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The influence of employee's perceptions of top management support, information technology competence, technology strategy, organizational climate, and organization's nationality on information systems security, and quality success

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The Influence of Employee's Perceptions of Top Management Support, Information Technology Competence, Technology Strategy, Organizational Climate, and Organization's Nationality on Information Systems Security, and Quality Success

by

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Dedication

This work would have never been completed without the unleashed support from my role model: my mother. Since day one at Turki bin Abdullah elementary school, my mom has pushed me into being an inquisitive, studious, and judicious individual. She ensured that I have access to the necessary resources to grow up in a healthy and salubrious environment. She exerted much effort, in the absence of my deceased father, in inculcating a deep motivation for learning and success in this raucous world.

Without the presence of my father, Fawwaz, I have never come to master discipline and good work ethics. He was the first in the home to wake me up early in the morning, equip me to school and pick me up after school. He was always punctual, concise, and sharp. He instilled in me positive morale and perseverance that were indeed prerequisites to finish this dissertation. I know for a fact that he is smiling and enthralled with this achievement due to his visionary leadership.

My luminous lighthouse, son Fawaz, has inspired me to become a better person, parent and student. Seeing Fawaz wake up to attend his kindergarten school made me determined to finish this dissertation and construct the best home environment for him through my hard work and business endeavors. For my sincere, loving, and encouraging wife, Mashel, has undergone severe difficulties and inconvenience for me being away in the United States doing graduate school. Despite all this, she has continued to support, motivate, and inspire me to finish my work on time to become the next successful leader in our family.

My immediate family, brothers, sisters, and relatives have also significantly contributed to the completion of this work. They have endlessly encouraged and supported me during hard times and stressful periods throughout this project. They offered a great environment defined by

empathy and real support. For them, I am thankful to have all of you and dedicate this work to you.

Acknowledgments

I sincerely thank Dr. Bellamy for his continued and tireless support to complete this project. Without his timely responsiveness and constructive feedback, this work would have never come to light. I also would like to thank the following professors: Dr. Ferdousi, Dr. Moylan and Dr. Lee for their encouragement, motivation, and feedbacks making this work a reality. I thank the family of faculty and staff at the College of Technology for helping me undergo all the difficulties and hindrances to complete this project.

This acknowledgment section would not be complete if I do not thank all friends who contributed to my personal and professional growth. I thank almighty God for having such a great circle of motivated individuals. It is unfortunate that I have to omit the explicit mentioning of names due to my fear of forgetting important people in my life. For all of you friends in Saudi Arabia and the United States, I extend my sincere thanks to all of you and look forward to seeing you all achieving success in your endeavors.

Last, but of course not the least, I would like to thank my generous and supportive sponsor, the Saudi Ministry of Interior: The State Security Agency and Special Security Forces in particular. Without your financial, logistical, and motivational support, this dissertation would have never seen any light. Thank you for continuing to support my endeavors.

Abstract

This research investigated the relationship between levels of top management, information technology, competence, technology strategy, and organizational climate within an organization and organization's success of information systems. The study conducted a quantitative study of 120 employees working for two organizations within the Ministry of Interior in Saudi Arabia and determine whether organizational attributes affect changes in information systems success. In addition, an American organization (40 employees) was used as a comparison. The analysis of the study found that top management support, information technology competence, technology strategy, and organizational climate were strongly correlated with information systems success in Saudi organizations. In addition, a moderation analysis was conducted using organizational climate categorized as high or low. Results indicated that relationships between top management support and information systems success did not differ. However, organizational climate has a small effect on the correlation between technology strategy and information technology competence on information systems success. Organizational nationality has no effect on the relationship between top management support and information systems success. However, the relationship between technology strategy and information systems success is highest within the American organization. In addition, the relationship between information technology competence and information systems success is highest within the Saudi organization.

Table of Contents:

List of Tables

List of Figures

Chapter 1: Introduction

Information systems (IS) presents organizations with a lot of benefits capable of improving organizational performance, productivity, and growth (Melville, Kraemer, & Gurbaxani, (2004). IS not only make employees' tasks simpler, easily done, and more standardized, they also aid stakeholders and managers in making competitive strategic decisions impacting the overall organizations' vision, mission, and outcomes (Petter, et al., 2013). O'Brien and Marakas (2008) summarized the benefits of IS to organizations in three main areas: support for daily operations, support for decision-making at all levels, and support for the identification of novel strategies contributing to the competitive advantages of organizations.

Businesses and organizations adopt and implement information systems to cut costs, increase efficiency, profitability, and productivity (Petter, et al., 2013). This form of information technology investment is costly, time-consuming and at best cumbersome. According to Stawski (2015), the "State of CIO" surveyed in 2013, reported that on average companies spent 5.2% of their revenues on information technology infrastructure, and a significant portion of this amount went to the adoption, implementation, and maintenance of IS. Given a large amount of money, effort, and time organizations put into IS implementation, organizations attempt to measure IS effectiveness or success in bringing about the desired outcomes set forth by the organizations (Petter, et all., 2013).

The literature on the determinants of information systems success is extensive (Sabherwal, Jeyaraj, & Chowa, 2006). On the one hand, a number of authors have pointed to the significance of user-related characteristics, such as users' experience with information systems, users' attitudes, and users' engagement with the IS project (Schmidt, Lyytinen, & Mark Keil,

2001; McElroy, Hendrickson, Townsend, & DeMarie, 2007). On the other hand, many studies have highlighted the importance of organizational factors including, its size, maturity, information technology, sophistication, top management support and, communication (Chiu, Chiu, & Chang, 2007; Stone, Good, & Baker-Eveleth, 2007; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Mishra, Konana, & Barua, 2007). Other studies have demonstrated the influence of the nature, type, scope and elements of IS projects, tasks associated with them and the overall environment governing their implementation (Nicolaou & McKnight, 2006; McGill, & Klobas, 2005; McGill, 2005; Zviran, Glezer, & Avni, 2006; Wang, Klein, & Jiang, 2006; Garrity, Glassberg, Kim, Sanders, & Shin, 2005). A common trend in the empirical literature on IS success is that authors oftentimes select a subset of factors influencing IS successful performance while leaving a number of significantly noted variables out of their constructed models, leading to numerous sources of bias. This has contributed to the generation of differing results concerning the magnitude and direction of influence associated with the factors influencing IS success. Further, authors have used varying data types, measurement models, and statistical techniques resulting in varying findings in the IS success scholarship.

The public sector in Saudi Arabia has implemented a variety of information systems assisting in the achievement of efficiency, productivity, and accountability (Zubaida & Zamani, 2014). Despite this extensive information technology investment, there have been no systematic evaluations of the extent to which such has achieved the desired outcomes. More importantly, the limited research on IS success in Saudi Arabia has noted the significant influence organizational variables play in determining the success of IS performance (Al Majed & Mayhew, 2013). Organizational characteristics including, top management support, management processes, information technology competence (IT competence), technology strategy, information

technology infrastructure, information technology governance, organizational size, information technology investment, and organizational environment, have been hypothesized to impact the quality and effectiveness of information systems in Saudi organizations, especially within the public sector (Almotairi, 2009; Saleh, Abbad, & Al-Shehri, 2013).

This dissertation focuses on the link between top management support, the employee's IT competence and technology strategy, organizational climate, and information systems success in Saudi Arabia. There has been no systematic evaluation of information systems success in the public sector in Saudi Arabia, and this study fills this important gap in the literature. The researcher has been a public employee for a decade. Therefore, access to public organizations was easier for him compared to tapping into private enterprises. To obtain the necessary data from private companies requires the researcher to get the consent from these companies which is difficult to do. On the other hand, obtaining consent from public agencies is easier since the researcher has built networks within those organizations, and consent has been obtained in a quicker fashion compared to private companies. Data availability was the main concern behind the researcher decision for the selection of public over private organizations. More importantly, the study will empirically assesses the proposed relationships linking organizational characteristics and information systems success using a previously unexplored region, Saudi Arabia. The study contributes to the existing understanding of information systems success by investigating the connection between various organizational attributes and information systems success, measured in three different ways: information quality, system quality, and information security. Table 1 displays the four main independent variables in the study: top management support, IT competence, technology strategy, and organizational climate. The table also displays the dependent variable, information systems success, measured in two dimensions proposed by

DeLone, and McLean, (2013): information quality and system quality. This study adds a new dimension to information systems success: information security that has not been adequately considered in the scholarship on information systems success.

Table 1.

Independent Variables and Dimensions of Information Systems Success

Independent factors	Dimensions of information systems success
Top Management Support. IT Competence Technology Strategy Organizational Climate	Information Quality System Quality Information Security

Information security is an essential element of the information system success (Parr, Shanks, & Darke, 1999). An organization may possess high levels of information quality and system quality while low levels of information security. If the information is left without due protection, it can be exploited by adversaries, criminals or anyone interested in harming the business or other individuals (Doherty, & Fulford, 2006). Therefore, any successful information systems should focus on the security dimension of the implementation process. This has been largely neglected by the study of information systems success as evident in the DeLone and McLean (2003) IS success models.

Statement of the Problem

The study of information systems success in Saudi Arabia is an emerging area of study that lacks systematic analysis. There are no existing empirical investigations of the relationship

between top management support, IT competence, technology strategy, and organizational climate and information systems success. Further, the organizational climate and organization's nationality influence over information systems success has not been explored. More importantly, studies of information systems success do not study information security enough as a main dimension of IS success. This study incorporates information security to the widely used measurement model of information systems success (DeLone & McLean, 2003) and explores its effect on information systems success within Saudi public organizations.

Nature and Significance of the Problem

Organizational elements such as top management support, IT competence and technology strategy are parts and parcels of the overall organizational structure making them important in determining the success or failure of organizational technological investments (de Guinea, Kelley & Hunter, 2005; Eikebrokk & Olsen, 2007). Organizational theories have concluded that organizational characteristics influence the people, projects, and tasks of any large-scale operation. Within the IS literature, many studies have explored the varying effects of organizational characteristics such as IT investment, top management support and organizational size on information systems success.

Top management support constitutes the most cited organizational factor influencing the success of IS performance in organizations (Petter, et all., 2013). Despite this, the variable's effect has been found to be inconsistent across studies (Petter, et all., 2013). Few analyses pointed to the positive, strong link that top management plays in bringing successful or effective IS performance (Kulkarni, Ravindran, & Freeze, 2006; Igbaria, Zinatelli, Cragg, & Cavaye, 1997). Other analyses pointed to weaker effects, concluding that the factor has a weak to moderate effect on IS success (Choe, 1996; Wang, Klein, & Jiang, 2006). Similar to other

organizational aspects, the study of the effect of top management support of information systems success only considered its relationship with a few dimensions among the six specified constructs outlined by the information systems success model. A meta-analysis conducted by Sabherwal, Jeyaraj and Chowa (2006) found that there is a strong, positive association between top management support and information systems success. Nevertheless, Petter, et all., (2013) reported that nearly half of their reviewed studies concluded that top management support was among the key organizational factors influencing IS success.

Previous scholarship on information systems success has noted the importance of IT competence (Levina & Vaast, 2005). Organizations equipped with a technical staff that is well versed in the organizations' industry are more likely to implement IS at a more effective rate compared to organizations with less capable teams. Further, other elements of IT competence, skills, knowledge of products and services in the sector, technology, and the combination of the three, have been found to influence levels of information systems success (Peppard & Ward, 2004). Organizations with better-skilled teams, possessing excellent marketing, leadership, and industry-specific skills, and teams who effectively use technology in enhancing their performance are likely to be better off in implementing IS platforms (Caldeira, & Ward, 2002).

A larger body of research has linked technology strategy to the successful effectiveness of technology in organizations (Galliers, & Leidner, 2014). Organizations with established standard operating procedures, clear targets, and transparent management policies are likely to adopt and implement technology such as information systems than organizations possessing less clear business and IT strategies (Melville, Kraemer, & Gurbaxani, 2004; Benbasat, Goldstein & Mead, 1987). Organizations equipped with more robust strategies incorporating technology,

clear targets, mechanisms of achieving business objectives, and evaluation tools assisting in monitoring progress, are found to be better in achieving successful information systems.

Information systems success has been extensively studied by various disciplines and numerous models have been proposed to measure it. The most widely utilized model of information systems success measurement was developed by DeLone and McLean (1992) and updated in DeLone and McLean (2003). The model originally included five dimensions of information systems success: information quality, system quality, ease of use, user satisfaction and net benefits. In the later update, the authors added a sixth dimension: service quality. Most studies have selected few dimensions, one to three, to measure information systems success in their studies. This study applies this strategy by including two of the original six dimensions: information quality and system quality. Moreover, the study adds a new dimension, information security, to those two in measuring information systems success in Saudi public organizations. This decision is informed by the recent recommendations by information systems scholars to consider information security in determining the information systems success (Laudon & Laudon, 2006: Tu & Yuan, 2014). The original DeLone and McLean, (2003) model is displayed in Figure 1 followed by the model constructed by this study in Figure 2.

While this research is concerned with the influence of top management support, IT competence, technology strategy, and organizational climate on information systems success, it controls for the rival explanation for information systems success, the organizational climate, and organization's nationality will be controlled to determine the magnitude and direction of the three main factors' effects on information systems success under exploration in this analysis.

This research is significant due to its theoretical value through testing empirically supported hypotheses in a new context. Organizational influence on information systems success

is a well-documented phenomenon when one considers the number of studies analyzing the various effects of organizations on information systems success in the West. Nevertheless, the story is not the same if one considers other contexts outside of the United States and Western Europe. Saudi Arabia is one of the largest economies in the Middle East where public, as well as private organizations, influence many social, technological, and environmental outcomes. This research allows the exploration of the organizational influence on information systems success in Saudi Arabia, a previously unexplored context marked with markedly distinct cultural traditions.

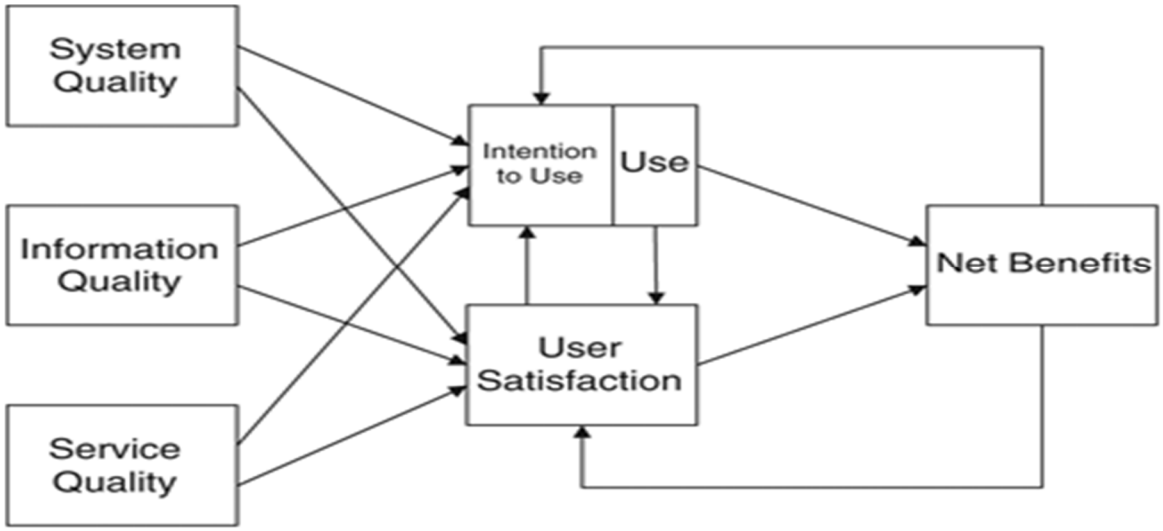

Figure 1. IS Success Model 2003 (DeLone & McLean, 2003).

The Proposed Model

This study aims to estimate the relationship between organizational factors and information systems success. Figure 2 represents the variables measured in the study. Organizational factors are shown on the left by the big box, the information systems success is shown on the right, and the moderating variables are in the middle.

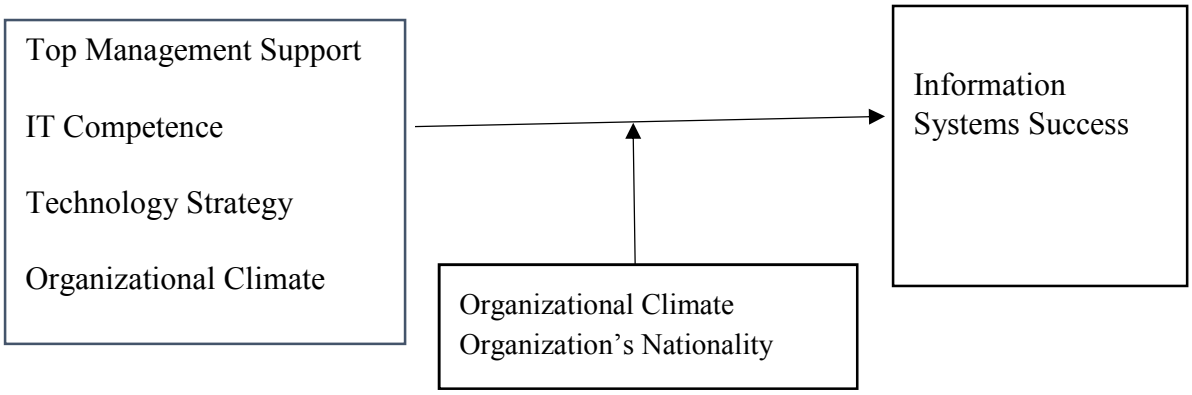

Figure 2. Proposed Model.

Objectives of the Research

This research aims to investigate the connection between top management support, IT competence, technology strategy and organizational climate and information systems success within Saudi public organizations. In doing so, it controls for the effects of organizational climate, as well as organization's nationality. Using a new data collected from a previously unexplored context, the public sector in Saudi Arabia, the study will estimate the proposed model using correlational analysis. This research will develop a recommendation for Saudi organizations on how to foster the best conditions for information systems success.

Research Questions:

1. To what extent does top management support relate to information systems success within Saudi public organizations?
2. To what extent does IT competence relate to information systems success within Saudi public organizations?

3. To what extent does technology strategy relate to information systems success within Saudi public organizations?
4. To what extent does organizational climate relate to information systems success within Saudi public organizations?
5. To what extent does organizational climate moderate all of the above relationships?
6. To what extent does the organization's nationality moderate all of the above relationships?

Limitations

This research suffers from a number of limitations:

First, the accuracy of this research is based on the honesty of employees responding to the questionnaire because employees may not accurately reflect their attitudes or behaviors in simply responding to an item on a questionnaire.

Second, the sample that would be used for the study is not a probability sample. This adds another subjective element to the research. Despite all difficulties and obstacles to reach a population of public sector employees in Saudi Arabia, the sample of employees to be questioned in the research is a convenience sample based on the researcher ability to access the population.

Delimitations

This research is limited to the following:

First, the choice of public organizations for the research is informed by the researchers' previous work experience, as well as accessibility. Not all organizations in the kingdom were considered simply because the author was not be able to travel to such locations. Only those in

Riyadh that are working in the security sector, where the researcher has worked for the past 15 years, will be visited.

Second, the sample used for this study was limited to IT employees because the literature favors them as the source of information due to the increased reliability of this information compares to other organizational groups.

Assumptions

Assumption 1: Self-reported answers to survey items are assumed to be the true responses for the items presented to participants.

Assumption 2: Saudi organizations are similar to those elsewhere.

Assumption 3: Information success can be realistically studied and measured.

Definitions

The definitions for the study variables are outlined in Table 2.

Table 2.

Variable Definitions

Variables	Definitions
Top Management Support	"The degree to which senior management understands the importance of the IS function and the extent to which it is involved in IS activities" (Petter, DeLone & McLean, 2013).
IT Competence	Refer to whether the organization possesses the necessary technical infrastructure, staff, and processes to be able to implement information systems successfully (Rezaei, Asadi, Rezvanfar, & Hassanshahi, 2009).
Technology Strategy	The plans and employees' awareness and capability of implementing such plans with respect to IT (Candra, 2012).
Organizational Climate	"Set of attributes which can be perceived about a particular organization and/or its subsystems, and that may be induced from the way that organization and/or its subsystems deal with their members and environment" (Hellriegel, & Slocum, 1974, p. 256).
System Quality	"Desirable characteristics of an IS" (Petter, DeLone & McLean, 2013, p 11).
Information Quality	"Desirable characteristics of the system outputs (content, reports, dashboards)". (Petter, et al., 2013, p. 11).
Information Security	"Protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability" (NIST, 2004, p. 7).

Chapter 2: Literature Review

This review provides a brief discussion of the organizational factors, top management support, IT competence, technology strategy and an organizational climate, that have been identified as determinants of information systems success. Scholars of information systems have also noted the possible influence of contextual characteristics such organizational climate and organization's nationality (Ancarani et al., 2009; Brown & Leigh, 1996; Crawford, 2008). The review also outlines the most utilized theoretical framework and measurement model for information systems success created by DeLone and McLean (2003). It also suggests a new dimension of information systems success, information security. Information security is arguably one of the most integral parts of any model measuring the success of any given information system regardless of the domain application (Chang, & Lin, 2007). Information systems may run efficiently, provide useful information and are easy to use, but insecure and jeopardizing the confidentiality, integrity, and availability of the system, the three most important functions of any IS, also known as the CIA triad (Chang & Lin, 2007).

Information Systems Success

Information systems success is essential for businesses growth, optimizing organizational functions and performance improvement (Laudon & Laudon, 2006). Thirty years ago, management information systems scholars have declared information systems success as the most important dependent variable in the field (Delone & McLean,1992). During the early 1990s, Delone and McLean (1992) synthesized a large amount of research devoted to the measurement of IS success and presented their findings in a succinct taxonomy shown below in Figure 3. Delone and McLean (1992) suggested that information systems success is multidimensional. First, the technical element of any given information system is captured by its

efficiency and accuracy of communicating the intended content. Second, the semantic element refers to the communication of intended meanings of the information being conveyed. Third, the effective component of information systems refers to the wide array of effects the system possesses on the receiver of information.

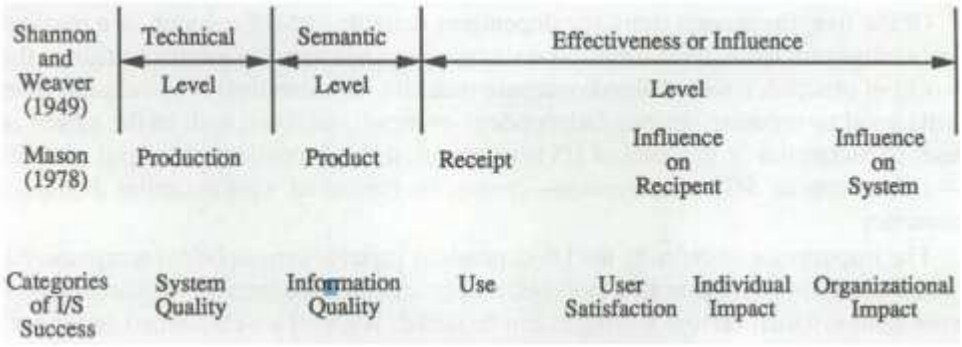

Figure 3. Categories of Information Systems Success (Delone & McLean, 1992).

The authors published an update 10 years later in 2003, commenting on the utility, validation, criticism, and applicability of the model. Given a lot of technological developments in information systems between 1992 to mid-2002, the authors believed that it would be beneficial to update their original theoretically driven model.

Delone and McLean (2003) operationalized the technical element by measuring the systems' quality. They used information quality to measure the semantic element, i.e., "the semantic level is the success of the information in conveying the intended meaning" (Delone, & McLean, 2003, p. 10), and use, user satisfaction, organizational impacts, and individual impacts as indicators to measure the effectiveness element.

The six dimensions of information systems success as shown in Figure 4 are said to be correlated. This assumption has several implications on the empirical investigation of IS success (Delone & McLean, 2003). Those varying degrees of information systems success, information

quality, and system quality influences individuals' levels of satisfaction and use of the system. This interaction affects the performance, productivity and a number of organizational outcomes resulting in varying individual, as well as organizational impacts (Delone and McLean, 2003).

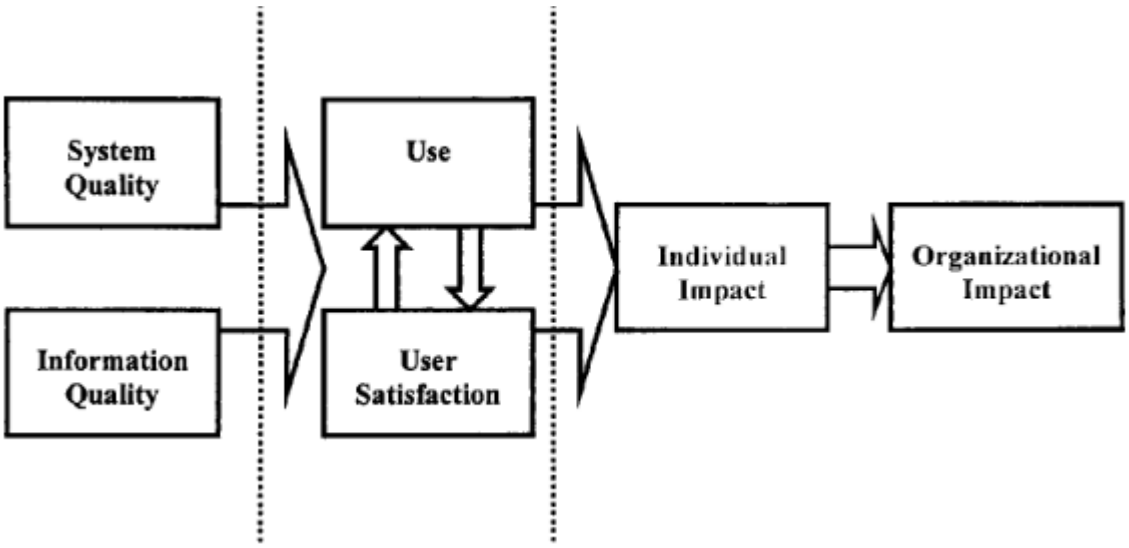

Figure 4. Updated IS Success Model 2003 (Delone and McLean, 2003).

The utilization of DeLone and McLean (2003) success model has been extensive. A simple search on Google Scholar for the Delone and McLean's information systems success model between 2012 and 2016 yielded more than 1,000 citations. The authors indicated that their model has been adopted as the brick and mortar of information systems evaluation and effectiveness in the management of information systems field. Nevertheless, the authors cautioned that many authors have not utilized the model properly overlooking their salient warnings about selectively choosing one or few of the dimensions rather than all of them. The authors concluded that information systems success is an interdependent process rather than a unidimensional construct.

This study modifies the information systems success measurement model proposed by DeLone and McLean (2003). Figure 2 above represents the newly constructed framework. First, information security is added as a separate dimension of information systems success. Second, the new model only uses information quality and system quality from the six proposed dimensions in the DeLone and McLean model. This decision has been taken for practical purposes. It would be difficult to measure all dimensions of information systems success given the limited scope of this project. Therefore, the author selected two of the most researched dimensions in the model: information quality and system quality. Adding information security to the model answers the recent calls by information systems success researchers to consider it as a significant element in the process.

Petter, et all., (2013) found a number of organizational characteristics cited by a great number of studies influencing dimensions of information systems success. Table 3 displays the organizational factors thought to influence information systems success in organizations.

Table 3.

Number of Relationships Supporting Organizational Factors and ISS Dimensions

Characteristic	System quality	Information quality	Service quality	Intention to use	Use	User satisfaction	Individual impact	Organizational impact	Summary NIS
Management support	NIS	-IS	-	-	NISSSSS	NNNNNISSSSSSSS	-ISSSS	-ISSS	7|22
Extrinsic motivation	-	-IS	-	NIS	-ISSSSSS	-	-	-	1|8
Management processes	-ISS	NISS	-	-IS	NISSS	NI-	-ISSS	NISS	4|13
Organizational competence	-	-IS	-	-	NISSSSSS	-	-	NISS	2|9
IT infrastructure	-	-ISS	-	-	-ISSSSS	NI-	-	NISSSS	2|11
IT investment	-	NI-	-	-	-IS	NI-	-	NI-	3|1
External environment	NI-	-	-	NIS	NNNISS	-	NI-	NISS	7|5
IS governance	-	-	-	-	-IS	NNIS	-	-	2|2
Organizational size	-	-	-	-	NNNI-	-ISS	-	-	3|2

Notes: N = not supported; S = supported; - = no studies.

Source: Petter, DeLone & McLean (2013)

The emergence of end-user computing led to the development of the service dimension to IS providers. This introduced service quality as another measure of information systems success. Pitt, Watson, and Kavan (1995) indicated that the failure to incorporate service quality in the exploration of information systems success does not accurately measure information systems success.

While models of information systems success emphasized systems quality, as well as information quality as separate dimensions of information systems success, the inclusion of those important dimensions seems to be insufficient in measuring the full range of information security. Information security is an important element in any information systems overall success (Chang & Lin, 2007). Once a breach occurs to an information systems infrastructure, its overall success diminishes. Therefore, a robust effective of any information systems should incorporate information security as a significant dimension of information systems success.

Organizational Determinants of IS Success

The literature on organizational connections to information systems success is vast (Sabherwal, Jeyaraj, & Chowa, 2006). This scholarship has pointed to the robust links among a number of factors with information systems success. In their extensive review of the determinants of information systems success. Petter, et all., (2013) concluded that top management support, IT competence, management process, information systems sophistication and extrinsic motivation all influence the level of information systems success. Others also linked information systems success to organizational characteristics including size, maturity, timeframe taken to implement information systems and management awareness of information systems (Leclercq, 2007; Dezdar & Ainin, 2011). The following is a brief outline of the relationship between each of these five predictors (top management support, IT competence,

technology strategy, organizational climate, and organization's nationality) and information systems success as an outcome.

Employee Perception of Top Management Support

Throughout the history of information systems success, researchers have pointed out the significance of top management support in the effectiveness of organizational IT projects success. Rockwell (1968) indicated that an effective use of information systems at any organization must begin with the chief executive officer. Kriebel (1968) concluded that whenever management is not involved in computer systems' development projects, those endeavors become economically disastrous. During the early rise of information systems, Adams (1972) suggested that for any information system to be successfully implemented, all levels of organizational management have to be at work in order for the project to succeed. During the 1980s, empirical evidence has concluded that top management support or senior involvement in information systems adoption and implementation projects serves as one of the most critical factors in the success of information systems deployment (Kanter, 1986; Applegate et al., 1988).

Management support reflects the "degree to which senior management understands the importance of the IS function and the extent to which it is involved in information systems activities" (Petter, et all., 2013). In the information systems success context, this refers to the financial, logistical, and visionary support top management awards the information systems team in their adoption, implementation, and maintenance of information systems frameworks (Hussien et al., 2007). Hwang, Lin, and Lin (2012) concluded that information systems success is contingent on organizational top management support, as well as training. Figure 5 displays the authors' direct effects model where an exogenous variable, top management support has positive correlations with information systems success.

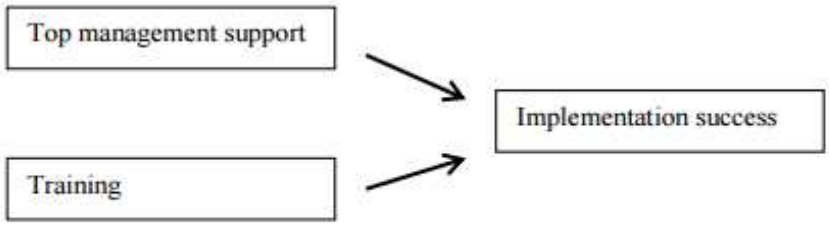

Figure 5. Direct Effects Model (Hwang, Lin, & Lin, 2012).

Fitriati and Mulyani, (2015) investigated the influence of organizational commitment to the success of accounting information systems' implementation. Using data from Central Java, Indonesia, the authors found that organizational commitment is positively correlated with accounting information systems' success. This finding confirms previous results indicating the significance of top management support and levels of IS sophistication in organizations in determining the success of information systems. However, Petter, et all., (2013) suggested that there is still more to learn about this relationship based on their review. The authors alluded to the lack of specificity concerning the types of management support provided for information systems success across many studies, leading to difficulties in generalizing conclusions using such a variable in determining information systems success.

Jarvenpaa and Ives (1991) conceptualized top management support within the IT context as the general involvement and participation in all technology related-organizational endeavors including the adoption and effectiveness of information systems. The authors alluded that top management support has been used to study various aspects relevant to information systems, including its adoption, type, implementation and evaluation (Boynton et al., 1994; Ang et al., 2001). Financial and logistical support for the planning, implementation, and evaluation of IS adoption offered by executive officers, Chief executive officers (CEO), Chief Financial Officers

(CFO), Human resource managers were associated with higher levels of information systems effectiveness (Jerneevopaa & Ives, 1991). King and Teo (1996) suggested that increased management involvement in technology strategy and deployment was associated with improved levels of implementation.

Igbaria et al. (1996) suggested that top management support improves many dimensions of information systems success. Their study found that increased organizational executive engagement with information systems activities improved levels of employees perceived information systems usefulness and ease of use. In a more systematic empirical analysis, Igbaria et al. (1997) found that top management support increases organizational net benefits such as "reduced search costs, cost savings, incremental additional sales, expanded markets and time savings" as well as information systems user satisfaction among end users in organizations. Ang et al. (2001) analyzed the role of top management on the total quality of IT outcomes in public organizations in Malaysia, finding that top management support was positively and significantly associated with all measures of IT quality, including information systems use. By the same token, Abdulla et al. (2005) found that the centralization and support of information systems within public organizations increased its efficient use and users' satisfaction in organizations.

Management in organizations tends to emphasize information systems success for business growth and performance (Thong, Yap, & Raman, 1996; Grewal, & Sambamurthy, 2002; de Guinea, et all., 2007). Their support has been highlighted as an important factor to securing critical information infrastructures in organizations (Fung & Jordan, 2002). By the same token, Hone and Eloff (2002) noted that organizations' capabilities of producing and utilizing quality information in business decision-making are contingent upon appropriate support offered

by top management. While top management support has been linked to information systems success, it has only been tested on few of the dimensions composing information systems success. This study extends this line of research by testing its effect on information quality, system quality, and information security.

Top management support happens to be the most vital factor when it comes to how information systems are to be implemented in an organization (Al-Mashari, 2003; Fui-Hoon Nah, Lee-Shang, & Kuang (2001); Schmidt et al., 2001; Smyth, 2001). Going by history, the management of information systems literature has always considered top management support a very important factor (Bassellier & Reich, 2001; Schein, 2006; Willoughby & Pye, 1977). It is important for the project to be highly prioritized by top management (Wee, 2000).

To run information systems very effectively, top management must show some commitment in the process of having to allocate resources when the need arises in other to aid a successful implementation process (Holland, Light, & Gibson., 1999). What this entails is allocating a realistic timeframe as well as making provisions for the right personnel for such project to be implemented.

According to Roberts and Barrar (1992) and Ke and Wei (2008) strategic as well as tactical actions can be taken by top management to ensure that organizational culture is greatly influenced. This will enable a culture conductive to not only be fostered but also ensure that information systems success is attainable. According to Chen and Popovich (2003), the success of information systems is dependent on how top management support is effective on any organization.

New objectives and goals should be legitimized by managers. The organization's vision should be well communicated across to employees. New responsibilities, roles and

organizational structures should be approved as soon as possible. New systems in companies should be set by top management through established policies. Whenever there tends to be conflict, it will be the duty of the managers to ensure that such is resolved (Roberts & Barrar, 1992).

Sharma and Yetton (2003) also explained that top management support can influence the effectiveness of information systems in a way which is positive. According to Elbanna (2013), communication tools are needed to ensure that management aligns with the project at hand. Kim, Lee, and Gosain (2005) also pointed out that top management is always vital when it comes to having a vision promoted. This will help in information systems success as well as that of information technology infrastructures. This is why top management is always expected to take part in the effectiveness of information systems (Dyba, 2005).

Nah, Zuckweiler, and Lee-Shang Lau, (2003) carried out a survey on officers of information and discovered that top management support is the most critical factor that can greatly influence the effectiveness of information systems in any organization. A research model was actually proposed by Law and Ngai (2007). The results showed that there is a positive relationship between information systems success and top management support.

Top management support is also another important condition for adoption of information systems success as well as information technology. According to Akkermans and van Helden (2002), a case study showed that top management support was one of the top factors which determined whether Enterprise resource planning (ERP) will be successful or not.

This is why activities of management, such as having conflicts resolved, having complementary structures introduced which can facilitate the use of such systems effectively and finally having norms which will strongly value the system reinforced, are all vital to the success

of information systems (Besson & Rowe, 2001; Somers & Nelson, 2004). According to Dong et al. (2009), for desired outcomes to be achieved, managers will have to ensure that their support actions are adjusted. This is because such success always requires a change of organizational context (Law & Ngai, 2007; Nah, et all., 2003). Organizational changes can get overcome by the higher levels of top management. This is the only way to guarantee an improved process of information systems success (Stelzer & Mellis, 1998).

Employee's IT Competence

Devece (2013) referred to IT competence as "the capacities, skills, and the tacit know-how about IT that an organization develops during a particular period of time. IT competence describes the firm's capacity to innovate using these technologies, converting available IT resources into strategic applications" (p.5). This view stems from earlier research originating from resource-based views of organizations. This line of thought concluded that organizational resources explain much of the variation in organizations' performance and productivity. Barney (1991) understood such resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc., controlled by a firm that enables the firm to conceive of and implement strategies that improve its efficiency and effectiveness."

In information systems research, competence generally refers to the ability to successfully evaluate information system platforms (Dhillon, 2005; Feeny et al., 1998; Gottschalk & Solli-Sæther, 2005). Benbasat and Reich (2003) suggested that there are two main components composing IT competence within an organization: IT knowledge and IT experience. While previous research has stressed the significance of organizational level competencies, this understanding of IT competence posits the main components within the individual. The authors

concluded that increased levels of IT knowledge and experience among managers improved levels of information systems success.

Feeny and Willcocks (1998) proposed nine essential elements organizations (leadership, business systems thinking, relationship building, architecture planning, making technology work, informed buying, contract facilitation, contract monitoring, and vendor development) must possess in order to implement information systems effectively. The nine core information system elements cover all periods involved in the planning, adoption, and implementation of information systems. The authors argued that if all of such components existed, a complete and robust IT competence ensues, ensuring a better effectiveness of information system projects. A similar model composed of six major areas of competencies was developed by Peppard et al. (2000). Those elements included strategy formulation, resource design, resource development, solution development, exploitation and monitoring of the solution, and process and information design. (Peppard et al., 2000).

Ravichandran et al. (2005) investigated the relationship between IT competencies and information systems success. The authors found that increased levels of IT competencies among organizations are associated with better IS performance. The study concluded that technological capabilities cannot stand alone in explaining the success rate of IS projects; their complements, including individual and management knowledge and experience, also account for a significant amount of the variation within organizations' IT success. An organization that develops human, technical skills and builds knowledge networks internally, as well as externally, is found to be the best candidate for being successful in implementing information systems.

IT competence refers to whether the organization possesses the necessary technical infrastructure, staff, and processes to be able to implement information systems successfully

(Rezaei, Asadi, Rezvanfar, & Hassanshahi, 2009). Organizations that align their vision and mission with IT knowledge focused on customers and are more adaptive to the fast-paced changing business environments and are more likely to have a successful information system. (Al Duwailah & Ali, 2013).

Petter, et all., (2013) noted that organizations with more competent IT managers are likely to succeed more in implementing information systems. The authors also alluded to the association between management processes, bureaucracy, decision-making style and change, and IS success. Organizations with more adaptable processes are likely to succeed more in implementing IS platforms. Also, the authors discussed the impact of organizational IT investment on levels of information systems success; organizations that allocate more investments in its IT infrastructure are likely to have better fate with IS effectiveness (Petter, et all., (2013). Many empirical analyses pointed to the positive link between IT competence and information systems success (Caldeira & Ward, 2002; Boynton, Zmud, & Jacobs, 1994; Armstrong & Sambamurthy, 1999; Rezaei, et all., 2009). Organizations equipped with technologies, a high-tech staff, and desire to embrace change and become better at utilizing available technologies are more likely to succeed in implementing information systems success (Caldeira & Ward, 2002).

Research on the effectiveness of information system has demonstrated that organizational capability is linked to organizations success of information systems (Liao, Kickul, & Ma, 2009). Many studies have indicated that the higher levels of technical capabilities at an organization, the better chances such organizations will have effective information systems (Caldeira & Ward, 2003; Zhu & Kraemer, 2005; Mishra, Konana, & Barua, 2007). The existence of research and development, training programs, and infrastructure, as well as appropriate human resource

management practices, have all been associated with increased levels of information systems success (Armstrong, & Sambamurthy, 1999; Melville, Kraemer, & Gurbaxani, 2004; Caldeira, & Ward, 2002).

Competence in the business world is becoming very important as a concept; reskilling, training, and developing the information technology workforce is essential to success. The process of training in software should be emphasized and implemented (Sumner, 1999). In other words, for employees to understand how the system relates to businesses, they will have to be trained. Extra training should be organized for managers as well as staff during the implementation process. For the needs of users to be met after installation, there is a need for a support program to be in place, such could be a help desk or user manual (Wee, 2000).

How IT is used is greatly influenced by the extent of managerial IT knowledge. Boynton et al. (1994) carried out a research on this and discovered that how IT is used or implemented in a company is always dependent on managerial IT knowledge. It has a direct and positive influence on its use. Hussein et al. (2007) also explained that there is a positive relationship between success dimensions of IS managerial IT knowledge. This implies that managers who understand the potentials which IT can bring to their businesses will have it promoted and vice versa. It was discovered that for information systems to be successful, managers must have knowledge regarding how it works. They must know its potentials and how it can meet the objectives of the business.

When business owners, as well as providers, have control over their systems, then there is no doubt that the knowledge of information systems will be critical to its success (Davenport 1998). Financial motivation from management is also needed for people managing the system (Chang & Park, 2004). Not paying attention to knowledge is costing lots of companies in the

long run. Firms are struggling to have their current systems captured, and they also struggling to identify the knowledge requirements (Davenport, 1998).

Knowledge capability is necessary when an organization needs to assimilate and understand its own system, and also it is necessary to make the best use of knowledge to ensure that high performances are achieved. It will provide a platform where enhanced competitiveness, human performance improvements, and substantial savings are achieved. By nature, it is multidisciplinary and integrates different concepts such as information systems, organizational theory, and strategic management. It tends to emphasize on integration and formalized approaches on how the information of an organization can be managed (Albers & Trinidad, 2006).

The major purpose of knowledge management is to ensure that knowledge is transferred within an organization amongst members that are in need of it. Retrieving, storing, and capturing of knowledge are vital to how it is transferred within an organization. Organizational knowledge happens to be a broad concept that entails both people as well as the concept (Davenport & Prusak, 1998). It can also be seen as a connection between artifacts as well as technical system (Guzman & Wilson, 2005). It can also be seen as the capability of an organization and also the gained experience of its members over the course of time (Tsoukas & Vladimirou, 2001).

Knowledge can also be seen as uncodified as well as codified (O'Dell & Grayson, 1998). It is explicit when visible and can be expressed. This knowledge can be transferred in data form, and it is easily expressed. Tacit knowledge is action based. It is not as easy to explain as explicit knowledge. However, it is the foundation that organizational knowledge has been built on (Nonaka & Takeuchi, 1995).

Many studies have indicated that the higher levels of technical capabilities at an organization, the better chances such organizations will have a successful implementation of IS (Caldeira & Ward, 2003; Zhu & Kraemer, 2005; Mishra, Konana, & Barua, 2007). The existence of research and development, training programs, and infrastructure, as well as appropriate human resource management practices, have all been associated with increased levels of successful implementation of information systems success (Armstrong & Sambamurthy, 1999; Melville, Kraemer, & Gurbaxani, 2004; Caldeira & Ward, 2002).

Technology Strategy

Early on during the 1970s and 1980s, researchers have pointed out to the significance of strategy in the effectiveness of organizational IT projects. McFarlan (1984) suggested that an information technology strategy unites various departments and employees' around a mutual vision concerning the value, role, and use of information systems in organizational productivity (Pollack, 2010). More specifically, technology strategy assists managers and stakeholders in identifying areas of strengths and weaknesses and focus scarce resources on needed change promoting positive organizational outcomes. Technology strategy also guides future development and adoption of new technologies and their use within organizations. All in all, IT/IS strategy has been found to directly influence information systems success (Ruohonen, 1996).

An information systems strategy entails what type of information systems should be purchased, its implementation process, and how its use will be evaluated. One of the most identified critical success factors in information systems success is the fit between the software package to be bought and the work of the organization as specified in the overall strategy (Holland & Light 1999; Sumner, 1999; Rosario, 2000). Improved levels of fit between

organization's' business processes and the functionality of the information systems were found to increase chances of information systems success. This finding has alluded to the link between strategic planning concerning customization, as well as information systems success. Organizations that have explicit strategic plans detailing the specific capabilities and functionality are more likely to succeed compared to those that do not (Holland & Light, 1999).

Holland and Light (1999) and Rosario (2000) also noted to the significance of the time implementation portion of the technology strategy as a critical factor in determining the success of information systems projects in organizations. The timing of purchase, the length of implementation, and deadlines for evaluation are crucial in improving the chances of successfully implementing information systems. Strategies that lack specific information concerning time and periods relevant to implementation and evaluation are likely to lead to chances of systems failure. Davenport (1998) found that rushing into purchasing information systems without adequate consideration of the various business implications on organizations is likely to lead to increased levels of information systems failure.

Sykes and Willcocks (2000), Rosario (2000), and Kuang, Lau, and Nah (2001), have all noted the importance of business process re-engineering in influencing information systems success. Technology strategy must contain the various business functions and processes the organization possesses, matching them with current IT functionality. The IT strategy must compare this with the available capabilities and functionality of the purchased system and specify the required steps to streamline it with its needs (Rosario, 2000; Kuang, et all., 2001). Business process re-engineering is distinct from customization since it aims to develop new things rather than altering already existing capability within the system (Sykes & Willcocks, 2000; Rosario, 2000). Information systems strategies must include detailed descriptions of

whether business processes would be altered contingent upon the re-engineering of the purchased system or not (Holland & Light, 1999). Failure to do so leads to increased levels of failure in implementing IS systems.

Falkowski et al. (1998) and Bingi et al. (1999) identified team management planning as an important factor in determining the success of IT projects. A team's composition, skills, and management are the main three elements of a teams' planning identified by the authors. (Cameron & Meyer, 1998). The study suggested that teams with more IT experience and knowledge were found to exhibit better information systems success performance. Caldas and Wood, (2000) studies IS teams' characteristics and found that those teams described as multidisciplinary, dedicated, composed of IT experts and consultants are found to be more competent in bringing positive outcomes with respect to information systems success. Moreover, other research has suggested that teams composed of individuals who are not only familiar with existing processes but also the best practices of the industry are better off in making a positive impact on IS projects' success (Bingi et al., 1999). Researchers have also noted the importance of specifying teams' management chain and change processes in the overall technology strategy, which are likely to influence information systems success (Appleton, 1999).

According to Gottschalk (1999), information strategy entails the plan of a company in relation to how information technology can be applied to ensuring that it is actualized. A term which is related to information that has been made use of on a constant basis is (strategic) information system planning. It is the process of strategizing how the goals of a company can be achieved using information technology approach (Lederer & Sethi, 1988). This involves using computer applications. This has to do with how information within an organization is being supplied and demanded. Such details could be the visions, goals, mission, plans, and guidelines of

the organization. It is always approved by management of the organization with a view to ensuring that the aspirations of the company are supported in the best way possible (Smits et al., 1997).

According to Blili and Raymond (1993), planning in any organization will get more critical once technology gets more vital to its products. They also pointed out that it is important for planning to get integrated into business strategy. Accordingly, to get successful information systems, organizations must have information strategy and system planning that are very effective (Fitzgerald, 1993; Premkumar & King, 1991). King and Teo (1997). Also, pointed out that strategic planning has to do with continuously improving capabilities of organizational infrastructures. In addition, they also suggested that a continuous improvement in IT/IS strategic planning is essential for any organization to be successful in technology. Gufroni, (2011) showed that for (strategic) information systems planning to be carried out effectively, companies ought to conduct external and internal business environments. According to Pollack (2010), information systems planning is a role that has to be carried out previously by system professionals. However, it is a process which now involves parties such as unit managers, top managers, systems professionals, customers, external stakeholders, alliance partners, and others (Ruohonen, 1996). Due to the fact that technology seems to be moving at a rapid pace, the planning approach needs to be re-evaluated regularly by companies. Also, there is a need for a rapid response by companies because they must quickly adopt apparent opportunities that start coming into existence (McNurlin et al., 2009). As researched by Issa-Salwe, Sharif, and Ahmed (2011), there are various factors which can affect IS success. These could be being able to align with IS strategies and corporate objectives, organization's maturity level, IT investment methodology, IS department measurement effectiveness, and implementation plan preparation. It was actually suggested by Khani, Nor, and Bahrami, (2011) that information system capabilities should be

emphasized on by organizations once information system is being developed. It was discovered in their study that the capabilities of information systems, such as business and technical dimensions, human resources, financial resources and so on, can determine the success of information systems. ITs planning process will involve negotiation, clarification, and having mutual understanding reached (Piccoli, 2008; McNurlin, et al., 2009). For instance, an agreement must reach regarding a production database, financial database, and marketing database to be built. What is to be done must, first of all, be agreed on. Once there is a failure to agree on sensitive issues by top management, such project, will be difficult to implement. This will bring about projects being halted on a temporary basis.

Organizational Climate

Organizational climate reflects "workers' perceptions of, and emotional responses to, the characteristics of their work environment" (Mahal, 2009, p. 2). In the same vein, organizational climate can be seen as that climate or atmosphere within an organization which workers are seeing to be real. Such can be in relation to developmental, supportive, creative and innovative team climate and so on (Patterson, Warr, & West, 2004). Organizational climate construct has always been objectively looked into by various researchers over the years (Dawson et al., 2008). It is a construct that is multidimensional in nature. This is why it has been evaluated by lots of experts in various ways (James & James, 1989). These are evaluations which directly relate to various issues such as communication, roles, and leadership (James & McIntyre, 1996).

Researchers have stated that climate may affect the organization in many ways (Diekhoff, Thompson & Denney, 2006). According to Moran and Volkwein (1992), organizational climate can be seen as those attributes which make an organization unique when compared to other companies. Such attributes could relate to trust, innovation, fairness, support, and cohesiveness.

They also pointed out that it is a platform through which cultural values of an organization are reflected upon.

Organizational climate has been discovered to have a very strong influence on the motivation of individuals working in such organization (Brown & Leigh, 1996). It can be conceptualized both at organizational and individual analysis levels. Psychological climate has to do with how an individual sees the work environment. One major factor or variable that has been known to play a great part in an employee's well-being is the organizational environment. It comprises various components or aspects within such an organization. These could be leadership behavior, working environment's layout, managerial style, support, and participation. All of them contributing as factors or components of organizational climate (Crawford, 2008).

Chaudhary, Rangnekar, and Barua (2013) gathered data from about 375 workers in 28 companies operating in India. The method of analysis employed was the hierarchical regression, which ensured that the relationship dynamics amongst the various variables were examined. It was further discovered that there wasn't any significant effect of climate strength on work engagement once climate quality has been controlled.

The proposition offered by field theory shows that there is a relationship between an organizational climate and the employees' behavior as well as the attitude of individuals who are working in such organization (Litwin & Stringer, 1968; Pritchard & Karasick, 1973). Ancarani et al. (2009) made use of hospitals to gather more facts about this research study. The relationship between the models of organizational climate as well as the satisfaction of patients was looked at. In order to have the relationship fully explored, data were gathered from seven hospitals located in Italy. There was a sample of about 625 workers (155 physicians and 470 nurses) and patients, which totaled about 1018. The questionnaire for organizational climate was based on

the idea of competing value framework while a survey instrument based on satisfaction of patients was used in the extraction of SERVQUAL scale. The relationship between climate as well as patient satisfaction was measured using structural equation modelling. It was discovered that models of innovation, change, and openness, as well as morale of workers and their cohesion, respectively, are related in a positive way to the satisfaction of patients.

Summary

Organizational characteristics have been linked to the success of information systems in organizations. This literature is at best a vast one with a barrage of studies linking various organizational factors, such as IT competence, top management support, technology strategy, and organizational climate, that have been identified as determinants of information systems success. Despite the proliferation of empirical studies on organizational links to information systems success, this is not the case in the Kingdom of Saudi Arabia. The kingdom is witnessing an information revolution where all types of organizations are evaluating and adopting various types of organizational systems. The assessment of the impact of organizational factors on information systems success is still infantile. This study attempts to fill this gap by developing a conceptual model proposed in Chapter 1 and test its empirical fit using the methodology specified in the following chapter.

Chapter 3: Methodology

Research Design

This dissertation attempts to evaluate the effect of top management support, IT competence, technology strategy, and organizational climate on IS success in Saudi organizations. To achieve this broad objective, the study aims to estimate the effects of top management support, IT competence, technology strategy, and organizational climate on information system effectiveness in public sector organizations in Saudi Arabia. To conduct this research, a descriptive correlational design has been devised to explore whether those factors influence information systems' success in organizations. Original data from employees working for three information management centers at the Ministry of Interior were gathered through an online survey. The correlational analysis was used to determine whether the level of top management support, IT competence, technology strategy, and organizational climate are associated with changes in information systems effectiveness levels.

This research utilizes the descriptive correlational design. Descriptive designs are appropriate for exploring associations between variables rather than explaining relationships among them. The purpose of this research is to determine if changes in organizational characteristics are associated with varying degrees of information systems success. This dissertation does not attempt to establish a causal model linking organizational variables to IS success. Therefore, the choice of correlational design is appropriate.

This study employs a cross-sectional study design. This means that the researcher will collected information from a sample through an online survey once rather than multiple times. This is important because one needs to be cautious in generalizing the results obtained from the

study. Cross-sectional designs suffer from numerous limitations. Cross-sections only offer researchers snapshots rather than trends of relationships analyzed, making it difficult to determine the existence, prevalence, and robustness of observed relationships among variables.

Population and Sample

The population of this research was Saudi employees within government organizations in the national security sector. This included all agencies within the Ministry of Defense, the Ministry of Interior, and all allied armed forces organizations including the National Guard. Many organizations within the government have adopted information systems to assist in the operation and implementation of the work assigned to the organization. Oracle products have been implemented almost at every ministry in the kingdom. The trend of assessment and implementing information systems within the work environment is expected to rise with the adoption of the new Vision of 2030 promising to revolutionize information technology within the kingdom.

The first organization is composed of a large information center tasked with the management of the ministry's clients' information as well as developing new instruments that better handle the repository, management, and analysis of the large databases. It is also tasked with harmonizing information gathering across the multiple units within the ministry, as well as other public organizations, to make informed decisions regarding the operation and implementation of data oriented decisions. The center also trains employees of the ministry, as well as other governments' staff, on how to utilize information systems and their related services. Moreover, they are responsible for the design, operation, and implementation of many programs initiated by the ministry to minimize the number of clients coming in physically. There are many services such as passports, identification cards, certificates, and other related services

administered through the various programs assigned to this organization. All of the databases related to these services are housed within the organization.

The second organization composing the sample of the study is a unit dealing with cybercrime management at the ministry. The agency is responsible for receiving, recording and retaining of all cybercrime complaints including, terrorism related threats, internet abuse and personal degradation on social media sites. The organization is constantly updating their databases and launched training programs to its staff on how to utilize the changing information systems structures within the organization.

In addition, this study includes an organization's nationality (American organization), as a moderating variable to statistically control other possible explanations for information systems success. Information systems have developed within the United States of America and Europe, and American companies have come up with standards, technologies, and capabilities for organizations to run effectively (Xue, Liang, Boulton, & Snyder, 2005).

Comparing any case to the United States will tell the researcher the differences in performance and effectiveness between that case and the United States. Recommendations could be made for that case, to improve the running of their information systems and organizational productivity, by understanding the relationship between information systems and other variables.

The sample for the study was taken from two anonymous organizations working within the Ministry of Interior and one American organization to statistically control for other possible explanation for information systems success, which generates a higher degree of internal validity. This study utilized convenience sampling to obtain the sample for the study. Despite the non-probability nature of this choice, this design allows the researcher to access a sample of

employees working for a large ministry of the government, the Ministry of Interior. The sample is 127 employees working for the two organizations within the ministry and 40 employees working at IS department at a large university in Southeast Michigan. This choice is pragmatic given the accessibility of the sample to the researcher. The researcher worked previously at the ministry, and obtaining access to the sample is easier compared to other organizations within the government.

Variables and Measurement

The dependent variable in this study is information systems success. As noted earlier, this variable has undergone extensive investigation and numerous measurement models have been proposed to capture its multi-dimensional structure. DeLone and McLean (2003) proposed a model with six information systems success dimensions: information quality, system quality, user satisfaction, net benefits, ease of use, and net benefits. Each refers to a distinct quality of information systems success. For this research, two dimensions were utilized in addition to information security. Information quality, system quality, and information security were used as measures for information systems success.

Information quality refers to the quality of information generated via the system (DeLone & McLean, 2003). Information outputs vary greatly from system to system. Those can be reports, tables, graphs, or combination of all three. When considering information quality, Gorla, et all., (2010) suggested four areas to examine: information accuracy, completeness, currency, and consistency. Accuracy refers to the fit between information produced and what it is supposed to represent in reality. Appendix A to this study includes the items used to measure information quality borrowed from Gorla, et all., (2010).

To measure accuracy, completeness, and currency, a number of characteristics were measured to construct the overall scale of information quality. Respondents in organizations were asked to indicate whether the information produced by the information system is accurate, complete, concise, always available, readily usable, easy to understand, appears readable, clear and well formatted. The reliability of this scale was 0.88, as reported in Sedera and Gable (2010). This scale also was validated and found valid to measure information quality by the same authors. Table 4 presents the Cronbach's alpha values of information quality for this study.

Table 4.

Information Quality Scale Reliability

	Number of items	Scale points	Cronbach's alpha
Information Quality	6	6	0.834

System quality refers to the extent to which the system is robust and technically sound (Gorla, Somers, & Wong, 2010). It represents the harmony of systems' components, including software and data related applications, as well as their interactions. A good system is indicated by the absence of bugs preventing its proper operation. Delone and Mclean (2003) indicated that system quality is assessed through examining its functionality, flexibility, ease of use, data quality and integration. This study utilizes Sedera and Gable (2010) measure presented, Appendix A, to capture the different facets of system quality. A number of indicators are used to assess system quality in this study. Respondents to the survey were asked about the system functionality, user requirements, system features, system accuracy, flexibility, sophistication, integration, and customization. The reliability of this scale was more than 0.88, as it was

validated by Sedera and Gable (2010). Table 5 presents the Cronbach's alpha values for system quality of this research.

Table 5.

System Quality Scale Reliability

	Number of items	Scale points	Cronbach's alpha
System Quality	6	6	0.836

Information security refers to the protection of information possessed by the organizations through applying the highest standards of confidentiality, integrity, and availability (Chang & Lin, 2007). Confidentiality refers to the extent to which information can be accessed. Typically, organizations must protect information from unauthorized access protecting the identity and sanctity of its clients (Chang & Lin, 2007). Integrity refers to the extent to which the information is valid (Chang & Lin, 2007). This means that organizations should only possess trustworthy, and accurate information. Availability refers to the reliability and existence of information by authorized users when needed (Chang & Lin, 2007). Organizations are expected to make information available to users in due time reliably. Information security quality is assessed through examining its confidentiality, integrity, and availability of the information system. This study utilized Chang and Lin (2007), which is presented in the Appendix A. This scale has acceptable reliability with higher than 0.73 and valid as reported in Chang and Lin (2007). Table 6 presents the Cronbach's Alpha values of information security for this study.

Table 6.

Information Security Scale Reliability

	Number of items	Scale points	Cronbach's alpha
Information Security	12	6	0. 926

The four main independent variables are top management support, IT competence, technology strategy, and organizational climate. Top management support refers to the breadth of interest and to the extent to which the highest levels of the organization, chief information officer, chief financial officer, senior executives, and leaders, are involved with the adoption, corporation, and evaluation of information systems. Support includes many things from providing sufficient funding to the projects to preparing appropriate environments to facilitate the success of information systems. Top management support is assessed through examining its "breadth of interest, support, and involvement of top or corporate management in IS and other information systems-related activities, and perception they hold about the IS ability to help achieve a competitive advantage, and their understanding of IS opportunities" (Elysee, 2012, p. 75). This analysis used Ragu-Nathan et al. (2004), which is outlined in the appendix. This scale was found to be reliable with 0.91 and valid as reported in Ragu-Nathan et al. (2004). Table 7 presents the Cronbach's alpha values of top management support for this study.

Table 7.

Top Management Support Scale Reliability

	Number of items	Scale points	Cronbach's alpha
Top Management Support	3	6	0. 812

Employees' IT competence refers to the depth and breadth of organization's, individual's and team's knowledge regarding the industry and all phases included within the sector. Knowledge capability is the systematic process of understanding, assimilating and applying an organization, to make the best use of knowledge to achieve sustainable competitive advantage and high performance" (Candra, 2012, p. 143). IT competence is assessed through examining employees understanding and assimilating of the system, and their ability to apply and share their knowledge and skills. This study utilizes Candra (2012) scale, which has been validated, and the Cronbach's alpha reliability coefficient was more than 0.7. The measure is outlined in Appendix A. Table 8 presents the Cronbach's alpha values of IT competence for this study.

Table 8.

IT Competence Scale Reliability

	Number of items	Scale points	Cronbach's alpha
IT Competence	8	6	0. 950

Technology strategy concerning IS refers to the plans and employees' awareness and capability of implementing such plans with respect to IT (Candra, 2012). This includes the

setting of clear objectives on how to incorporate IT solutions in the overall business strategy. It also includes whether employees' ideas were gathered and, they were trained to implement such plans. Technology strategy is assessed through examining its clarity of information systems plans, soliciting ideas from employees related to implementation, informing employees before the implementation, assessing the organizational changes needed to fully support the new system, and assessing of the capabilities of the new system (Elysee, 2012; Hann & Weber, 1996; Lederer & Salmela,1996; Lederer & Sethi, 1992; Lederer & Sethi, 1996). To measure this construct, a new scale was created by the supervisor of the dissertation, Dr. Bellamy, which is outlined in Appendix A. Table 9 presents the Cronbach's alpha values of technology strategy for this study.

Table 9 Technology Strategy Scale Reliability

	Number of items	Scale points	Cronbach's alpha
Technology Strategy	8	6	0. 956

This study will also measured organizational climate an independent variable and moderating variable. This research utilized Payne and Mansfield, (1978); the study utilized two dimensions, questioning authority and open-mindedness, because they are more relevant to this research than other dimensions. In addition, this scale has been validated and the Cronbach's alpha reliability coefficient, which was more than .80 for questioning authority and .90 for open-mindedness. The measure is outlined Appendix A. Table 10 presents the Cronbach's alpha values of organizational climate for this study.

Table 3.

Organizational Climate Scale Reliability

Organizational Climate	Number of items	Scale points	Cronbach's alpha
	8	6	0. 920

All items in the survey presented Appendix A are measured on 1—5 Likert scales, where 1= strongly disagree and 5= strongly agree. The survey instrument is based on previously validated scales utilized from the referenced authors in Appendix A. Before the administration of the instrument, the author presented the survey to two IS experts at his university and changes were made. In addition, all constructs measures were found to be reliable with higher than 0.7. The survey was also be translated into Arabic, and two researchers will validated the translation process.

Data Analysis

Descriptive statistics (means, median, and Standard deviations and measures of normality for all variables utilized in the study are described in the following chapter. After describing the data, a correlation analysis was used to evaluate the relationship between the dependent variable and each independent variable. This model also included the organizational climate and organization's nationality as moderating variables to statistically control for other possible explanation for information systems.

Chapter 4: Results

Descriptive Analysis of the Sample

There are a total of 167 participants who are from three organizations. One hundred twenty-seven of these participants are from two Saudi Arabian organizations making up about 76%. The remaining 40 participants are from one organization in the United States of America, making up about 24%. Table 11 shows descriptive Statistics for All Variables.

Table 11.

Descriptive Statistics for All Variables Used in the Analysis

Type	Frequency	Percent	Valid Percent	Cumulative Percent
Saudi Org 1	61	36.5	36.5	36.5
Saudi Org 2	66	39.5	39.5	76.0
US Org 3	40	24.0	24.0	100.0
Total	167	100.0	100.0	

Normality

Skewness and Kurtosis are used to examine the normality of data. Table 12 is showing that the skewness and kurtosis values obtained are between the range of +2 and –2. This implies that the data have been normally distributed.

Table 12.

Normality Testing for Variables Used in the Analysis

		IS Success	Information Quality	System Quality	Information Security	TMS	IT Competence	TS	OC
N	Valid	167	167	167	167	167	167	167	167
	Missing	0	0	0	0	0	0	0	0
Skewness		-.400	-.369	-.105	-.790	-.731	-1.081	-.272	.229
Std. Error of Skewness		.188	.188	.188	.188	.188	.188	.188	.188
Kurtosis		-.175	-.690	-.752	-.053	-.299	.189	-1.240	-.962
Std. Error of Kurtosis		.374	.374	.374	.374	.374	.374	.374	.374

¶

In order to answer the dissertation's questions, the researcher set up a correlation table for Pearson to measure relations and their significance using the SPSS program.

Results

1. **To what extent does top management support relate to information systems success -within Saudi public organizations?**

To examine this question, Pearson correlation was used to determine the direction and strength of the relationship between top management support and information systems success within Saudi public organizations. As shown in Table 13, in general, there is a significant, positive and strong relationship between top management support and information systems success ($r = .77$, $p < .01$, $n = 127$). In addition, each sub-dimension of information systems success, which includes information quality, system quality, and information security, was examined separately. It was found that there is a significant, positive, and strong relationship between top management support and information quality ($r = .581$, $p < .01$, $n = 127$). It was also found that there is a significant, positive, and strong relationship between top management support and system quality ($r = .609$, $p < .01$, $n = 127$). Finally, it was found that there is a significant, positive, and strong relationship between top management support and information security ($r = .763$, $p < .01$, $n = 127$).

2. **To what extent does IT competence relate to information systems success within Saudi public organizations?**

Table 13 shows that the relationship between IT competence and information systems success is statistically significant, positive, and strong ($r =. 735$, $p < .01$, $n = 127$). In the sub-dimensions of information systems success, which contains information quality, system quality, and information security, it was found that there is a strong as well as positive relationship between IT competence and information quality ($r = .500$, $p < .01$, $n = 127$). It was also found that the relationship between IT competence and system quality is statistically

significant, positive and strong (r =.683, p <.01, n = 127). Finally, it was found that the relationship between IT competence and information security is statistically significant, positive, and strong (r = .681, p < .01, n = 127).

3. **To what extent does technology strategy relate to information systems success within Saudi public organizations?**

Table 13 shows that the relationship between technology strategy and information systems success is statistically significant, positive, and strong (r = .640, p < .01, n = 127). In IS success sub-dimensions, which actually contained information quality, systems quality, and information security, it was revealed that technology strategy and information quality has a significant, positive, and strong relationship (r = .683, p < .01, n = 127). It was also found that there is a significant, positive and strong relationship between technology strategy and systems quality (r =.500, p < .01, n = 127). Finally, the study found that there is a significant, positive, and strong relationship between technology strategy and information security (r = .691, p < .01, n = 127).

4. **To what extent does organizational climate relate to information systems success within Saudi public organizations?**

Table 13 shows that there is a significant, positive and strong relationship between organizational climate and information systems success (r = .615, p < .01, n = 127). In addition, each sub-dimension of information systems success, which includes information quality, systems quality, and information security was examined separately. It was found that there is a significant, positive, and strong relationship between organizational climate and information quality (r = .523 p < .01, n = 127). The study also found that there is a significant, positive, and strong relationship between organizational climate and systems

quality ($r = .534$, $p < .01$, $n = 127$). Finally, this research found that there is a significant, positive, and strong relationship between organizational climate and information security ($r = .544$, $p < .01$, $n = 127$).

Table 13.

Correlation Results for All Variables Used in the Analysis

$N = 127$	IS Success	Information Quality	Systems Quality	Information Security
Top Management Support	.776**	.581**	.609**	.763**
IT Competence	.640**	.522**	.630**	.537**
Technology Strategy	.735**	.683**	.500**	.691**
Organizational Climate	.615**	.523**	.534**	.544**

*P. ≤ 05 **P. ≥ 01

5. To what extent does organizational climate moderate all of the above relationships?

Organizational climate was re-coded into two levels based on the median. Table 14 shows the median results of organizational climate in Saudi organizations. The moderating influence of organizational climate was used to test the strength and direction of the relationship between, top management support, IT competence, technology strategy and information systems success. The overall organizational climate scores that are lower than the median are considered as low-level organizational climate. On the other hand, those scores that are higher than the median scores are referred to as higher-level organizational climate.

Table 14.

Median Results in Saudi Originations

n=127	Valid	127
	Missing	0
Mean		23.02
Median		22.00
Std. Deviation		9.235
Minimum		8
Maximum		40

First, to examine the moderating impact of organizational climate on the relationship between top management support and information systems success, Table 15 was carefully analyzed. Under an organizational climate level that is low, the relationship between top management support and information systems success is statistically significant, positive, and strong ($r = .727$, $p < .01$, $n = 65$). In addition, there is a positive, significant, and strong relationship between top management support and information systems success under an organizational climate level that is high ($r=0.761$, $p<0.01$, $n=62$). Based on these findings, there is no organizational climate effect on the relationship between top management support and information systems success since the differences in correlation values isn't sufficient.

In addition, information systems success sub-dimensions, which include information quality, systems quality, and information security, were examined separately. In the case of low level of organization climate, there is a strong, positive, and significant relationship between top management support and information quality ($r = .564$, $p < .01$, $n = 65$). In the case of high level of organizational climate, there is a positive, strong, and significant relationship between top

management support and information quality ($r = .534$, $p < .01$, n = 62). Based on these findings, there is no organizational climate effect on information quality and top management support. This is because the correlation values don't have any significant difference between the two levels.

It was also revealed that in the case of low-level organizational climate, there is a significant, positive, and strong relationship between top management support and system quality ($r = .404$, $p < .01$, $n = 65$). In the case of high-level organizational climate, there is a significant, positive, and strong relationship between top management support and system quality ($r = .761$, $p < .05$, $n = 62$). Due to these findings, the relationship between top management support and system quality under high organizational climate is better due to the highest correlation value ($r = .761$, $p < .05$, $n = 62$).

It was also found that in the case of low-level organizational climate, there is a strong, positive, and, significant relationship between top management support and information security ($r = .713$, $p < .01$, $n = 65$). In the case of high-level organizational climate, there is a strong, positive and significant relationship between top management support and information security ($r = .748$, $p < .01$, $n = 62$). Due to these findings, the organizational climate doesn't have any kind of effect on information security and top management support. This is because their correlation values don't have much difference.

Second, to examine the moderating impact of organizational climate on the relationship between IT competence and information systems success, Table 15 was analyzed. Under an organizational climate level that is low, the relationship between IT competence and IS success is statistically significant, positive, and strong ($r = .581$, $p < .01$, $n = 65$). In addition, there is a

positive, significant, and strong relationship between IT competence and information systems success under organizational climate level that is high ($r = .635$, $p < .01$, $n = 62$). As a result, the relationship between IT competence and information systems success under high organizational climate is better due to the highest correlation value ($r = .635$, $p < .01$, $n = 62$).

In addition, information systems success sub-dimensions, which include information quality, system quality, and information security, was examined separately. In the case of low-level of organization climate, there is a significant, positive, and strong relationship between IT competence and information quality ($r = .585$, $p < .01$, $n = 65$). Under an organization climate level that is high, there is a significant, positive, and strong relationship between IT competence and information quality ($r = .415$, $p < .05$, $n = 62$). Due to this fact, the relationship between IT competence and information quality under low organizational climate is better due to the highest correlation value ($r = .585$, $p < .01$, $n = 65$).

It was also revealed that in the case of low-level organizational climate, there is a significant, positive, and strong relationship between IT competence and system quality ($r = .528$, $p < .01$, $n = 65$). Under high level of organizational climate, there is a significant, positive, and strong relationship between IT competence and system quality ($r = .672$, $p < .05$, $n = 62$). Due to these results, the relationship between IT competence and system quality under high organizational climate is better due to the highest correlation value ($r = .672$, $p < .05$, $n = 62$).

Finally, it was found that under low-level of organizational climate, there is a significant, positive, and strong relationship between IT competence and information security ($r = .418$, $p < .05$, $n = 65$). In the case of high level of organizational climate, there is a significant, positive and strong relationship between IT competence and information security ($r = .616$, $p < .01$, $n = 62$).

Due to these findings, the relationship between IT competence and information security under high organizational climate is better due to the highest correlation value ($r = .616$, $p < .01$, $n = 62$).

Third, to examine the moderating impact of organizational climate on the relationship between technology strategy and information system success, Table 14 was analyzed. Under an organizational climate level that is low, the relationship between technology strategy and information systems success is statistically significant, positive, and strong ($r = 0.605$, $p < 0.01$, $n = 65$ In addition, there is a positive, significant, and strong relationship between technology strategy and information system success ($r = .767$, $p < .01$, $n = 62$). As a result, the relationship between technology strategy and information systems success under high organizational climate is better due to the highest correlation value ($r = .767$, $p < .01$, $n = 62$).

In addition, each information system success sub-dimensions, which includes information quality, system quality and information security was examined separately. In the case of low level of organization climate, there is significant, positive and strong relationship between technology strategy and information quality ($r = .316$, $p = .10$, $n = 65$ Under organization climate level that is high, there is significant, positive and strong relationship between technology strategy and information quality ($r = .541$, $p < .01$, $n = 62$). As a result, the relationship between technology strategy and information quality under high organizational climate is better due to the highest correlation value ($r = .541$, $p < .01$, $n = 62$).

It is also found that under low level of organizational climate there is a significant, positive and strong relationship between technology strategy and system quality ($r = .529$, $p < .01$, $n = 65$). Under high level of organizational climate, there is a significant, positive and strong

relationship between technology strategy and system quality ($r = .767$, $p < .05$, $n = 62$). As a result, the relationship between technology strategy and system quality under a high organizational climate is better due to the highest correlation value ($r = .767$, $p < .05$, $n = 62$).

Finally, it is found that under low level of organizational climate there is a significant, positive and strong relationship between technology strategy and information security ($r = .570$, $p < .01$, $n = 65$). Under high level of organizational climate, there is a significant, positive and strong relationship between technology strategy and information security ($r = .747$, $p < .01$, $n = 62$). As a result, the relationship between technology strategy and information security under high organizational climate is better due to the highest correlation value ($r = .747$, $p < .01$, $n = 62$).

Table 15.

Moderating Influence of Organizational Climate (OC) for Saudi Organizations

OC_MOD		IS Success	Information Quality	System Quality	Information Security
n=65 LOW	Top Management Support	.727**	.564**	.404**	.713**
	IT Competence	.581**	.585**	.528**	.418**
	Technology Strategy	.605**	.316*	.529**	.570**
n=62 HIGH	Top Management Support	.761**	.530**	.761**	.748**
	IT Competence	.635**	.415**	.672**	.616**
	Technology Strategy	.767**	.541**	.767**	.747**

*P. ≤ 05 **P. ≥ 01

6. **To what extent does the organization's nationality moderate all of the above relationships?**

In this study, Nationality of the organization is used as moderating variable to examine the impact of the organizational nationality on the relationships between top management support, IT competence, technology strategy, organizational Climate, and information systems success.

In the first place, in Saudi organizations, there is a positive, strong as well as significant relationship between top management support and information system success ($r = .776$, $p < .01$, $n = 127$). In the case of American organization, the relationship between top management support and information system success is strong, positive and significant too ($r = .788$, $p < .01$, $n = 40$). Due to this fact, organizational nationality has no effect on the relationship between (information systems success and top management support). This is because the difference which exists between correlation values isn't sufficient enough.

In addition, each information systems success sub-dimension, which comprises information quality, system quality and information system security was examined separately, in the case of Saudi organizations, there is a positive, strong as well as significant relationship between top management support and information quality ($r = .581$, $p < .01$, $n = 127$). In the same vein, top management support and information quality tend to have strong, positive significant relationship in American organization ($r = .531$, $p < .01$, $n = 40$). As a result, organizational nationality doesn't have any effect or influence on top management support and information quality due to the fact that the correlation values difference for both countries are insufficient.

It was also found that in the case of Saudi organizations, there is a positive, strong, and significant relationship that tends to exit between top management support and system quality ($r = .609$, $p < .01$, $n = 127$). The same relationship can also be said of American organization between top management support and system quality ($r = .634$, $p < .01$, $n = 40$). Due to this fact, there is no effect on the relationship between top management support and system quality as a result of insufficient correlation values difference.

Also, it was found that in the case of Saudi organizations, there is a strong, significant, and positive relationship between top management support and information security ($r = .763$, $p < .01$, $n = 127$). The same can be said of the American organization in the relationship between top management support and information security ($r = .776$, $p < .01$, $n = 40$). Due to this, organizational nationality doesn't influence top management support and information security relationship. This is because of low correlation values difference which are insufficient.

Examining the moderating impact of organizational nationality on the relationship between IT competence and information system success. As shown in Table 16, in Saudi organizations, there is significant, positive and strong relationship between IT competence and information system success ($r = .640$, $p < .01$, $n = 127$). In American organization, there is significant, positive, and strong relationship between IT competence and information system success ($r = .524$, $p < .05$, $n = 40$). As a result, the relationship between IT competence and information system success in the Saudi organizations is stronger due to the highest correlation value ($r = .524$, $p < .01$, $n = 127$).

In addition, each sub-dimension of information systems success, which includes information quality, system quality, and information system security was examined separately. In Saudi organizations, there is a significant, positive and strong relationship between IT

competence and information quality ($r = .522$, $p < .01$, $n = 127$). In American organization, there is a significant, positive and strong relationship between IT competence and information quality ($r = .423$, $p < .05$, $n = 40$). As a result, the relationship between IT competence and information quality in Saudi organization is better due to the highest correlation value ($r = .522$, $p < .01$, $n = 127$).

It was also found that in the Saudi organization, there is a significant, positive, and strong relationship between IT competence and system quality ($r = .630$, $p < .01$, $n = 127$). In American organization, there is a significant, positive and strong relationship between IT competence and system quality ($r = .424$, $p < .5$, $n = 40$). As a result, the relationship between IT competence and system quality in the Saudi organizations is stronger due to the highest correlation value ($r = .630$, $p < .01$, $n = 127$).

Finally, it was found that in the Saudi organizations, there is a significant, positive and strong relationship between IT competence and information security ($r= .537$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive, and strong relationship between IT competence and information security ($r = .479$, $p < .05$, $n = 40$). As a result, the relationship between IT competence and information security in the Saudi organizationd is stronger due to the highest correlation value ($r = .537$, $p < .01$, $n = 127$).

Examining the moderating effect of organizational nationality on the relationship between technology strategy and information system success. As shown in Table 16, in Saudi organizations, there is a significant, positive and strong relationship between technology strategy and information system success ($r = .735$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive, and strong relationship between technology strategy and information

system success ($r = .853$, $p < .01$, $n = 40$). As a result, the relationship between technology strategy and information system success in the American organization is stronger due to the highest correlation value ($r = .853$, $p < .01$, $n = 40$).

In addition, each sub-dimension of information systems success, which includes information quality, system quality, and information system security, was examined separately. In the Saudi organizations, there is a significant, positive, and strong relationship between technology strategy and information quality ($r = .500$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive, and strong relationship between technology strategy and information quality ($r = .658$, $p < .01$, $n = 40$). As a result, the relationship between technology strategy and information quality in the American organization is stronger due to the highest correlation value ($r = .658$, $p < .01$, $n = 40$).

It was also found that in the Saudi organizations, there is a significant, positive, and strong relationship between technology strategy and system quality ($r = .683$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive and strong relationship between technology strategy and system quality ($r = .778$, $p < .01$, $n = 40$). As a result, the relationship between technology strategy and system quality in the American organization is better due to the highest correlation value ($r = .778$, $p < .05$, $n = 40$).

Finally, it was found that in the Saudi organizations, there is a significant, positive, and strong relationship between technology strategy and information security ($r = .691$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive, and strong relationship between technology strategy and information security ($r = .747$, $p < .01$, $n = 40$). As a result, the

relationship between technology strategy and information security in the American organization is stronger due to the highest correlation value ($r = .747$, $p < .01$, $n = 40$).

Investigating the moderating impact of organizational nationality on the relationship between organizational climate and information system success. As shown in table 16, in Saudi organizations, there is a significant, positive, and strong relationship between organizational climate and information system success ($r = .615$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive and strong relationship between organizational climate and information system success ($r = .633$, $p < .05$, $n = 40$). As a result, the relationship between organizational climate and information system success in the American organization is better due to the highest correlation value ($r = .633$, $p < .01$, $n = 127$).

In addition, each sub-dimension of information systems success, which includes information quality, system quality, and information system security, was examined separately. In the Saudi organizations, there is a significant, positive, and strong relationship between organizational climate and information quality ($r = .523$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive, and strong relationship between organizational climate and information quality ($r = .451$, $p < .05$, $n = 40$). As a result, the relationship between organizational climate and information quality in Saudi organizations is stronger due to the highest correlation value ($r = .523$, $p < .01$, $n = 127$).

It was also found that in the Saudi organizations, there is a significant, positive and strong relationship between organizational climate and system quality ($r = .534$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive and strong relationship between organizational climate and system quality ($r = .546$, $p < .5$, $n = 40$). As a result, the relationship

between organizational climate and system quality in American organization is stronger due to the highest correlation value ($r = .546$, $p < .01$, $n = 127$).

Finally, it was found that in the Saudi organizations, there is a significant, positive, and strong relationship between organizational climate and information security ($r = .544$, $p < .01$, $n = 127$). In the American organization, there is a significant, positive and strong relationship between organizational climate and information security ($r = .591$, $p < .05$, $n = 40$). As a result, the relationship between organizational climate and information security in the American organization is stronger due to the highest correlation value ($r = .591$, $p < .01$, $n = 127$).

Table 16.

Correlation Results for All Variables in the Saudi Arabia and the United States of America

SA		IS Success	Information Quality	System Quality	Information Security
n=127	Top Management Support	.776**	.581**	.609**	.763**
	IT Competence	.640**	.522**	.630**	.537**
	Technology Strategy	.735**	.500**	.683**	.691**
	Organizational Climate	.615**	.523**	.534**	.544**
USA	Top Management Support	.788**	.531**	.634**	.776**
n=40	IT Competence	.524**	.423**	.424**	.479**
	Technology Strategy	.853**	.658**	.778**	.747**
	Organizational Climate	.633**	.451**	.546**	.591**

*P. ≤ 05 **P. ≥ 01

Conclusion

The analysis of the study found that top management support, information technology competence, technology strategy, organizational climate have a significant, positive, and strong relationship with information systems success in the Saudi organizations. In addition, organizational climate has no effect on the correlation between top management support and information system success. However, the organizational climate has a small effect on the correlation between IT competence as well as technology strategy on information systems success. Organizational nationality has no effect on the relationship between top management support and information systems success. In addition, the relationship between IT competence and information systems success in the Saudi organizations is stronger due to the highest correlation value. However, the relationship between technology strategy and information systems success in the American organization is better due to the highest correlation value.

Chapter 5: Discussion

This study has found significant findings in its field; hence, the researcher will discuss and present these findings in detail in this chapter.

Discussion

The study found a significant, positive, and strong relationship between information systems success as well as top management support within Saudi public organizations. The study found a stronger correlation between top management support and the sub-dimension of information systems success referred to as information security. It seems that top management support aids the human element in the information systems' success process by providing the necessary motivational, logistical, training and financial support to the team who is involved in implementing information systems. For instance, top management in organizations can update the necessary technology, provide advanced training in information security, increase compliance with information security policies and map out the evaluation process for information systems implementation.

The outcomes of the findings suggested that chief executive officers (CEOs) should support other employees to ensure the success of the information systems, in other words, top management in any organization must provide all support to information systems project, such as training, financial backing, and technical support, to ensure that IS/IT employees get all support that is needed for success. Management has often stressed the roles of a successful information system in the process of having organizational goals and objectives achieved. Furthermore, information systems will likely not be successful without the necessary financial commitment and support on the part of management. It is very important that top management supports information systems project in lots of ways. Top management support is vital to the process of

having to secure important information infrastructures in any organization (Fung & Jordan, 2002). In the same vein, Hone and Eloff (2002) explained that support is most important when it comes to the quality of information produced over the course of time in an organization, especially in the process of reaching decisions on pressing issues. The influence of the attitude of management on how information is processed is always tested (Bulgurcu, Cavusoglu, & Benbasat, 2010).

It has been found in this study that information technology competence is very important when it comes to information systems effectiveness in Saudi public organizations. It has been further suggested that companies should devise means through which the IT skills of their employees will be improved upon to ensure that the system is successful. It is important for workers to have the necessary skills for IS/IT projects to be successful. This is why management needs to ensure that the skills of workers are developed to align with the requirements of such a project. The study found a stronger correlation between IT competence and the sub-dimension of information success referred to as system quality. According to the study's findings, when individuals and teams have IT knowledge capability, the system quality will be more effective because this knowledge and skill will be applied and used and that makes the system functionality, features, flexibility, sophistication, and integration work more effectively.

It has been discovered that the better the ability of employees technically, the higher the chances of IS success (Zhu & Kraemer, 2005; Mishra, Konana, & Barua, 2007). Variables that can be associated to IS success are research and development existence, training programs as well as infrastructure, and effective practices related to human resource management (Melville, Kraemer, & Gurbaxani, 2004; Caldeira & Ward, 2002). For an IS project to be successful, users need to be adequately trained. Scaling of software, as well as hardwires, may require days.

However, when it comes to going through the learning curve, such may require months (Crowley, 1998). Through sufficient training, employees get retained. According to Graig (2000), organizations that are in the process of having ERP projects implemented or are considering the idea must look into the issue of employee retention.

Secondly, the findings found that technology strategy has a vital role in information systems success within the public organizations in Saudi Arabia. It showed that technology strategy will enable companies or organizations to have an efficient information system. The strategy for information systems success has been discovered to be dependent on background. This is why a successful method in a company may bring about a different result when used in another company. The strategy as well as approach of an IS must be structured or tailored in such a way that it can meet the needs of the company that it is being used in. Whenever you are attempting to come up with a technology strategy, ensure that you have analyzed the limitations that are in your company. These could be available timeframe, financial resources, skilled personnel, and others. The study found a stronger correlation between technology strategy and the sub-dimension of information systems success referred to as system security. It seems that technology strategy aids the information systems security success by providing the essential assessment, plans, and proper strategies to support the IT team secure the system. For instance, updating necessary technology plans, providing advanced technology, increasing compliance with information security policies, assessing and increasing the IT team's awareness and capability of information systems security will secure the information systems in the organizations by providing confidentiality, integrity, and availability of the information system.

Holland and Light (1999) and Rosario (2000) pointed out how technology strategy relates to time in the process of having to successfully implement IS projects in public organizations.

These could be the time of purchase, the time length for implementing, and evaluation deadlines can significantly have the chances of an IS successfully implemented. Those strategies that don't have any specific timing regarding when they will be implemented and evaluated will likely not succeed over the course of time. According to Davenport (1998), when an IS system is bought without its business implications being taken into consideration, it could lead to increased levels of IS failure. According to Minahan (1998), companies always make the mistake of not devising proper strategies on how to ensure a successful implementing of IT. They neither have a complete and comprehensive understanding of ERP nor know what is required to have it successfully implemented.

The study found that organizational climate is a very significant factor in information systems success-within Saudi public organizations. The study found that good organizational climate has a significant role to play in the effectiveness of information systems within the Saudi public organizations. This could be seen as the platform created for workers and every member of staff to strive. Management needs to implement policies that are aimed at creating and sustaining the perfect climates that workers can be at their best during such projects. The study found a stronger correlation between organizational climate and the sub-dimension of information systems success referred to as system security. The study found that organizational climate aids the human element in the information systems' success process. For instance, providing a healthy climate by allowing individuals to question the authority and encourage them to criticize policies, decisions, and point out security vulnerabilities and bugs will secure and protect confidentiality, integrity, and availability of the information system.

Also in the study, the organizational climate was used as a moderating variable to test the relationship between information systems success and top management support, IT competence

and technology strategy. It was eventually found that the organizational climate had no impact on the relationship between top management support and information systems success within Saudi public organizations. It was also found that organizational climate has moderated the correlation between technology strategy and information systems success in public organizations in Saudi Arabia. That means a good organizational climate will likely increase the correlation between IT competence and information systems success. In addition to this fact, organizational climate was actually seen in this study as a good moderating variable in terms of its influence on the correlation between information technology competence and information systems success in organizations located in Saudi Arabia. It indicated that a good organizational climate will increase the relationship between IT competence and information systems success.

The study also researched the effects of top management support, technology strategy, IT competence, and organizational climate on the information systems success in an organization in the United States of America. It was compared with what was found in the case of public organizations in Saudi Arabia. It was found that there was no major difference between top management support and information systems success in both settings, as the same outcomes were likely to be experienced. Also, there is a strong relationship between both information systems success and technology strategy in both countries; it was, however, discovered that due to higher correlation value, the organization in the United States of America tends to be better. Also, it found that there is a strong as well as positive relationship between information systems success in organizations and information technology competence in both America and Saudi organizations. However, the organizations in Saudi Arabia tend to be better due to higher correlation. Finally, organizational climate and information systems success within Saudi and

American organizations have a significant, positive, and strong relationship. However, based on the higher correlation value organization in the United States of America tend to be better.

Saudi Arabia has a unique cultural fabric. Because of the strong bond that exists among its people. Social capital levels in Saudi Arabia are higher compared to those in the west (Palmer et al., 1984 as cited in Baker et al., 2010). Apart from this fact, the workforce is only made up of a very small population of females. Also, the average working age in Saudi Arabia is lower compared to the most developed countries around the world (Al-Gahtani, 2004).

Limitations and Future Research:

This research suffers from a number of limitations, such as the accuracy of this research is based on the honesty of employees responding the questionnaire because employees may not accurately reflect their attitudes or behaviors in simply responding to an item on a questionnaire. In addition, the sample that was used for the study was not a probability sample. This adds another subjective element to the research. Despite the access to the hard to reach a population of public sector employees in Saudi Arabia, the sample of employees were questioned in the research were a convenience sample based on the researcher ability to access the population. This limits the ability to make generalizable statistics about the population of the study, Saudi public organizations. Future research may utilize probability sampling techniques to ensure that all employees have equal chance to be selected.

This research was limited to the choice of public organizations for the research is informed by the researchers' previous work experience, as well as accessibility. Not all organizations in the kingdom were considered simply because the author was not able to travel to such locations. Only those in Riyadh that are working in the security sector, where the researcher has worked for the past 15 years, were visited. Further studies may at least select one

organization from all regions (13 regions) in Saudi Arabia. This sample will be a good reflection of the entire organizational populace in Saudi Arabia.

In addition, the sample was used for this study was limited to IT employees because the literature favors them as the source of information due to the increased reliability of this information compared to other organizational groups. Since all employees that are working in IT department in security organizations within Ministry of Interior in Saudi Arabia were men, this study was limited to men only. Future research may select a sample that reflects both women as well as men since the law in Saudi Arabia has been recently adjusted to enable women to play more active roles in the working force.

Future research should consider all dimensions of information systems success as outline by Delone and McLean (1992) thus, research only considered two dimensions (system quality and information quality). Future research should study the significant relationships between all information systems success dimensions (information quality, system quality, service quality, system use/usage intentions, user satisfaction, and net system benefits) and their correlation with information systems success.

With the increase of information security importance for today's organization work, future research should focus on information security as a relevant dimension for information system success. This research recommends future researchers to constructs objective reliable and valid measures of information security.

Research Implication

This research is concerned with the influence of top management support, IT competence, and technology strategy on information systems success. It controlled for the rival

explanation for IS success, the organizational climate and organization's nationality will be controlled for, to determine the magnitude and direction of the three main factors' effects on information systems success under exploration in this analysis. This research is significant due to its theoretical value through testing empirically supported hypotheses in a new context. Organizational influence on information systems success is a well-documented phenomenon when one considers the number of studies analyzing the various effects of organizations on information systems success in the West. Nevertheless, the story is not the same if one considers other contexts outside of the United States and Western Europe. Saudi Arabia is one of the largest economies in the Middle East where public, as well as private organizations, influence many social, technological, and environmental outcomes. This research allows the exploration of the organizational influence on information systems success in Saudi Arabia, a previously unexplored context marked with markedly distinct cultural traditions.

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APPENDICES

Appendix A: Survey

This survey is being conducted by the College of Technology at Eastern Michigan University. It aims to investigate the connection between top management support, IT competence and technology strategy and IS success controlled by Organizational Climate within Saudi public security organizations. Your identity will remain completely anonymous. Please return the completed survey within a month from receiving the Survey.

Information System Success:

1- Information Quality

Use the following scale for the next set of questions:	5 - Agree 4 - Slightly Agree 3 - Neither Agree/Disagree 2 - Slightly Disagree 1 - Disagree

1. ___ Information needed from our information systems is always accurate.
2. ___ Information needed from our information systems is always available.
3. ___ Information needed from our information systems is always in a form that is readily usable.
4. ___ Information needed from our information systems appears readable, clear and well formatted.
5. ___ Information needed from our information systems is concise.

6. ___ Overall, I'm satisfied with Information Quality provided by my organization's information systems.

Adopted from Sedera & Gable, (2010).

2- System Quality

Use the following scale for the next set of questions:	5 - Agree
	4 - Slightly Agree
	3 - Neither Agree/Disagree
	2 - Slightly Disagree
	1 - Disagree

7. ___ Our information systems are equipped with necessary features and functions.
8. ___ Our information systems always do what I want to do.
9. ___ Our information system user interface can be easily adapted to one's personal approach.
10. ___ Our information system requires only the minimum number of fields and screens to achieve a task.
11. ___ All data within our information system is fully integrated and consistent.
12. ___ Our information system can be easily modified, corrected or improved.

Adopted from Sedera & Gable, (2010).

3- Information System Security.

Use the following scale for the next set of questions:	5 - Agree
	4 - Slightly Agree
	3 - Neither Agree/Disagree
	2 - Slightly Disagree
	1 - Disagree

14. ___ My organization enforces security controls (such as the cryptographic system) to protect sensitive information and proprietary/business secrets.

15. ___ Unauthorized employees are prohibited from accessing organization's information resources.

16. ___ Employees must follow organization policy and regulations when releasing or transmitting information.

17. ___ My organization has well-implemented security practices to protect important information from stolen by malicious intrusions (such as break-in, Trojans, and spy-wares).

18. ___ Information security measures are implemented in my organization to prevent sensitive information from unauthorized disclosure.

19. ___ My organization constantly updates information resources and regularly creates information backups.

20. ___ My organization regularly conducts a risk assessment and updates security plans to reduce the probability of loss of information.

21. ___ When acquiring important information from the information sources or business partners, employees will store it into the organization's database.

22. ___ My organization has security controls (such as change management procedures) in place to prevent unauthorized information changes (creation, alteration, and deletion).

23. ___ The database is periodically reconciled and regularly maintained in my organization to increase the accuracy and reliability of information.

24. ___ There are well-established information access control procedures in your company, to make sure that for any particular information resource only authenticated users with right privileges can access such resource.

25. ___ A legitimate user with business needs can access organization information at any time and at any place.

Adopted from Ernest Chang & Lin (2007)

Top management support

Use the following scale for the next set of questions:	5 - Agree
	4 - Slightly Agree
	3 - Neither Agree/Disagree
	2 - Slightly Disagree
	1 - Disagree

26. ___ Top management reviews the information system's problems and provides necessary support to resolve it.

27. ___ Top management supports the IS function.

28. ___ Top management keeps the pressure on operating units to work with IS.

Adopted from Candra. (2012).

IT Competence.

Use the following scale for the next set of questions:	5	-	Agree
	4	-	Slightly Agree
	3	-	Neither Agree/Disagree
	2	-	Slightly Disagree
	1	-	Disagree

29. ___ I knew the general concept and functions of Information systems before our company adopted it.

30. ___ I am qualified enough to perform tasks using Information systems.

31. ___ I have superior skills and capabilities to perform tasks using Information systems.

32. ___ I can apply the knowledge derived from Information systems to our tasks.

33. ___ I can share knowledge derived from Information systems with others in the same department.

34. ___ I can share knowledge derived from Information systems across departments.

35. ___ I can share my knowledge with others through the Information systems network.

36. ___ Overall, I fell that I have the capability to achieve the objectives of tasks by using the Information systems.

Adopted from Candra. (2012).

Technology Strategy.

Use the following scale for the next set of questions:	5 - Agree
	4 - Slightly Agree
	3 - Neither Agree/Disagree
	2 - Slightly Disagree
	1 - Disagree

37. ___ There was a clear plan for implementing the new technology.

38. ___ Employees ideas were solicited concerning the selection and implementation of the new technology.

39. ___ There was a clear plan for implementing the new technology

40. ___ Management had a clear understanding of the objectives for new technology

41. ___ Employees were well trained to use the new technology before it was implemented.

42. ___ Employees were well informed of the new technology before it is implemented

43. ___ Assessment of the organizational changes needed to fully support the new technology.

44. ___ Assessment of the capabilities of the new technology.

Created by Dr. Bellamy

Organizational Climate.

Use the following scale for the next set of questions:	5 - Agree
	4 - Slightly Agree
	3 - Neither Agree/Disagree
	2 - Slightly Disagree
	1 - Disagree

45. ___ Criticism of policies and practices is encouraged.

46. ___ When people disagree with a decision, they work to get it changed.

47. ___ Many people will not hesitate to give strong support to a project that senior management is opposed to.

48. ___ People delight in challenging official policies.

49. ___ Errors and failures are talked about freely so that others may learn from them.

50. ___ No one needs to be afraid of expressing extreme or unpopular viewpoints here.

51. ___ People here speak out openly.

52. ___ People here feel free to express themselves impulsively.

Adopted from Payne, & Mansfield, (1978).

Appendix B: Human Subjects Study Completion Form

RESEARCH @ EMU

UHSRC Determination: **EXEMPT**

DATE: **April 28, 2017**

TO: **Saud Alsahli, P.h.D**
Eastern Michigan University

Re: **UHSRC: # 1059903-1**
Category: Exempt category 2
Approval Date: April 28, 2017

Title: **The Influence of Top Management Support, IT Competence, Technology Strategy, Organizational Climate, and Organization's Nationality on Information Systems Quality and Security Success.**

Your research project, entitled **The Influence of Top Management Support, IT Competence, Technology Strategy, Organizational Climate, and Organization's Nationality on Information Systems Quality and Security Success.**, has been determined **Exempt** in accordance with federal regulation 45 CFR 46.102. UHSRC policy states that you, as the Principal Investigator, are responsible for protecting the rights and welfare of your research subjects and conducting your research as described in your protocol.

Renewals: Exempt protocols do not need to be renewed. When the project is completed, please submit the **Human Subjects Study Completion Form** (access through IRBNet on the UHSRC website).

Modifications: You may make minor changes (e.g., study staff changes, sample size changes, contact information changes, etc.) without submitting for review. However, if you plan to make changes that alter study design or any study instruments, you must submit a **Human Subjects Approval Request Form** and obtain approval prior to implementation. The form is available through IRBNet on the UHSRC website.

Problems: All major deviations from the reviewed protocol, unanticipated problems, adverse events, subject complaints, or other problems that may increase the risk to human subjects **or** change the category of review must be reported to the UHSRC via an **Event Report** form, available through IRBNet on the UHSRC website

Follow-up: If your Exempt project is not completed and closed after **three years**, the UHSRC office will contact you regarding the status of the project.

Please use the UHSRC number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office.

Good luck in your research. If we can be of further assistance, please contact us at 734-487-3090 or via e-mail at human.subjects@emich.edu. Thank you for your cooperation.

Sincerely,

Sonia Chawla, Ph.D.
Research Compliance Officer