000*</td>
<td>.005*</td>
<td>.011*</td>
</tr>
</tbody>
</table>

*p < .05

The Research Results and Findings from the Study Questions

The research was guided by the questions below and the responses are quantitatively based on the target group’s attitudes as framed by their beliefs and psychological backgrounds.

**Question 1:** What is the nature of the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles?

**Question 2:** What is the nature of faculty attitudes based on demographics, age, years of experience, department, and nationality?

The use of a Likert scale – SA, AG, N, DS, and SD – facilitated obtaining exact answers, which, according to Oppenheim, reinforces reliability and validity in the research (1992). To answer Question 1 and Question 2, the researcher decided to use the following criteria to report his data and answer the questions.

- When the mean is more than 4.5 it indicated high-level of faculty attitudes.
When the mean is from 3.5-4.4 it indicated positive faculty attitudes.

When the mean is from 2.5-3.4 it indicated neutral faculty attitudes.

When the mean is from 1.5-2.4 it indicated negative faculty attitudes.

When the mean is less than 1.5 it indicated high negative faculty attitudes.

In table 5, the mean for faculty members (males and females) attitudes towards Deming’s 14 Principles of TQM was 4.48. The results of the mean indicated that the faculty members at KAU College of education had positive attitudes towards Deming’s 14 Principles of TQM.

<table>
<thead>
<tr>
<th>Faculty Members</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimu</th>
<th>Maximu</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>4.48</td>
<td>.35122</td>
<td>3.74</td>
<td>5.00</td>
<td>1.26</td>
</tr>
<tr>
<td>Valid N</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The researcher decided to investigate the faculty attitude towards Deming’s 14 Principles of TQM by demographic variables. First, by using gender, it was clear from Table 6 that female faculty members had high positive attitudes towards Deming’s 14 Principles of TQM because the mean was 4.54, while the male faculty members had positive attitudes towards Deming’s 14 Principles and their mean was 4.43.
Table 6: Faculty Members’ Attitude Scores by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>4.54</td>
<td>28</td>
<td>.38969</td>
</tr>
<tr>
<td>Male</td>
<td>4.43</td>
<td>33</td>
<td>.31268</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>

Second, as shown in Table 7, the scores for faculty members’ attitudes towards Deming’s 14 Principles according to age was positive for faculty members age from 27-39 years and from 40-49 years. Additionally the means were 4.49 and 4.37. On the other hand, for the faculty members whose age was beyond 50 years the score was 4.68, which indicated that they had high positive attitudes towards Deming’s 14 Principles.

Table 7: Faculty Members’ Attitude Scores by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-39 years</td>
<td>4.49</td>
<td>24</td>
<td>.36997</td>
</tr>
<tr>
<td>40-49 years</td>
<td>4.37</td>
<td>24</td>
<td>.34610</td>
</tr>
<tr>
<td>50-60 years</td>
<td>4.68</td>
<td>13</td>
<td>.23880</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>
Third, in Table 8 for Saudi faculty members’ attitudes towards Deming’s 14 Principles based on nationality the score was positive (4.47). Further, as for the attitudes of non-Saudi Arabian faculty members towards Deming’s 14 principles, the score was 4.51, which suggests that there was a high positive attitude towards Deming’s 14 Principles.

Table 8: Faculty Members’ Attitude Scores by Nationality

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Saudi</td>
<td>4.51</td>
<td>16</td>
<td>.39378</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>4.47</td>
<td>45</td>
<td>.33884</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>

Fourth, Table 9 explored the scores of faculty members’ attitudes towards Deming’s 14 principles by department or office occupation. Results showed that the faculty attitudes towards Deming were positive for the following departments: educational administration and planning, special education, physical education, art education, and educational technology. And, the means for each of these departments were: 4.40, 4.46, 4.36, 4.42 and 4.34 respectively. The highest means and high positive attitude scores towards Deming’s 14 Principles came from educational psychology department, educational foundation department, and curriculum and instruction department. Their means were sequentially 4.63, 4.58, and 4.63. On the other hand, the
dean’s office generated a smaller mean based on department or office occupation which was 3.73.

**Table 9: Faculty Members’ Attitude Scores by Department or Office Occupation**

<table>
<thead>
<tr>
<th>Department or Office Occupation</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deans office</td>
<td>3.73</td>
<td>2</td>
<td>.00000</td>
</tr>
<tr>
<td>Educational Psychology Department</td>
<td>4.63</td>
<td>6</td>
<td>.06846</td>
</tr>
<tr>
<td>Educational Foundation Department</td>
<td>4.58</td>
<td>4</td>
<td>.17870</td>
</tr>
<tr>
<td>Educational Administration and Planning Department</td>
<td>4.40</td>
<td>4</td>
<td>.68732</td>
</tr>
<tr>
<td>Curriculum and Instruction</td>
<td>4.63</td>
<td>16</td>
<td>.28802</td>
</tr>
<tr>
<td>Special Education Department</td>
<td>4.46</td>
<td>14</td>
<td>.42319</td>
</tr>
<tr>
<td>Physical Education Department</td>
<td>4.36</td>
<td>8</td>
<td>.16630</td>
</tr>
<tr>
<td>Art Education Department</td>
<td>4.42</td>
<td>3</td>
<td>.00000</td>
</tr>
<tr>
<td>Educational Technology Department</td>
<td>4.34</td>
<td>4</td>
<td>.26118</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>

Fifth, as shown in Table 10, faculty members’ attitudes scores towards Deming’s 14 principles by professional hierarchy showed positive attitudes of faculty members
identified as teaching assistants, assistant professors, and associate professors and their means were respectively 4.47, 4.45, and 4.39. The highest mean that indicated a high score for positive attitudes towards Deming’s 14 principles came from full professors who accounted for 4.80. Table 10 also shows that Teaching Assistants – who assume similar roles as GAs/TAs in the US– make up for the greatest percentage in the sample. Most of them teach undergraduates and may also assist professors in their research and teaching tasks.

Table 10: Faculty Members’ Attitude Scores by Professional Hierarchy

<table>
<thead>
<tr>
<th>Professional Hierarchy</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>4.47</td>
<td>25</td>
<td>.26735</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>4.45</td>
<td>16</td>
<td>.35792</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>4.39</td>
<td>14</td>
<td>.45288</td>
</tr>
<tr>
<td>Full Professor</td>
<td>4.80</td>
<td>6</td>
<td>.25908</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>

Sixth, as shown in Table 11, the score for faculty members’ attitudes towards Deming’s 14 principles based on years of teaching was 4.56 for the interval 0-10 years. A score of 4.53 is the score for those who taught more than 20 years. Thus, faculty members whose years of teaching was less than 10 or over 20 scored high positive attitudes towards Deming’s 14 principles, while those with years of teaching between 11
and 20 provided a score of 4.35 indicating that they had positive attitudes towards Deming’s 14 principles.

Table 11: Faculty Members’ Attitude Scores by Years of Teaching

<table>
<thead>
<tr>
<th>Years of Teaching</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 years</td>
<td>4.56</td>
<td>23</td>
<td>.36636</td>
</tr>
<tr>
<td>11-20 years</td>
<td>4.35</td>
<td>20</td>
<td>.34530</td>
</tr>
<tr>
<td>more than 21 years</td>
<td>4.53</td>
<td>18</td>
<td>.30992</td>
</tr>
<tr>
<td>Total</td>
<td>4.48</td>
<td>61</td>
<td>.35122</td>
</tr>
</tbody>
</table>

By using the two-way ANCOVA, the researcher answered question 2 and 3.

**Question 3:** To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by gender?

**Question 4:** To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by professional hierarchy?

**Ho:** \( \mu = 0 \)

**HA:** \( \mu \neq 0 \)

**Ho:** The independent variables, gender and professional hierarchy, are not statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.
**HA:** The independent variables, gender and professional hierarchy, are statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.

First of all, the assumption that the data for faculty members’ attitudes (dependent variable) and the research independent variables (gender and professional hierarchy) were distributed normally was verified, as previously discussed by using a *Histogram*, *Kolmogorov-Smirnov*, and the *Shapiro-Wilk* tests of normality. Also, for the homogeneity of variance, the researcher did apply the Levens’ test as shown in Table 12. The result in Table 12 explored that the request of the homogeneity of variance was met. Also, the same table shows that the p-value (.128) was statistically not significant (*p* < .05); meaning that the researcher cannot turn down the study’s null hypothesis and the study data had the homogeneity of variance.

| Table 12: Levene's Test for the Dependent Variable: Faculty Members Attitudes |
|-----------------------------|---|---|---|---|
| Levene Statistic | F  | Df1 | Df2 | Sig. |
| 1.975 | 2.182 | 3 | 57 | .128 |

*p* < .05

The ANCOVA model, as Table 13 indicates showing the independent variable, *gender*, was not significantly related to faculty member attitudes towards Deming’s 14 Principles, *F*(1.57) = .022, *p* = .883 and the null hypothesis was not rejected. On the other hand, regarding the independent variable of *professional hierarchy*, the covariate
variable in this model, was not significantly related to faculty member attitudes towards Deming’s 14 Principles, $F(1.57) = .735$, $p = .395$. Also, as in Table 13, the interaction between the independent variables, gender and professional hierarchy, was not significant statistically, $F(1.57) = .448$, $p = .506$ and the null hypothesis was not rejected.

Table 13: ANCOVA Model for Gender and Professional Hierarchy

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III</th>
<th>Df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Model</td>
<td>.312$^a$</td>
<td>3</td>
<td>.104</td>
<td>.836</td>
<td>.480</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>226.437</td>
<td>1</td>
<td>226.437</td>
<td>1820.</td>
<td>.000</td>
<td>.547</td>
</tr>
<tr>
<td>Gender</td>
<td>.003</td>
<td>1</td>
<td>.003</td>
<td>.022</td>
<td>.883</td>
<td>.000</td>
</tr>
<tr>
<td>Professional Hierarchy</td>
<td>.091</td>
<td>1</td>
<td>.091</td>
<td>.735</td>
<td>.395</td>
<td>.013</td>
</tr>
<tr>
<td>Gender * Professional Hierarchy</td>
<td>.056</td>
<td>1</td>
<td>.056</td>
<td>.448</td>
<td>.506</td>
<td>.018</td>
</tr>
<tr>
<td>Error</td>
<td>7.090</td>
<td>57</td>
<td>.124</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1234.308</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>7.401</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
The ANCOVA model, as Table 14 indicates, shows that the independent variable, gender, the covariate variable in this model, was not significantly related to faculty members' attitudes towards Deming’s 14 Principles, $F(1.53) = 1.823, p = .183$ and the null hypothesis was not rejected. On the other hand, the independent variable of professional hierarchy was significantly related to faculty members' attitudes towards Deming’s 14 Principles, $F(1.53) = 3.484, p = .022$. The partial eta squared was .165 that indicated that the independent variable, professional hierarchy, illustrated 16% of faculty member’s attitudes towards Deming’s 14 Principles. Also, as in Table 14, the interaction between the independent variables, gender and professional hierarchy, was not significant statistically, $F(1.53) = 1.844, p = .150$ and the null hypothesis was not rejected.

Table 14: ANCOVA Model for Gender and Professional Hierarchy

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III</th>
<th>Df</th>
<th>Mean</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1.487</td>
<td>7</td>
<td>.212</td>
<td>1.903</td>
<td>.087</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>527.148</td>
<td>1</td>
<td>527.1</td>
<td>4723.</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
<td>625</td>
<td></td>
</tr>
</tbody>
</table>
Table 14: continued

<table>
<thead>
<tr>
<th>Professional Hierarchy</th>
<th>1.166</th>
<th>3</th>
<th>.389</th>
<th>3.484</th>
<th>.022*</th>
<th>.165</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.203</td>
<td>1</td>
<td>.203</td>
<td>1.823</td>
<td>.183</td>
<td>.033</td>
</tr>
<tr>
<td>Professional Hierarchy</td>
<td>.617</td>
<td>3</td>
<td>.206</td>
<td>1.844</td>
<td>.150</td>
<td>.094</td>
</tr>
</tbody>
</table>

* Gender

<table>
<thead>
<tr>
<th>Error</th>
<th>5.915</th>
<th>53</th>
<th>.112</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1234.30</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>7.401</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

The researcher decided to apply the ANOVA model to test the study variables without controlling independent variables, gender and professional hierarchy. As Table 15 indicates, the independent variable, gender, was not significantly related to faculty members attitudes towards Deming’s 14 Principles, $F(1.53) = 1.823$, $p = .183$ and the null hypothesis was not rejected. Additionally, the other independent variable, professional hierarchy, was not significantly related to faculty members attitudes towards Deming’s 14 Principles, $F(1.53) = 1.294$, $p = .286$ and the null hypothesis was not rejected. In addition, as shown in table 15, the interaction between the independent variables, gender and professional hierarchy, was not significant statistically, $F(1.53) = 1.844$, $p = .150$ and the null hypothesis was not rejected.
Table 15: ANOVA Model for Gender and Professional Hierarchy

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III</th>
<th>Df</th>
<th>Mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1.487a</td>
<td>7</td>
<td>.212</td>
<td>1.903</td>
<td>.087</td>
</tr>
<tr>
<td>Intercept</td>
<td>879.789</td>
<td>1</td>
<td>879.789</td>
<td>7883.5</td>
<td>.000</td>
</tr>
<tr>
<td>Professional Hierarchy</td>
<td>.433</td>
<td>3</td>
<td>.144</td>
<td>1.294</td>
<td>.286</td>
</tr>
<tr>
<td>Gender</td>
<td>.203</td>
<td>1</td>
<td>.203</td>
<td>1.823</td>
<td>.183</td>
</tr>
<tr>
<td>Professional Hierarchy</td>
<td>.617</td>
<td>3</td>
<td>.206</td>
<td>1.844</td>
<td>.150</td>
</tr>
<tr>
<td>* Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>5.915</td>
<td>53</td>
<td>.112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1234.308</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>7.401</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Results

Based on the consideration of Deming’s principles separately, faculty member attitudes toward Deming’s 14 principles were not similar based on the independent variables, gender. Also, based on high positive scores, faculty member attitudes toward Deming’s principles, as in Table 16, indicates that male and female faculty members
shared together high positive attitudes in principles Principle 1: “Create constancy of purpose for improvement of product and service”; Principle 2: “Adopt the new philosophy”; Principle 5: “Improve constantly and forever the system of production and service”; Principle 6: “Institute training”; Principle 7: “Adopt and institute leadership”; Principle 10: “Eliminate slogans, exhortations, and targets for the work force”. On the other hand, based on the two top mean scores, male faculty members had high mean scores in principles 4, and 10, while female faculty members had high mean scores in principles 1, and 5. In addition, based on low mean scores, faculty member attitudes toward Deming’s principles, as in Table 16, indicated that male and female faculty members shared together low mean scores attitudes in principle 8. On the other hand, based on the low mean scores, male faculty members had low mean scores in principles 4, and 8, while female faculty member had high mean scores in principle 8.

*Table 16: Means of Faculty Members Attitudes based on Gender towards Deming’s 14 Principles*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistic</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle1</td>
<td>Female</td>
<td>4.76</td>
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<tr>
<td></td>
<td>Male</td>
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</tr>
<tr>
<td>Principle2</td>
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</tr>
<tr>
<td></td>
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<td>Principle3</td>
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<td>Principle</td>
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<td>Score</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
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</tr>
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<td>Principle9</td>
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<td>Principle10</td>
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<td></td>
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<td>Principle11</td>
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<tr>
<td></td>
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<td>4.54</td>
</tr>
<tr>
<td>Principle12</td>
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<td>4.34</td>
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<tr>
<td></td>
<td>Female</td>
<td>4.42</td>
</tr>
<tr>
<td>Principle13</td>
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<td>4.61</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4.47</td>
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</table>
Based on Deming’s principles separately, the faculty member attitudes toward Deming’s 14 principles were not similar based on the independent variables, *professional hierarchy*, even when the attitudes toward these principles were positive for all of Deming’s 14 principles. A high mean score for teaching assistants was 4.84 in principle 5, while the high mean scores for assistant professors was 4.73 in principle 1. Also, associate professors high mean was 4.66 in principle 1, while full professors’ high mean was 4.88 in principle 9. On the other hand, principle 9 had lower scores for teaching assistants, assistant professors, and associate professors which their means were sequentially 3.62, 3.75, and 3.42. Also, even when the result showed that faculty attitude toward Deming’s 14 principles was positive, there were high positive attitudes toward principle 7 and the mean of the teaching assistants was 4.54. The mean of assistant professors was 4.75, the mean of associate professors was 4.57, and the mean of full professors was 4.52.
Table 17: Means of Faculty Members Attitudes based on their Professional Hierarchy towards Deming’s 14 Principles

<table>
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<tr>
<th>Professional Hierarchy</th>
<th>Statistic</th>
<th>Std. Error</th>
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<tr>
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<td>.04303</td>
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<td>Full Professor</td>
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<td>.14055</td>
</tr>
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<td>.14868</td>
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<td>.16913</td>
</tr>
<tr>
<td>Full Professor</td>
<td>4.19</td>
<td>.13852</td>
</tr>
<tr>
<td>Principle 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Assistant</td>
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</tr>
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<td>Assistant Professor</td>
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</tr>
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<td>Associate Professor</td>
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<td>.16390</td>
</tr>
<tr>
<td>Full Professor</td>
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</tr>
<tr>
<td>Principle 4</td>
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<td>Full Professor</td>
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<td>Principle 5</td>
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</tr>
<tr>
<td>Assistant Professor</td>
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<td>.08333</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>4.61</td>
<td>.12529</td>
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Table 17: continued

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<th>p-value</th>
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<td>Full Professor</td>
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<td>.42164</td>
</tr>
<tr>
<td>Principle9</td>
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<td>Full Professor</td>
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<td>.07027</td>
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<td>Principle10</td>
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<td>Position</td>
<td>Score</td>
<td>Significance</td>
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<tr>
<td>-----------</td>
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<td>Full Professor</td>
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Chapter Five: Discussion, Suggestions, and Conclusion

In this chapter, the researcher discusses the findings reported in Chapter Four. The researcher discusses the relationship between the study’s findings and literature explored in Chapter Two. Finally, the chapter presents conclusions from the study, also in relation to the literature reviewed.

In general, the research focused on the attitudes of KAU faculty members at the College of Education towards Deming’s 14 principles of TQM. The research participants included 61 faculty members who work at the KAU College of Education in Jeddah, Saudi Arabia. The demographic information of faculty members included gender, age, nationality, department or office occupation, years of teaching experience in higher education, and professional hierarchy. In this study, Saudi faculty members made up 73.8% (45) of participants, while non-Saudi faculty members formed 26.2% (16). Male faculty members made up 54% (33) of the participants and female faculty members were 45.9% (28) of the participants in this study. In professional hierarchy, faculty members who were full professors comprised 9.8% (6), while associate professors represented 23% (14) of participants. In addition, 26.2% (16) of the participants were assistant professors, while teaching assistants made up 41% (25) of the participants.

To answer the research questions, the researcher decided to use two methods of data analysis. First, for democratic information, the researcher used descriptive statistics. For this purpose, the researcher compared the minimum and maximum values and by measuring the means of the findings. Second, for the research question, the researcher decided to use a two-way ANCOVA by using the SPSS 19. Using ANCOVA is an
excellent way to test the difference between means for the independent variables and attitude towards Deming’s fourteen principles. In the same sense, the ANCOVA tested the interaction between independent research variables and dependent variables. Additionally, the researcher also used histograms and Kolmogorov-Smirnova and Shapiro-Wilk tests of normality in order to ensure that data was normally distributed.

The research was guided by the following questions:

Q1: What is the nature of the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles?

Q2: What is the nature of faculty attitudes based on demographics, age, years of experience, department, and nationality?

Q3: To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by gender?

Q4: To what extent are the attitudes of the faculty members at KAU’s College of Education towards Deming’s fourteen principles determined by professional hierarchy?

Ho: $\mu = 0$

HA: $\mu \neq 0$

Ho: The independent variables, gender and professional hierarchy, are not statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.

HA: The independent variables, gender and professional hierarchy, are statistically significant to the dependent variables, attitude towards Deming’s fourteen principles.
Discussion of the Study’s Findings

The study indicates that faculty members’ attitudes toward Deming’s 14 principles of TQM at KAU College of education in Saudi Arabia were, overall, positive. Findings strongly promote and reinforce the need to apply TQM in general and Deming’s 14 principles of TQM in particular at KAU College of Education. The study’s positive findings about the application of Deming’s 14 principles and the success in their application in education have been confirmed in several studies (Bonstingl, 2001; Leonard, 1996; Miller, 1991; Warwick, 1995).

Positive and negative issues. Despite the fact that faculty members’ attitudes toward Deming’s 14 principles of TQM at KAU College of Education were positive based on a Likert scale (used along with mean 4.48), there were some concerns about faculty attitudes towards some principles individually. In principle 8, for instance, the mean for female faculty was 3.80 while that for male was 3.57. Deming’s (2000) principle 8, “Drive out fear, “argues that the existence of obstacles hindering the employee’s active involvement in organizational decision-making discourages and impedes quality. Applying to the domain of education, it comes down to the point that barriers need to be suppressed in order to create greater participation among both students and faculty members in increasing quality in education (Leonard 1996; Warwick, 1995). Items 22, 23, and 24 evaluated faculty members’ attitude towards principle 8. Also, based on the literature about Principle 8, the items 22, 23, and 24 – comprising Principle 8 – are used to evaluate how patterns of fear are present in the teacher-student relationship as well as in the faculty-leader relationship.
In this study, the researcher thinks that, to some extent, faculty members still believe that students cannot make good grades unless they show fear towards them. Such an attitude among KAU teachers is in complete opposition with Deming’s (2000) teachings, simply because maintaining a teacher-student relationship of fear becomes a barrier to a student’s greater achievement. In general, the findings show that the target faculty maintains a positive attitude towards Deming’s principles, which means that faculty members are willing to take their responsibilities to change their behaviors towards TQM-based organizational change. Arguing on the significance of change, Fullan (2007) maintains that even after consulting one hundred publications, it can only be seen that the way to change is motivation. Thus, motivation emerges as way to reach the goals that Deming (2000) sets in his discussion of quality. In addition, the literature also confirmed that motivating both faculty members and students by drawing them out of a relationship of fear will help increase their participation and cooperation in the learning process (Smith, 1991).

**Gender differences among faculty members.** In this study, female faculty members – who have similar realities with Saudi women in other Saudi institutions – showed a high positive attitude towards Deming’s 14 principles, while the male faculty members only showed a positive attitude towards the same principles. In Githendu’s (1996) study, similar conclusions have been made with regard to faculty members’ commitment to the implementation of TQM strategies. His study reflected that female instructors were slightly more inclined to implement those strategies than their male counterparts, given that the former provided much higher rating compared to the latter. In
addition, Githendu’s (1996) results showed that teacher’s individual efficacy correlated with student quality achievements. The same implications seem to apply to faculty members at the KAU College of education, especially because, as the findings showed, female faculty members appear to be more committed to Deming’s TQM strategies. However, other studies have found that the male gender is more willing to apply the TQM concept in the institution. Lian’s (2001) study focuses on the implementation of TQM in Malaysia and covers a wide range of variables including gender (especially male). His research findings show that gender, particularly the male, is associated with a productive implementation of TQM strategies, especially because male faculty members are depicted as more active and motivated in implementing TQM strategies.

The study found that faculty attitudes toward Deming’s 14 principles of TQM at the KAU College of Education were not significantly determined by their respective gender distributions. Many studies support this aspect of the study’s findings while the environment and the work place are different as in the Saudi setting. For instance, Huey Wu (2004) conducts a specific examination of the relationship between quality in administration and the implementation of TQM strategies. He concludes that the gender variable has less impact on the production of quality. Similarly, the results Moore (2000) generated in his study further support this contention regarding the gender variable. Moore’s study investigated the perceptions of institutional leaders in relation to quality improvement strategies in public schools. His findings informed that gender had no significant effects on the participants’ perceptions. On the same lines, Alnaweigah’s (2013) study conducted in the Saudi Taif University examines the role of TQM in
organizational change. In his findings, he notes that there is no gender-based significant difference. In brief terms, the gender variable appears almost insignificant in the implementation of TQM just like the above studies have shown.

However, other researchers have argued that gender as a variable plays an important role in faculty members’ attitudes towards TQM strategies. For instance, Kalso (2008) identifies that gender as one of the elements that can help to determine the degree of mean satisfaction of educational quality services among higher education students. Similarly, Thor (2012) makes the gender variable a priority in the same sense and argues that gender bears an important effect with regard to the achievement of quality education. Additionally, Lian (2001) has found that gender as a variable also functioned in the same sense. Lian studies the implementation of TQM in Malaysia and covers a wide range of variables including gender was productive in implementing of TQM strategies in Malaysia. Due to the fact that the impact of the gender variable in the discussion depends on other external factors, this also means that this factor needs further qualitative research to help find more possible answers. In the end, it becomes clear that cultural differences have little effect on the applicability of Deming’s principles, given that research from different places in the world can come to similar conclusions.

**Faculty differences through professional hierarchy.** When controlling the gender variable, the study findings indicate that the independent variable, *professional hierarchy*, had a significant impact on faculty members’ attitudes towards Deming’s 14 principles and this was illustrated by the rate of 16% of faculty members’ attitudes towards Deming’s 14 principles. The finding showed that the independent variable,
professional hierarchy, did not significantly impact faculty attitudes towards Deming’s 14 principles if the researcher did not control the other independent variable, gender. In addition, faculty members’ attitudes towards Deming’s 14 principles by professional hierarchy reflected positive attitudes for faculty members who were teaching assistants, assistant professors, and associate professors and high positive attitudes towards Deming’s 14 principles came from full professors. In this study, this variable—professional hierarchy—is used in reference to educational background, degree, title, position, level of knowledge, and so on. As shown in the study findings, Alnaweigah (2013) concluded that there are no significant statistical differences among participants in terms of professional hierarchy. Such findings in Alnaweigah’s research are referred to as professional hierarchy as an independent variable. Similarly, Kim (1995) examines factors favorable for the implementation of TQM in Korea. He makes the argument professional hierarchy, as a variable, has a significant impact on, for instance, how employees behave towards the implementation of TQM strategies. Additionally, like Kim’s study, Hurst (2002) indicates that professional hierarchy, as an independent variable in this study, plays a significant role in a successful implementation of TQM principles in classrooms.

However, like in the paradigm of the gender variable, research findings have also showed that the professional hierarchy variable does not always generate greater effects on research findings. Like this study, the research by Huey Wu (2004) is an example that illustrates this instance. In his study, the degree and title variables mean teacher’s position, in this study, refers to professional hierarchy. For Huey Wu, the two variables
speak to the faculty member’s hierarchical position in the department in reference title, makes the same argument that this variable bears a lesser impact on how quality of services is produced in the broader institution. The perception about the professional hierarchy variable is made by Moore (2000) who refers to this variable in his research as *position* and *years of experience*. As mentioned above, his research examines the perceptions of educational leaders regarding quality improvement principles in schools. Moore’s findings show that professional hierarchy has no major effects on the perceptions of the research participants. The same perception of the professional hierarchy variable is made by Lian (2001) who was cited previously. Professional hierarchy, in his study, is represented as the faculty member’s educational background. In the findings, it is surprisingly showed that the subject’s education does not forcibly support a better implementation of TQM strategies.

In the end, it becomes noticeable that the existence of opposing perspectives about the two research variables – gender and professional hierarchy – is also related to the relativities associated to the two concepts. Most of these relative realities seem based on the orientations of the research topic, or the researcher’s emphasis; and by extension, it is also determined by the social and cultural context of the target society.

**The implications of age in faculty member attitudes.** The study’s findings showed that faculty member attitudes towards Deming’s 14 principles based on age distributions was *positive* for faculty members aging between 27-39 years and those between 40-49 years. On the other hand, faculty members whose age is beyond 50 years showed high *positive attitudes* towards Deming’s 14 Principles. Faculty members whose
age is more than 50 years had a more positive attitude towards applying Deming’s 14 principles in education.

However, it must be noted that there are few studies that argue that age does not have a significant impact on faculty’s inclination towards implementing Deming’s principles. For instance, Thor (2012) posits that age does not bear an important effect on the generation of quality in education. In addition, Huey Wu’ study (2004) indicates the same while showing that age bears a lesser impact on how quality of services is produced in the broader institution is generated. In general, what the study’s findings reflect is that faculty members of all age show willingness to apply Deming’s TQM strategies.

**The implications of nationality in faculty members’ attitude.** Faculty member attitudes towards Deming’s 14 principles based on nationality was positive for faculty members from Saudi Arabia, while the non-Saudi faculty members showed high positive attitudes towards Deming’s 14 Principles. This study’s findings have also been reflected in a few other studies conducted in the Saudi setting, in particular. Alamri’s 2011 study indicated that the motivations between Saudi and non-Saudi (expatriate) faculty members are not the same in the higher education system in Saudi Arabia. In this study, however, findings show that the non-Saudi faculty members are more able to apply Deming’s 14 principles at the KAU College of Education in Jeddah. Deming (2000) does not indicate in his philosophy any signal that employees ‘nationality in country is an important to apply his principles. Further, according to Walton (1986) Deming did apply his principle outside the United States. In fact, Deming’s philosophy applied in Japanese companies was successful, suggesting that the success for these principles does not depend on
nationality or specific country.

**Faculty members’ attitude by department or office occupation.** Faculty attitudes towards Deming’s 14 principles by department or office occupation were positive for faculty members from educational administration and planning department, special education department, physical education department, art education department, and educational technology department. High positive attitudes towards Deming’s 14 Principles came from the educational psychology, educational foundations, and curriculum and instruction departments. On the other hand, a smaller mean based on department or office occupation – nearly neutral - was the dean office scores. The finding showed that leaders of College of Education, the dean office, had less motivation to apply Deming’s 14 principles. To some extent, this reflects what Almudere’s (1999) asserts in the conclusions of his study based in Saudi Arabia. He states that the lack of constancy of purpose is accentuated by the resistance of traditional leaders to change. Arguing along the same lines, Venkatraman’s study (2007) emphasizes that resistance to change complicates the implementation of new TQM strategies and renders it almost impossible (p.97). Like this study’s findings, Derbass (1994) mentions two TQM-related obstacles. One obstacle is the excessive centralization of decision-making that traditionally characterizes educational organization in Saudi Arabia. As a result, argues Derbass, centralization causes power monopolization, which hinders the emergence of a coordinated and collaborative leadership, the kind often associated with transformational leadership. The second obstacle relates to the lack of information exchange involving all members of the organization. In the context of higher education, in particular, Derbass’s
study findings are reflected in the present study as it shows that KAU leaders are reluctant to engage in new changes.

The fact that KAU’s educational leaders’ resistance to change is a challenge is reinforced by the argument in the literature that the leaders’ role is crucial for a successful implementation of TQM strategies (Deming, 2000; Walton, 1986; Delavigne & Robertson, 1994). A similar argument is reinforced in Sashkin’s 1986 study where he speaks about the production of quality in relation to the leader’s commitment to the application TQM.

Moreover, the role of the leader in the creation of change has been made a major concern in Deming’s philosophy. In fact, Deming’s (2000) insistence that “managers be leaders,” implies that managers should be innovative and thus create a vision that can lead to the production of quality. In this sense, resistance to change among educational leaders at the KAU College of Education speaks to an unwillingness to implement Deming’s 14 principles, which remains a challenge to be overcome at the institution.

**Faculty members’ attitudes by years of teaching.** Faculty attitudes towards Deming’s 14 principles based on the years of teaching were *high positive* for those ranging between 0-10 years and for those whose teaching experience is beyond 20 years. These means show that faculty members whose years of teaching is more than 20 years and less than 10 years had a high motivations to apply Deming’s 14 principles, while faculty members whose years of teaching is between 11-20 was a positive attitudes towards Deming’s 14 principles. These findings in relations to the years of teaching experience are supported by other studies. For instance, the research by Huey Wu (2004)
shows that teaching experience (in terms of years) bears a lesser impact on how quality of services is produced in the institution as a whole. A similar perception about professional hierarchy as a variable is made by Moore (2000) who refers to this variable in his research as *position* and *years of experience*. As noted earlier, Moore’s research examines the perceptions of educational leadership with respect to how quality in education can be improved. In the end, he finds that professional hierarchy does not bear major impacts on the perceptions of the research participants. Yet, despite these contrasting research conclusions, the present study shows that, in the specific case of KAU, all faculty members are willing to engage in the implementation of Deming’s TQM regardless of years of teaching experience.

**Additional Results from the Study**

Based on Deming’s principles each treated separately, faculty members’ attitudes toward Deming’s TQM indicated that male and female faculty members shared a *high positive* attitudes in Deming’s applications in education by creating constancy of purpose for improvement of product and service. Those principles include: Adopting a the new philosophy, improving constantly and forever the system of production and service, institute training, adopting and instituting leadership and eliminate slogans, exhortations, and targets for the work force. The adoption of such attitude remains instrumental for increasing educational quality, especially through student achievement. In fact, this relationship between the Deming’s principles cited above and the creation of positive educational results has been widely supported in the literature (Deming, 2000; Dye 1991; Hughes1991; Hunt 1991; Hyson 1991; Leonard 1996; Warwick, 1995).
In addition, the findings indicated that male and female faculty members shared together low mean scores of attitudes in principle 8. In addition, this study showed that male faculty members had low mean scores in principles 4, and 8, while female faculty member had high mean scores in principle 8. The findings contrast several studies supporting this principle in its application in education (Deming, 2000; Leonard, 1996; Smith, 1991; Warwick, 1995). Deming’s (2000) principle 8, Drive out fear, like in Leonard (1996), who thinks that fear can be paralyzing. One example he provides relates to student involvement in classroom activities. He argues that the use of grades to put pressure on students – “rocking the boat” – can discourage learners because they become hindered in producing efforts in the teaching-learning process (p. 207). A similar contention is made by Warwick (1995) when he argues that the best way to suppress obstacles is to eliminate the “end-of-the-year review” which he believes do not always create positive results as expected. In the results of this study, faculty members at the KAU College of Education believe that fear is useful in the educational process. This educational attitude reflects the same problems raised in Deming (2000) and the study conducted by Warwick (1995). In other words, the existence of fear in the teacher-student relationship among KAU faculty creates a challenge against the fruitful implementation of Deming-oriented educational strategies.

Based on Deming’s principles treated separately and the independent variable professional hierarchy, the faculty member attitudes toward Deming’s 14 principles were positive for all Deming’s 14 principles. On the other hand, principle 9 had lower scores for teaching assistants, assistant professors, and associate professors that are close to
neutral in this principle. Deming’s ninth principle, *Break down barriers between staff areas*, is an important principle for Deming. According to Deming (2000), the master concept in this principle is teamwork. In his argument, Deming believes that a holistic approach is useful when it comes to finding solutions to organizational problems. In his discussion of this principle, he provides an example of a supervisor, “president,” who realized that the leaders of the different segments of the organization provided a positive report in regarding how we a task might have been done (2000, p.62). However, Deming argues that such a report does not exclude the prevalence of problems, simply because there lacks a holistic approach. In the present study, findings reflect a similar lack of a holistic approach to detecting and solving problems, which can be broadly attributed to a problem related, first, to the educational leadership. Also, as highlighted in the study’s findings, one of the major causes of this almost chronic obstacle is the centralization of leadership.

With regard to this issue of leadership centralization, Derbass (1994) highlights problems like those in my study that characterizes most Saudi institutions in general. In his detailed study, Derbass argues that the centralization of authority hinders teamwork in the organization, which, in tend, discourages a collective approach to problem solving. Along the same lines, many studies have argued that Deming’s principle 9 means that communication between different departments facilitates identification of organizational challenges and helps provide collective solutions (Deming, 2000; Leonard, 1996; May, 1991). In the findings of the present study, it is shown that leaders of the KAU College of Education have to build a new philosophy in the college to ensure that all segments of the
institution are coordinated. To reach this point, the researcher thinks that establishing workshops for faculty members are an effective method to acquire a “work experience” and skills required in the environment (Tsu-Hsuan at al. 2009, p. 19).

**Suggestions from the Study Findings**

Based on the study results, there are a few suggestions that can be made at the practical level, and which also appear in relation with the review of literature. This study indicates that the attitudes of faculty members toward Deming’s 14 principles are generally positive towards applying these principles. At the practical level, the study findings and the literature showed means and ways for applying those principles at the KAU College of Education, mostly because the findings point to the Deming-related organizational malfunction where several issues lie. In addition, the study tries to serve as an instrument for mapping out the barriers that may affect the application of Deming’s 14 principles, especially in an Arab setting. The researcher also suggests that the lessons from the study findings may be useful both to the KAU College of Education and also to the Saudi Ministry of Education, particularly in terms of applying Deming’s 14 principles of TQM.

**To constantly improve curriculum and services.** The study findings showed that faculty members are willing to improve the curriculum and services, but that there is a need to consolidate this will by including unmotivated leaders in the process. This suggestion relates to the core of Deming’s philosophy of TQM as represented by his 14 principles. In relation to Deming’s proposition, Hughes believes that each improvement needs to be based on statistics gathered from comparison of data related to performances
of traditional classrooms and the new ones. Deming also insists on this pattern in the following terms, “allocate resources for long-term planning” (p.24). Speaking on the same lines, he believes that long-term solutions to existing problems depend on what he calls “constancy of purpose.” By these terms, Deming means constancy in the organization’s functioning towards reaching specific goals. A suggestion that Deming (2000) makes in this sense is that companies should be constantly innovative so as to meet the changing requirements of customers. For Bonstingl (2001), the practical application of this principle comes down to the role of the educational leadership that should focus on a continued attempt to improve a coordinated work between students and teachers, and educational leaders. In his application of Deming’s first principle, Leonard (1996) finds it important that educational organizations clarify the set objectives to students as well in order to ensure that the latter can consciously follow the whole teaching-learning process. Dye (1991), in his analysis of Deming’s principle 1, makes the point that, for more success in leadership tasks, leadership needs flexibility and adaptability, which are both achievable through different forms of “innovation” and through a constant aim at improving the design of products and services (p.10). In his study, too, Warwick (1995) speaks on the same lines. In his analysis, practical application of this principle means the assessment of the costs of total system as well as the establishment of “priorities for school” in such a way that surplus expenses can be avoided (p. 174).

The need for a new philosophy of change. In the present study, the results indicate that faculty members at the KAU College of Education have generally a positive
attitude towards TQM-based change, particularly through the application of Deming’s 14 principles. This also calls for a transformational form of leadership where decision-making is made collective. In addition, it must be noted that transformational leadership is not simply based on the relationship of exchange between the leader and the team, but it also means that the attitude of the leader should be a model that inspires the rest of the collective from whom he or she is also inspired. Writing in that sense, Hawkins (2009) insists that the transformational leader is primarily a bearer of vision and also serves as a role model. Another positive aspect in the application of TQM is it facilitates change in climate. In the field of education, the practical application of this principle creates networks communication, which helps leaders to pragmatically engage in the new transformative philosophy (Warwick, 1995). Leonard (1996) reiterates the same emphasis that Deming (2000) makes with regard to on the establishment of the philosophy. He believes that the teacher invites the students to cooperate and to actively participate in the production of a quality education. Again, Seymour and Collett (1991) argue TQM creates a solid belief among the participants of this study that attitudes change in relation to the efforts towards quality improvement. In addition, the implementation of TQM also provides a common language, which for Seymour & Collet, represents a common language that comes from the implementation of TQM. Thus, in the case of KAU’s College of Education, it becomes evident that the implementation of change imposes a collective collaboration that includes all educational, including teachers, students, and more importantly the resistant educational leaders. In other words,
the implementation of change at KAU in Deming’s terms would require transformational leadership where patterns of non-collaborative leadership are eliminated.

**Importance of constant long-term evaluation.** In the results of the present study, it reads that faculty members at the KAU College of Education show willingness to apply long-term evaluation in Deming’s terms. The importance of long-term evaluation in the implementation of Deming’s TQM strategies has been widely discussed. Speaking in that sense, Walton (1986) speaks about evaluation-related problems in the metaphor of diseases. The third disease, in particular, summarizes as “evaluation of performance, merit rating, or annual review” (p.91). Walton believes that this challenge bears similarities with Deming’s idea “management by fear.” Like Deming, Walton sustains that these methods that focus on short-term results are not productive and discourages the organization’s long-term goals. In many instances, this tendency hinders the possibilities for implementing new TQM strategies that guide to change. In his reading of Deming’s principle 3, Heady (1991) sustains Deming’s argument that mass inspection bears several negative consequences on education at the postsecondary level. Similarly, as this principle suggests, Warwick (1995) argues that the principle also means the suppression of the end-of-the-year evaluations that, for him, mean evaluating the service provided on a continuous basis (p.174). In the KAU College of Education context, evaluation of students and of the teaching process poses the same challenges, especially because both faculty and administrative board tend to excessively rely on grades to determine student progress. In many instances, this ends up hindering
student achievement instead; mostly because the addition of stress becomes a challenge to the very target educational objective.

**Importance of continuity in professional training.** As indicated in the study’s results, faculty members at the KAU College of Education are committed to improving their skills and professional training on a continuous basis. This educational pattern has also been noted elsewhere in a similar context. For instance, in Al-Qahtani’s (1993) study about the challenges of applying TQM in Saudi Arabia, he notes different facts such as the repeated changes in managerial position and the shortcomings in the training of employees. To this, he adds another challenge consisting of the shortcomings in individual performance, the variety in customer needs, non-existence of helpful finance information, and finally absence of productive structures in which the activities the company’s departments operate in coordination.

Arguing for the importance of continued training, Hogan (1991) further believes that long-term costs in systems of higher education often emanate from a continued absence of sufficient student training geared towards reaching the stage of trained citizen, as a productive individual (p.42). In the same way, Leonard (1996) emphasizes the importance of a continued professional training. He insists that when faculty members are constantly working on updating their professional skills, this helps improve the educational while impacting the student’s input. In his study, Hunt (1991) finds the relevance of constant training in education in the sense that faculty members as well as staff need excellent training in their tasks of teaching and administration in order to be more productive. In his application of principle 13 to higher education, Miller (1991)
writes that it is also of the educational leader’s duty to make sure that all faculty members are up-to-date in their disciplines in order to ensure that their colleges and universities respond to the ever-changing needs of the society. In this study, the same suggestion needs to be reinforced among the leadership at the KAU College of Education where this remains a problem. Educational managers and administrators need to spend more money in convening and supporting academic conferences as they constitute platforms where faculty members can exchange and update their knowledge in a number of ways.

**The need for instituting leadership and decision-making.** As indicated in the study findings, faculty members do show an interest in involving themselves in leadership issues and in the decision-making process. Writing on the same lines, Hyson (1991) argues that “management by walking around” is not sufficient to detect problems and find solutions. In his interpretation of Deming’s “institute leadership,” he believes that every associate – faculty and staff members – need to be included of the leadership, which helps encourage them to participate in detecting problems and finding solutions in an active manner (pp.63-66). In his perception, Bonstingl (2001) puts the practical level of this principle in concise words. For him, the principle states the leadership means having one’s hands on experience by “helping”, rather “threatening or punishing” (p. 98). This argument is more than relevant in the educational context of the KAU College of Education where both students and faculty members seem pressured by the institutionalized rules and regulations. This brings this research to suggest that there is a need to humanize the teaching-learning process by making some room for stress-free activities.
In addition, the literature also indicates that leadership is perceived as an organizational mode that guides the human society and helps create a social order for development. Reitzug and O’Hair (2002) argue, in that sense, that the capacity of the leader to bring together all actors to an understanding facilitates the mapping out of the resources in the surrounding environment, which can easily enrich the process of teaching-learning. Similarly, in _Out of the Crisis_, Deming contends that successful leadership is one that makes efforts to create an organizational structure based on collaboration in the decision-making process, which, he believes, leads the collective to develop self-efficacy towards increasing quality in production (p. 54). Fullan (2003) argues in the same sense and believes that the moral imperative of the organizational leader operates at both the micro and macro levels in both community and school. In sum, it must be retained that collaborative leadership, which as data shows lacks at the KAU College of Education, needs to be cultivated in order to create a greater sense of both student and faculty involvement in developing the educational environment.

**The Importance of decentralization.** This aspect is in direct linkage with the previous discussion. In fact, as the study’s data shows, educational leaders, the dean’s office in particular, is not very much in favor of a decentralized leadership. This poses several problems, or diseases, in Walton’s (1986) terms. In Walton’s seven diseases, especially in the field of higher education, challenges are highlighted which also discourage the production of positive results through the implementation of TQM strategies. In his study of Saudi management systems, Derbass (1994) discusses two TQM-related diseases. The first refers to the excessive centralization of decision-making
that characterizes leadership in Saudi Arabia. As a result, Derbass argues, this monopoly impeaches the flow of information among people and hinders the emergence of coordinated and collaborative leadership. The second disease results from the former and relates to the lack of information exchange between the different segments that make up the broader organization. Almost similarly, Alnaweigah (2013) produces a study which shows TQM as the remedy against educational problems in Saudi Arabia. More specifically, Alnaweigah’s argument is framed on the contention that there is a parallel between the application of TQM and general growth. In brief terms, this emphasis on the need to decentralize leadership speaks directly to what needs to be done in order to reduce education problems related to centralized decision-making at the KAU College of Education.

The need for an open educational environment. The study results also showed that faculty members are willing to apply healthy communications between them and departments. This constitutes an admirable aspect that can play a significant role in successfully implementing Deming’s TQM towards increasing quality in education. In his philosophy, Ishikawa (1985) believes that TQM does not simply mean the department of quality, but involves all the departments of the institution. Walton argues that leadership as the manager’s task means his or her ability to suppress what Deming called “barriers” which stops the worker from being actively involved in framing the philosophy that guides the organization towards development (p.70). In his discussion of Deming’s principle 2, Fain (1991) suggests that implementation of “new philosophy” implies two major establishments. One is that the educational institution needs to believe in its people
– the actors – and, at the same time, it is the role of the people to believe in the collectively established philosophy of work that governs the institutions. Two, the philosophy must be directly connected to the objectives of that particular institution (pp. 21-22). One barrier that Kelly (2011) points out is the salience of bureaucracy. He states that a large bureaucracy often becomes its own reason for existence for it does not forcibly serve for the creation of effective results in the educational structure (p.15). Similarly, bureaucracy constitutes a serious barrier to educational development in the KAU College of Education. Not only because administrators often seek to control all educational activities, but also because their tendency to oversee all activities ends up taking a long time for realizing elementary things such as grant application, registration, and so on.

**On self-improvement and effective efficacy.** The study findings indicate that faculty members are willing to take responsibility to develop both self- and collective efficacies. Self-efficacy, in this sense, underlies the teacher’s professional attitude. Thus, one understands that the measurement of the level of self-efficacy also helps measure what a particular teacher can achieve as far as educational achievements are concerned. In this context, as Goddard (2000) remarks, there emerges a necessity for an effective educational leaders to inspire different patterns of self-efficacy among his/her employees so as to facilitate more objectivity in the educational process.

Walton (1986) sustains the same understanding of leadership in relation to the creation of efficacy. He argues that leadership, as the manager’s task, also means an ability to improve collaborative work, which ultimately helps suppress the obstacles to
the effective participation of the employee in the work process. In brief terms, these arguments reinforce the notion that leadership, as an organizational body, has an important role in creating the environmental conditions for building self-efficacy among faculty members. In the context of this study, it can be noted that for such types of leadership to be effective, faculty efficacy needs to orient itself towards a constructive and productive collaborative work within the KAU College of Education. In fact, as Paulsen & Betz (2004), remark a major element that sustains the building of an effective leadership is a shared vision. In making this link between shared vision and efficacy, Paulsen and Betz contend that the members of a group will adhere to the sense of collective efficacy when efficacy also reflects their opinion. At the same time, they make an argument that such form of leadership creates room for more motivation among both teachers and students.

**Transformation through organizational and social action.** In its holistic consideration of the educational system at the KAU College of Education, the study provided findings that also showed that faculty members’ willingness to take actions towards the final step of implementing positive transformation. In his management philosophy, Deming (2000) argues that transformational leaders create an organizational environment that aids the followers in the execution of their assigned tasks. Both transformational and democratic forms of leadership are, in this sense, oriented towards creating organizational grounds that are propitious for a long-term growth. This form of educational organization, as exemplified by both transformational and democratic styles of leadership, remains a good fit for the King Abdulaziz University. In fact, not only
would it be ideal for undoing the traditional form of centralized management, but also it would facilitate the involvement of the community in the creation of greater student achievements. Sashkin (1986) speaks about the production of quality in relation to the educational leader’s commitment to applying institutional change. He identifies different levels of organizational leadership. Transformational leadership is one of them. In his argument, Sashkin notes that for the implementation of a transformative change in the organization, the leader must put a vision to work, a vision that promotes a coordinated action based on the collective philosophy. In the present study, this organizational pattern is perceived as necessary for the realization of transformational change at the KAU College of Education. In fact, as earlier mentioned, the democratization of decision-making becomes conducive to the development of a new structure where student achievement becomes greater.

**Work experience and policy.** In the findings, faculty members also show willingness to change the organizational policy that has governed the college until today. Policy change, in this context, is meant to build better institutional components that support the Deming-inspired transformative project. In his philosophy, Deming (2000) promotes a continued improvement of the worker’s training, or capabilities, in terms of how s/he can adapt to the changing environment of the workplace and the realities of the evolving consumer society.

In that sense, “mobility of top management” is the fourth disease that Walton argues weakens the company in general. He states that constantly changing the company’s top leaders will destabilize the organization and reduce its possibilities to
meet long-term objectives. Similarly, in his analysis of Deming’s (2000) principle 8, Smith provides another example about fear arguing that it can hinder productivity among employees. For Smith (1991), despite the fact that sentiment of fear may be useful to stabilize productivity among worker, it can also hinder concentration on the tasks that assigned. The example that Smith provides can be related to American faculty members most of whom are usually required to publish so as to get promoted or tenured. For Smith, the consequence is that professors may end up focusing more on their research publications, which can impact the quality of the education that students receive. In the KAU context, this remains relevant as well, especially because the teacher-student relationship suffers a lot from institutional rules. For instance, although problems still persist in terms of educational research, KAU faculty members face different institutional requirements – such as curricula limitations – which prevent their constant focus on increasing student achievement.

**Additional Suggestions**

**TQM implications for educational programs.** The application of TQM strategies and concepts also needs the elaboration of effective programs for students and teachers to understand its goals and aims. Applying this idea comes down to making sure that educational leaders establish the institution’s objectives which channel the transformative action (Leonard, 1996; Warwick, 1995). In the case of higher education, students as well as the community become customers to the educational organization. In this sense, collaboration between school and community facilitates educational leaders’ tasks of identifying expectations. The particularity of Deming’s understanding of quality
originates from his adoption of a quite synchronic definition of quality that came to be understood as part of TQM. As argued in the literature, implementing TQM techniques in higher education has yielded positive results. Seymour and Collett (1991) note, for instance, that the application of TQM has helped the interaction between peer institutions which they perceive as crucial to a more successful teaching-learning process (p. 15).

Applied to the context of the KAU College of Education, this calls for opening the college’s educational structure to other input possibilities from other institutions. As a result, not only would this action facilitate the process of diversifying the curricula, but also it will help expose students to foreign realities to make them more aware of and receptive to other realities.

**On instituting plans for implementing TQM.** In the study findings as well as in the reviewed literature, it is indicated that planning remains critical for the practical application of Deming’s and TQM concepts. In fact, in the few institutions where TQM strategies have been implemented in Saudi Arabia, some positive outcomes have been noted in terms of helping institutions cut down the amount of financial waste and also reduce the prices of expensive activities (Aljodea, 2012). In their study, Al-Sulimani and Sharad (1994) perceive application of TQM strategies as a practical instrument for Saudi institutions to achieve quality education. Along the same lines, Crosby (1979) understands quality as what he calls excellence, or zero defects, in the production process. In Crosby’s analysis, quality is the standard tool for measuring quality in the product and how it satisfies the expectations of customers. Deming seems interested in the production of quality for the company’s future no matter how long it takes. Reflecting
on the same model, Feigenbaum (1991) believes that quality cannot be attained through focus on individual aspects of the organization, but rather by proceeding through the entire whole of the organizational body. In his education-related perspective, Hyson (1991) suggests that faculty members are better equipped to detect problems related to teaching compared, for instance, to the dean, simply because they are more exposed to the daily activities in the class. Additionally, it becomes crucial that teachers be placed at the center of any planning programs. This implies that inclusion of faculty members in leadership motivates them to be more active in voicing their opinions, and thus helps them find productive solutions. When applied to the KAU context, this means that there is more to do in terms of rendering the organizational body more inclusive. Through this, faculty members at the KAU College of Education will become more involved in the process of identifying problems, especially those related to teaching-learning, while helping solve them in much easier ways.

**Suggestions for Further Research**

This quantitative study was unique in its attempts to explore Deming’s principles in Saudi Arabia. The researcher believes that there is a need to conduct more studies to investigate Deming’s philosophy and theories and how it can help provide solution to existing educational problems in the entire region, as a whole. The fact that the research focused on faculty member’s attitudes toward Deming’s 14 principles opens a window to more research to explore the other actors at KAU College of Education. Conducting research that will focus on KAU’s College of Education, its students, staff, and leadership will certainly help garner knowledge regarding educational shortcomings. Additionally,
conducting studies that examine and investigate the policies and the procedures in KAU will be useful to Saudi educational stakeholders at the state level.

In addition, the study’s overall findings show that all the 61 faculty members (out of 176 faculty at the College of Education) targeted in the study are committed to the implementation of Deming’s fourteen principles, while the Dean’s office appears moderately supportive. This suggests that further study is needed to understand why there are still challenges in the implementation of TQM and why implementation of Deming’s TQM strategies is still stifled. At the same time, further studies examining the administrators’ attitudes in the Dean’s office are needed in order to help identify why the latter is less positive than faculty about implementing Deming’s strategies. For now, however, based on Deming’s (2000) principle of “institute leadership,” one understands that the Dean’s commitment to the fourteen principles is crucial for the Deming-related change to take off at the KAU College of Education. In this sense, the same commitment among educational leaders, coupled with faculty motivation, will serve as foundational grounds for that change.

Furthermore, there is a need to see more about the study notes that were discussed, especially when results showed that the Dean’s office is less motivated as the faculty towards the implementation of Deming’s 14 principles. Additionally, findings reflect that the faculty members were open into implementing the principle eight. Some deeper research conducted in qualitative studies might be important to explain some exceptional cases where members of the target group showed unwillingness to engage in the dynamics of this principle. Such qualitative studies would imply conducting close
interviews with leaders in order to understand why the resistance to Deming’s fourteen principles. Also, it is important to conduct studies that explain the possible additional changes that can emerge from Deming’s philosophy, especially TQM in general, from the faculty perspective. Also, there is a need for more studies to examine the KAU College of Education productions and its quality. It also remains vital to examine the KAU College of Education productions and the job market that reflect the community needs. Finally, the researcher believes that it is high time that educational researcher looked into the importance of establishing educational leadership organizations, programs and curriculum in TQM in higher education so as to help match graduating students with society’s market need.

**Conclusion**

In conclusion, it must be noted that conducting this research was not an easy task, especially because it is one, if not the first, among few that examined the attitudes of faculty members towards Deming’s 14 principles in an Arab setting. Thus, challenges in conducting the research also related to a lack of resources that deal with the implementation of TQM in the Middle East in general, and Saudi Arabia in particular. In that sense, this quantitative study makes a significant contribution to understanding the problems of educational research in the region as well as how to find solutions to chronic educational malfunctions.

In its findings, the study indicated that faculty members’ attitudes toward Deming’s principles at the KAU College of Education were, overall, *positive*. It also shows that the attitudes of faculty members toward Deming’s principles were not
influenced by the independent variables of gender and professional hierarchy. However, the findings indicated that leaders at the KAU College of Education, such as the Dean Office, had moderate motivation in the application of Deming’s 14 principles. Additionally, the target group of faculty members also showed that they disagree with Deming’s principle 8 that reads, “Drive out fear.” This finding needs attention and also further research, as indicated earlier, mostly because such research might provide additional information as to why educational leaders are inclined towards some form of conservatism.

Furthermore, the study also found that faculty members’ attitudes toward Deming’s 14 TQM principles at KAU College of Education were, overall, positive, given that they are strongly committed to promoting the need to apply TQM in general and Deming’s 14 principles of TQM in particular. Based on the findings, the study encourages the Saudi Ministry of Higher Education as well as KAU leaders to (re)consider a much deeper commitment to TQM strategies, especially Deming’s principles, in order not only to increase student achievement, but also to help graduating students to meet the expectations of an ever-fluctuating Saudi job market and increase efficiency.

Finally, the study strongly recommends researchers and organizational researchers to engage in more TQM-oriented research in general, and in Deming’s TQM in particular, so as to help solve educational problems that become almost chronic. Indeed, at KAU, in particular, there is still a need to evaluate the procedures and the policies at the College of Education in order to identify the wide range of problems raised
in this study. This would certainly be a crucial start for a positive transformational change to take off.
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Appendix A: Study Survey (English Language)

Ohio University Consent Form

Title of Research:

"FACULTY ATTITUDE TOWARD DEMING’S FOURTEEN PRINCIPLES OF TOTAL QUALITY MANAGEMENT IN HIGHER EDUCATION AT THE KING ABDUL AZIZ UNIVERSITY COLLEGE OF EDUCATION"

Researcher: Abdulrahman Alsulami

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it by clicking the button continue. This will allow your participation in this study.

Explanation of Study:

This study proposes to examine the attitudes of faculty members at the King Abdul Aziz University College of Education towards Deming’s fourteen principles of Total Quality Management (TQM). The project tests the applicability of Deming’s strategies of TQM towards the production of a quality higher education.

If you agree to participate, you will be asked to answer questions in an online survey after clicking the button continue. You should not participate in this study if you do not want to answer questions about your teaching experience in higher education. Your participation in the study will last maximum 15 minutes.

Risks and Discomforts:

No risks or discomforts are anticipated

Benefits:

The researcher is convinced that a successful implementation of Deming’s principles at KAU will definitely set the grounds for greater positive outcomes within KAU’s College of Educational and at all levels of the educational system. In addition, it is of the researcher’s belief that application of Deming’s principles will create a pedagogical environment where students and teachers can together conduct a cooperative and more productive teaching-learning environment. By exclusively focusing on faculty attitudes, the researcher hopes, in the end, to bring to light the pros and cons of implementing Deming TQM in the college of education at KAU.

Confidentiality and Records:

Your study information will be kept confidential by the researcher and the immediate advisor. Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;
* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Contact Information:

If you have any questions regarding this study, please contact:
If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)683-0664.

By clicking the button continue below, you are agreeing that:
- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered
- you have been informed of potential risks and they have been explained to your satisfaction.
- you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study.
- you are 18 years of age or older
- your participation in this research is completely voluntary
- you may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Abdulrahman Alsusami

* Required

Part I: Academic and Demographic Information:
Please check or write the correct answer

1. 1. Gender *
   Mark only one oval.
   - Female
   - Male

2. 2. Age *
   Mark only one oval.
   - 20 – 30
   - 31 – 40
   - 41 – 50
   - 51 – 60
   - 61 – 70

3. 3. Nationality *
   Mark only one oval.
   - Saudi Arabia
   - Non-Saudi
4. 4. Department or Office occupation *
   Mark only one oval.
   □ Dean office
   □ Vice-dean office
   □ Educational Psychology department
   □ Educational Foundation department
   □ Educational Administration and Planning department
   □ Curriculum and Instruction department
   □ Special Education department
   □ Physical Education department
   □ Art education department
   □ Educational Technology department
   □ Qur'an Studies department

5. 5. Professional Hierarchy *
   Mark only one oval.
   □ Teaching Assistant
   □ Assistant Professor
   □ Associate Professor
   □ Full Professor

6. 6. Years of Teaching Experience in higher education *

7. 7. Please feel free to add any information that you may find useful to the study

Part II. Evaluation of the attitudes of faculty members towards
Deming's fourteen principles

8. *

https://docs.google.com/forms/d/14uR1SrqyHTC2B7w_gx6B_FXj6a8N4Uq4sUjfs/edit
**Mark only one oval per row.**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
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<tbody>
<tr>
<td>1. Leadership in higher education should continuously emphasize collaboration between faculty and students</td>
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<td>2. Leadership in higher education facilitates reaching the set educational objectives for students.</td>
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<tr>
<td>3. Curriculum needs to be continuously updated to meet society’s changing needs.</td>
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<td>4. Education Leadership should not be afraid of change in policy- and decision-making.</td>
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<tr>
<td>5. Successful communication between educational actors helps towards a positive transformative change.</td>
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<tr>
<td>6. Educational quality requires that the organizational leadership bestows trust on all actors – staff, faculty and students.</td>
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<td>7. Too much focus on grades discourages student quality learning.</td>
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<td>8. Students need to be made active and responsible in the teaching-learning process.</td>
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<td>9. Depending on mass inspection in education will not guarantee educational quality</td>
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<td>10. Prioritizing cheap over expensive educational material undermines quality education.</td>
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<td>Deming’s fourteen principles of TQM - Google Drive</td>
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<td>--------------------------------------------------</td>
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<tr>
<td>11. Buying educational material should imply a collective consent.</td>
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<tr>
<td>12. Higher education institutions should collaborate with other educational institutions to increase student performance.</td>
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<td>13. Educational leadership should take part in ensuring faculty members’ continued training.</td>
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<td>14. Continuously updating faculty members’ knowledge will improve students’ Intake.</td>
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<td>15. Continued faculty training ensures a long-lasting quality education.</td>
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<td>16. Educational policies should include continued faculty training with regard to education objectives.</td>
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<td>17. Gathering feedback from all educational actors facilitate identification of educational problems.</td>
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<td>18. Feedback from educational actors helps create more productive educational programs.</td>
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<td>19. Educational leaders alone cannot see all educational problems.</td>
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<tr>
<td>20. Faculty and students need to be included in the process of identifying educational needs.</td>
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<tr>
<td>21. Educational leadership should not just punish, it must help.</td>
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<tr>
<td>22. Student evaluating faculty at the end of the year is not productive.</td>
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<tr>
<td>23. Instilling fear in the student does no lead to</td>
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<tr>
<td>24</td>
<td>Imposing publications on faculty threatens concentration on teaching process.</td>
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<tr>
<td>25</td>
<td>Faculty and staff become passive educational actors when worried about getting fired.</td>
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<td>26</td>
<td>Inter-departmental collaboration facilitates identification of challenges and problem solving.</td>
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<td>27</td>
<td>Centralization of educational leadership undermines teamwork.</td>
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<tr>
<td>28</td>
<td>Educational leaders must respect and trust faculty members to improve education.</td>
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<td>29</td>
<td>Appropriately rewarding faculty members leads to their motivation.</td>
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<td>30</td>
<td>Application of a positive change increases the organization's prestige.</td>
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<td>31</td>
<td>Educational leadership should not prioritize the number of students to their quality.</td>
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<td>32</td>
<td>Grades do not always reflect knowledge of course material.</td>
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<tr>
<td>33</td>
<td>Extending educational programs and materials needs educational research.</td>
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<tr>
<td>34</td>
<td>Reducing bureaucracy increases faculty members' self-motivation.</td>
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<td>35</td>
<td>Systems of merit may reduce motivation among average-level students.</td>
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<tr>
<td>36</td>
<td>Giving students</td>
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<tr>
<td>4/10/2014</td>
<td>Deming's fourteen principles of TQM - Google Drive</td>
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<tr>
<td>1. Leadership responsibilities increases their active involvement.</td>
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<td>37. Rewarding educational actors impacts the improvement of the learning process.</td>
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<td>38. It is part of the educational leadership to ensure that faculty members update their training.</td>
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<td>39. Faculty members have the responsibility to ensure continuity in professional training.</td>
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<td>40. Implementation of change requires breaking with old ways.</td>
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<td>41. It is of the educational leadership's to take primary action in implementing the positive transformative change.</td>
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<td>42. Positive transformation requires a leadership fearless of change.</td>
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Powered by Google Drive
Appendix B: Study Survey (Arabic Language)

المبادئ الأربعة عشر للعالم الأمريكي يُمنح لدارة الجودة الشاملة للتعليم العالي

Required *

نموذج (جامعة أوهايو) للمواافقة على المشاركة في استبيان

لا يتضمن هذا النموذج أي شروط أو ملاحظات

الرقم:

199

الشرطة والقواعد:

سابقت محاولات الدورات سريًا على سبيل البحث وجدة البحث، في حين سيُتم كل جهد تخطيط على المبادرات المماثلة بمشاريع.

كذلك يتضمن هذا النموذج أيضًا بعض الوثائق في الولايات المتحدة من الأعلام على المعلومات، وهي

* الوثائق الإضافية، على سبيل المثال، مقال هيئة إدارة المصطلح، الذي هو مسؤولية النشر الخاصين للبحث.

For example, the Office of Human Research Protections.

* ملخص جامعة أوهايو (OSU) بما في ذلك المراجعة، وهي الليبية التي تُعرف على الأبحاث في جامعة أوهايو.

(RB) Institutional Review Board.

معلومات الإتصال:

إذا كان لديك أي أسئلة أو استفسارات، يرجى الاتصال بucciad710@ohio.edu / +1 740-274-3560

عذرًا على المشاركة، لك ذلك ترفق على ما يلي:

- إذا غابت هذه الملاحظات (أو تم تجاهلها) وأعلنت ملاحظة أو خرق، فلن تكون القاهرة لإجادة على مبادئ البحث.

- قد يكون من المبادرات المماثلة أو ترشيح الباحث أو مواجهة غير مباشر أو تطيع المبادرات هذه الإتجاه.

- جامعة أوهايو لا تقدم بنود للمشتركين أو نقبل في حالة المشاركة بهذه الاتهامات.

- مشاركة في هذا البحث عملي في ذلك.XXX.

أصبح ذلك تكد، يمكن المشاركة في أي وقت، وفي حال قررترك المشاركة فإن ذلك حق شرعي وأن تم من خلال الأقرار أي ميزدة من المزايا التي يحقهما القانون.

https://docs.google.com/forms/d/e/1FAIpQLSf1Gt789DeZMV3oFqVFsE8k6eSbVC-m-ww-WOdZy9gI/edit

18
الجزء الأول: معلومات المشارك بالاستمارة

1. الجنس
   - مرور
   - منفعة

2. العمر

3. الجنسية
   - سعودي
   - غير سعودي

4. القسم أو الناحية
   - مكتبة المنهج
   - مكتبة ندأ (واحة الكليات)
   - قسم علم النفس
   - قسم أصول التربية
   - قسم الإدارة والتخطيط التربوي
   - قسم المناهج وطرق التدريس
   - قسم التربية الإسلامية
   - قسم التربية الدينية
   - قسم التربية الفنية
   - قسم قضايا التعليم
   - قسم الدراسات القرآنية

أخيرًا / عبد الرحمن الطائي

4/10/2014 - Google Drive

(الأخبار المсылلة والمتابعة النسبية وأعمال العالم العربي، نادي النشرة الشهوانة (النسخة المهنية))
الجزء الثاني: تقييم الاتجاه نحو مبادئ العالم الأمريكي ديمج للعودة الشاملة في التعليم العالمي

يرجى ملاحظة أن بعض الفقرات لم تتم الرجوع إليها في التقييم.

| مواقف مكثفة | مواقف غير مكثفة | غير مواقف
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>وجود الفئة في التعليم العام يجب أن تكون مكثفة.</td>
<td>يمكن أن تكون متوسطة.</td>
<td>يمكن أن تكون متواضعة.</td>
</tr>
<tr>
<td>يتوجه من الأهداف التربوية إلى الطلاب</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
</tr>
<tr>
<td>المناهج تحتاج إلى تحسين بشكل مستمر.</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
</tr>
<tr>
<td>التوصيات الناجحة بين مصنع.</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
<td>يمكن أن تتم من خلال تشجيع الطلاب على التفاعل الاجتماعي.</td>
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6. سنوات الخبرة في التعليم العالي

7. عزيزي عمرو، هيئة التدريس، إذا كنت مفترحاً أو متطلبات من الممكن أن تكون الدراسة فارجوا مكتبة الكتابة في المكان المخصص فأنه وشكراً.

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8. "Mark only one oval per row."
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<tr>
<th>التدريس في مصاعب تحد الاختلافات التربوية للكلات</th>
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<td>دور اللغة الطبيعية في الطمأنينة</td>
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<tr>
<td>تقييم اجسامية التدريس في نهاية العام الدراسي</td>
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<td>فرق الفروض الحركية في اعطاء التدريس</td>
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<td>اعداد اللغة التدريس والموظفين</td>
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<td>التقنن المانع بين جمل الكلمات الساعدة</td>
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<td>المركزي في اللغة العربية تحدد</td>
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<td>توجر على اللغة العربية الالتزام</td>
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<td>التمكن اللغة العربية الثابتة</td>
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<td>المقامات لاحظية التدريس تتحز</td>
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</tr>
<tr>
<td>التغيير الاجتماعي لغة التدريس من نفسها وملحقاتها بين الكلمات</td>
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<tr>
<td>على اللغة العربية هو وضع في ألوانها زرعة الطلاب في الكلية في مقال حالة العام</td>
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<td>رأى البرامج في البرامج التربوية</td>
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<td>الحد الحدودية للغة التدريس</td>
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<td>اعطاء الطلاب مسئولية فردية في اللغة</td>
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<td>المقامات الجملة في مصلحة الطلاب</td>
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</table>
التغير الإيجابي في العمل يتطلب اجراءات استراتيجية قاضية، ومشاركته الجماعية دون استثناء لفتح الأبواب للتنمية والتقدم.

التغير الإيجابي يتطلب قيادة شجاعة نحو التغير والتقدم الترازي.
## Appendix C: Items of Deming’s 14 Principles and Cronbach's Alpha Scours

### Item-Total Statistics

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
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Appendix D: IRB Approval

A determination has been made that the following research study is exempt from IRB review because it involves:

Category 2. research involving the use of educational tests, survey procedures, interview procedures or observation of public behavior

Project Title: Faculty Attitude Toward Deming’s Fourteen Principles of Total Quality Management in Higher Education at the King Abdulaziz University College of Education

Primary Investigator: Abdulrahman Alsulami

Co-Investigator(s):

Advisor: Dwan Robinson

Department: Educational Administration

Rebecca Cale, AAB, CIP
Office of Research Compliance

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved (as an amendment) prior to implementation.
Appendix E: IRB Approval from KAU

TO WHO IT MAY CONCERN AT OHIO UNIVERSITY

This is to certify that the Faculty of Education at King Abdul Aziz University (KAU), Jeddah- Saudi Arabia welcomes Mr. AbdulRahman Al Sulami to administer the tools of his research, (Questionnaires and interviews), under the supervision of the Department of Educational Administration and Planning. Mr. Al Sulami is a faculty member at the same department and he has been granted a full scholarship from (KAU) to obtain a Ph.D. in Educational Administration and Planning.

The Faculty of Education at (KAU) consists of the following departments & staff members:

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Vice-dean for Graduate Studies & Research
Osama H. Maajeny

e-mail: omaajeeny@live.com