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The impact of technophobia on technology acceptance and the moderating influence of transformational leadership, organizational climate, and emotional intelligence

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The Impact of Technophobia on Technology Acceptance and the Moderating Influence of Transformational Leadership, Organizational Climate, and Emotional Intelligence

by

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Abstract

This study sought to investigate the relationship between technophobia and technology acceptance. In addition, this study examined the moderating influence of variables such as transformational leadership, organizational climate, and emotional intelligence has any influence on that relationship. This study determined that there is a significant negative relationship between technophobia and technology acceptance. Furthermore, all moderating variable were found to have a strong moderating influence on the relationship between technophobia and technology acceptance. In other words, transformational leadership, organizational climate, and emotional intelligence lessen the strength of the negative correlation to the point that technophobia and technology acceptance were no longer correlated.

Previous studies investigate technophobia using technologies that are no longer new; computers, fax machine, email, VCRs, and ATMs. In the conclusion of the study, it was suggested the future studies should further investigate technophobia with different variables.

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I would like to thank the committee as a whole, without your help this dissertation would have never been possible. I would like to express my thanks and appreciation to my dissertation chair Dr. Bellamy who was a great mentor and helped me throughout my Ph.D. Dr. Bellamy's support was influential on my learning experience at Eastern Michigan University. Also, my endless gratitude to my committee, Dr. Brake, Dr. Bishop, and Dr. Pilato, whom support had significant influence on the completion of this dissertation. Their dedication has guided me go through the dissertation process.

Dedication

I dedicate this work mainly to seven people whom influenced my life and made me the man I am today.

First and foremost, to my Dad,

Your constant and relentless support for my academic effort pushed me to achieve this milestone of my life. It pains my heart to reach the finish line and not see you there, my only consolation is that I know you are with me.

To my Mom,

When darkness prevails, just like the moon, your light always broke through and guided me in my journey.

To my sisters; Rana, Rema, Ruba, and Farah

Throughout history, travelers depended on the northern star to guide them to their destination. I am privileged to have four northern starts in my life.

To the one whom, regardless of the situation, I know I can always depend on, my brother Moad. You are always there for me with your selfless acts, thank you for being a brother and a friend.

Finally, to my few but great friends who supported me in my academic endeavor.

Chapter 1: Introduction

In the field of technology-related research there is no clear definition of technophobia in its truest sense. Korukonda and Finn (2003) and Korukonda (2005) point out that the literature lacks a distinction between "computer anxiety" and "technophobia." Anthony, Clarke, & Anderson (2000) argue that it is misleading to use the term "technophobia" when talking about computer phobia or computer anxiety. Several studies have used "technophobia" as a surrogate/proxy term to refer to generalized computer or technology-driven anxiety (Korukonda and Finn, 2003; Brosnan, 1998; Celaya, 1996; Mcilory, Sadler, & Boojawon, 2007; Rosen, Sears, & Weil, 1987; Korukonda, 2005; Thorpe, and Brosnan, 2007). Other studies have used terms such as "computer phobia" (Mcilory, Sadler, & Boojawon, 2007; Rosen, Sears, & Weil, 1987), "cyberphobia," "negative computer attitude" (Weil, and Rosen, 1990), "computer resistance" (Meier, 1985), or "technostress" (Sami, & Pangannaiah, 2006; Brod, 1984; Weil, and Rosen, 1997) when referring to computer anxiety. The vast majority of studies on technophobia investigate fear of computers and do not account for many current technologies (Celaya, 1996).

While technophobia has been conceptually defined, no one has attempted an empirical or operationalized codification of this term. In this study, we define technophobia as *an irrational fear and/or anxiety that individuals form as a response to a new stimulus that comes in the form of a technology that modifies and/or changes the individual's normal or previous routine in performing a certain job/task. Individuals may display active, physical reactions (fear) such as avoidance and/or passive reactions (anxiety) such as distress or apprehension.*

The sheer amount of research focusing on computer-related fear and anxiety demonstrates the importance of developing a tool for measuring technophobia in general not just as it applies to specific technologies. This study will use a scale developed by Khasawneh and

Bellamy (2014) to measure technophobia in a broader context that incorporates new technologies in general, not just computers. The main thrust of this study is to investigate the correlation between technophobia and technology acceptance. Furthermore, this study will measure the moderating influence of organizational climate, emotional intelligence, and transformational leadership on the relationship between technophobia and technology acceptance. Previous researchers have not yet defined or measured technophobia without tying it to a specific technology. This study will add a missing piece to the body of knowledge surrounding technology by measuring technophobia in general.

Computers, email services, video cassette recorder (VCR), and fax machines are no longer at the apex of technology in the work place. People are interweaving new and different types of technologies into their work and personal environments, changing the ways we function in our daily lives. Norman (1990) argues that the issue with technology is: "The same technology that simplifies life by providing more functions in each device also complicates life by making the device harder to learn, harder to use. This is the paradox of technology" (p.31).

Continuous technological proliferation pressures individuals to accept new technologies within very short periods of time. Technophobia can be a daunting impediment to companies that constantly change technologies or experience rapid technological changes. Employees must adopt new work habits for organizations to benefit from technological advancements. However, monetary incentives often prove to be inadequate motivations for change, especially if advancement in an organization requires the adoption of new technologies (Mitchell, 1994).

Companies constantly introduce new technologies into their work environments to retain competitive advantages and stay in business. The international data corporation (IDC) estimated that the U.S. technology spending was $236.6 billion and expected to grow to $330.7 in 2017

(IDC, 2014). However, technologies cannot improve organizations if employees choose not to adopt them. Markus and Keil (1994) state "If the desired improvement conflicts with what people are motivated to do, a system alone will not solve the problem" (p.24). Sinkovics et al. (2002) also points out a lack of research on the role of technophobia and technology adoption. Technophobia is often seen as a psychological orientation and/or an attitude toward technology. Because of this, we chose to study the moderating variables that appear to influence the relationship between technophobia and technology acceptance.

Since employees' emotions may influence their psychological orientations toward technology, the current study chose emotional intelligence as a moderating variable in this study. Changes in technology commonly affect employees' emotions in the workplace. When a new technology is introduced, employees tend to avoid it (Weil and Rosen, 1997). When individuals face technological changes, they typically experience a state of fear, even if they accept the change in question (Cambre, & Cook, 1985). Brosnan (1998) argues that a person's anxiety about a new technology might not stem from the technology itself but from higher performance expectations associated with the technology. Celaya (1996) argues that a company considers an employee to be "productive" if they have practical knowledge about all technologies relating to their job. All of these factors can influence employees' emotions, which affect their attitudes toward technology. Though current research is inconclusive about the different levels of anxiety among employees toward computers, we argue in this study that it is useful to explore the moderating influence of employees' emotional intelligence on their technophobia and technology-acceptance relationships.

Workplace environments may also influence employees' attitudes toward technology adoption. The work environment is a fertile ground for research on personal behavior (Drexler,

1977). Employees operate in the context of what is referred to in the relevant literature as an "organizational climate." Organizational climate is one of many variables that influence employees' attitudes within a work environment. Previous researchers have argued that organizational climates affect employees' behavior (Pena-Suarez, Muniz, Campillo-Alvarez, Fonseca-Pedrero, and Garcia-Cueto, 2013). Similar to emotional intelligence, organizational climate has a great influence on employees' behavior; it influences their senses of reasoning and how they deal with and understand their surroundings. Organizational climates influence employees' performance by providing an antecedent for employee behavior. The concept of organizational climate helps us understand how organizations can provide meaningful environments to their members (Payne and Pugh, 1976). Organizational climate can help organizations reach their goals (Muchinsky, 1987). Because of its impact on many aspects of the workplace, Drexler (1977) encouraged researchers to measure organizational climate. Organizational climate serves as the unwritten rule-book that defines what is okay to do and what is not (Cannon, 2006). Some authors define organizational climate as a perception of "how things are" in an organizational environment. Organizational climate is chosen as a moderating variable in this study because of its impact on employees' behavior and the lack of prior research on the moderating impact of organizational climate on the correlation between technophobia and technology acceptance.

Finally, the leadership body of knowledge is saturated with studies that confirm the importance of leadership and its impact on employees' attitudes. Bradach (1996) states that "leaders are organizational architects" (p.1). Employees perceive their leaders as the embodiments of their organizations' values. Many theories describe different leadership styles and how they influence employees. For a leader to be viewed as an effective leader, he or she

should be able to communicate their organizations' vision and goals. Givens (2008) argues that leaders have a great positive influence on their employees. Transformational leadership has gained a significant amount of attention in the field of leadership studies. Transformational leadership connects to and positively influences an array of outcomes: employee commitment to an organization, job satisfaction, perceived extra effort, organizational citizenship behaviors, job satisfaction, self-efficacy, motivation, and trust (Givens, 2008). Bromley and Kirschner-Bromley (2007) argue that transformational leaders inspire and intellectually stimulate their employees and possess charismatic personalities. The concept of transformational leadership was originally developed by Burns (1978). Burns analyzed political leaders and believed that transformational leaders encourage and motivate their followers to accomplish more by aligning their personal values with their organization's values. Transformational leaders strengthen their employees' morale and motivate them to accomplish more. Also, this leadership style and its sub-dimensions pay special attention to employees' intrinsic problems and issues. The current study chose transformational leadership as a moderating variable in this study because we believed it is the most suitable leadership style for positively influencing the relationship between employees' technophobia and their technology acceptance. The current study will utilize the Bass and Avolio (1995) Multifactor Leadership Questionnaire MLQ scale.

Statement of the Problem

Several researchers have identified that technology research is missing a definition of technophobia that is separate from computers; researchers also need a tool for assessing technophobia within this new framework. The current study provides a conceptual definition of technophobia and uses a new scale developed to assess technophobia outside of computers. Furthermore, this study will measure the impact of individuals' technophobia on their levels of

technology acceptance, as well as the moderating influence of transformational leadership, emotional intelligence, and organizational climate on that relationship.

Nature and Significance of Problem

In the context of computer anxiety, researchers estimate that at least one out of three Americans is a technophobe. In the past, researchers have defined technophobia and developed scales to measure it by using computers to represent technology. However, computers are no longer the greatest or most complicated technologies in the modern workplace. Some researchers suggest that individuals develop fear or anxiety from specific pieces of software or new technologies but not from the computer itself. The body of knowledge is full of research on technophobia (i.e., Rosen, Sears, & Weil, 1993; Weil and Rosen, 1997; Mcilroy, Sadler, & Boojawon, 2007; Brosnan, 1998b), but researchers have focused solely on computer phobia, using that category as representative of technophobia (Korukonda and Finn, 2003; Korukonda, 2005). Several researchers have pointed to this gap in the literature but continued to use computer-anxiety scales in their research. For instance, Korukonda (2005) acknowledged the confusion between technophobia and computer anxiety but ended up using the Computer Anxiety Rating Scale (CARS-C) developed by Weil et al. (2000), the Computer Thoughts Survey (CTS-C) developed by Weil and Rosen (2000), and the General Attitude Toward Computers scale (GATC-C) developed by Sears et al. (2000) to measure technophobia.

Technology changes at a fast and exponential rate. In 1980, the total number of computers sold by 24 companies was 724,000; however, after only three years, one company (Apple) sold more than a million computers (Brod, 1984). The "snowball effect" of technology can be observed in many technologies. For example, it took transistors five years to go from the lab to the radio (Scheel, 1988). Humans' cognitive skills develop slowly over time (in a linear

fashion) while technology moves at a much faster pace (in an exponential fashion). This process creates a gap between employees' skills and knowledge and the technology; this gap may slow the adoption of a new technology. Davisson (1994) reported that employees in the early 1990s were more afraid of technology than they were of losing their jobs due to downsizing

The introduction of a new technology is a major change for an organization. When a new technology is introduced to the workplace, a new situation is created in which employees have no experience. The unpredictability of some situations causes anxiety (Seligman, 1975), and this anxiety may be connected to the new technology introduced. Weil and Rosen (1997) believe that technophobia causes employees to avoid technology. Sinkovics et al. (2002) point out the lack of research on the role of technophobia and technology adoption. Companies invest millions of dollars each year in new technologies; some employees' may refuse a new technology due to technophobia. This study will provide insight into that area.

This study argues that an employee's emotional intelligence affects their correlation between technophobia and technology acceptance. Management (and the organization as a whole) will serve as a support system for employees and positively influence their relationship between technophobia and technology acceptance.

The moderating variables used in the present study have been used by previous scholars because of these variables' significant impacts on many outcome variables. Numerous studies have examined the impacts of transformational leadership on several organizational outcomes (Smith, 2011; Spinosa, Glennon, & Sota, 2008; Kanungo, 2001; Leadership styles, 2006; Val & Kemp, 2012; Bromley & Kirschner-Bromley, 2007; Burns, 1977, Hemsworth, Muterera, & Baregheh, 2013). Rehman and Waheed (2012) studied the moderating influence of emotional intelligence on the relationship between transformational leadership and the decision-making

process. Harms and Crede (2010), and Palmer et al. (2001) studied the relationship between emotional intelligence and transformational leadership. Yildiz and Ozcan (2014) believe that organizational climate is a great moderating variable; they studied it as a moderating variable between transformational leadership and employees' creativity levels. Organizational climate is a good moderating variable that affects organizational processes such as decision making, communication, and controlling; it also affects psychological processes such as creating, learning, motivation, and commitment (Ekvall, 1996).

A significant amount of literature supports the variables used in this study. In the literature review for this research, we found no references to studies of technophobia's impact on technology acceptance or the moderating influence of the moderator variables we chose. The current study conceptually defines technophobia without connecting it to any specific technology. Also, this study examines the correlation between technophobia and technology acceptance-which is yet to be measured. In addition, the role of transformational leadership, organizational climate, and emotional intelligence as moderating influences on technophobia and technology acceptance will be investigated. To the study questions, a new measurement tool for technophobia is developed, tested, and utilized in this study.

The results of this study will greatly benefit organizations by providing insight into whether employees' fear of technology affects their technology acceptance. Knowing the influence of transformational leaders, organizational climates, and emotional intelligences on the relationship between technophobia and technology acceptance will help organizations understand their employees' attitudes toward new technologies.

Objective of Research

The purpose of this study is to understand the correlation between technophobia and employee acceptance. The extent to which that correlation can be moderated within formal organizations by transformational leadership, organizational climate, and emotional intelligence will be examined.

Assumptions

- Survey respondents will answer all survey questions truthfully.
- Managers will be cooperative and answer all assessment questions truthfully.

Delimitation and Limitation

The sample for this study consisted of local companies and small businesses in southeastern Michigan. To collect the data, this study used the printed surveys method, since "technophobes" might not take an online survey, and this could result in a biased sample. For a participant to be included in the study, they must have worked within an organizational environment and have a manager; this requirement limited the number of participants in this study. Another limitation of this study is that it relied on respondent honesty. The researcher has no control over the "sample bias" issue. None of the participants was younger than 20, the sample was predominantly white, and it did not use probability random sampling.

Research Questions and Framework

This study seeks to answer the following questions:

1. Is there a relationship between technophobia and technology acceptance?
2. Is there a relationship between the five dimensions of technophobia and the two dimensions of technology acceptance?

3. Does transformational leadership moderate the correlation between technophobia and technology acceptance?

4. Do the four dimensions of transformational leadership moderate the correlation between technophobia and technology acceptance?

5. Does organizational climate moderate the correlation between technophobia and technology acceptance?

6. Do the three dimensions of organizational climate moderate the correlation between technophobia and technology acceptance?

7. Does emotional intelligence moderate the correlation between technophobia and technology acceptance?

8. Do the three dimensions of emotional intelligence moderate the correlation between technophobia and technology acceptance?

9. Do age, gender, education level, and years of experience moderate the relationship between transformational leadership and technology acceptance?

A model of the variables included within this study and their proposed relationships is presented below, Figure 1. Also, the current study will investigate the moderating impacts of demographics on the correlation between technophobia and technology acceptance, Figure 1.

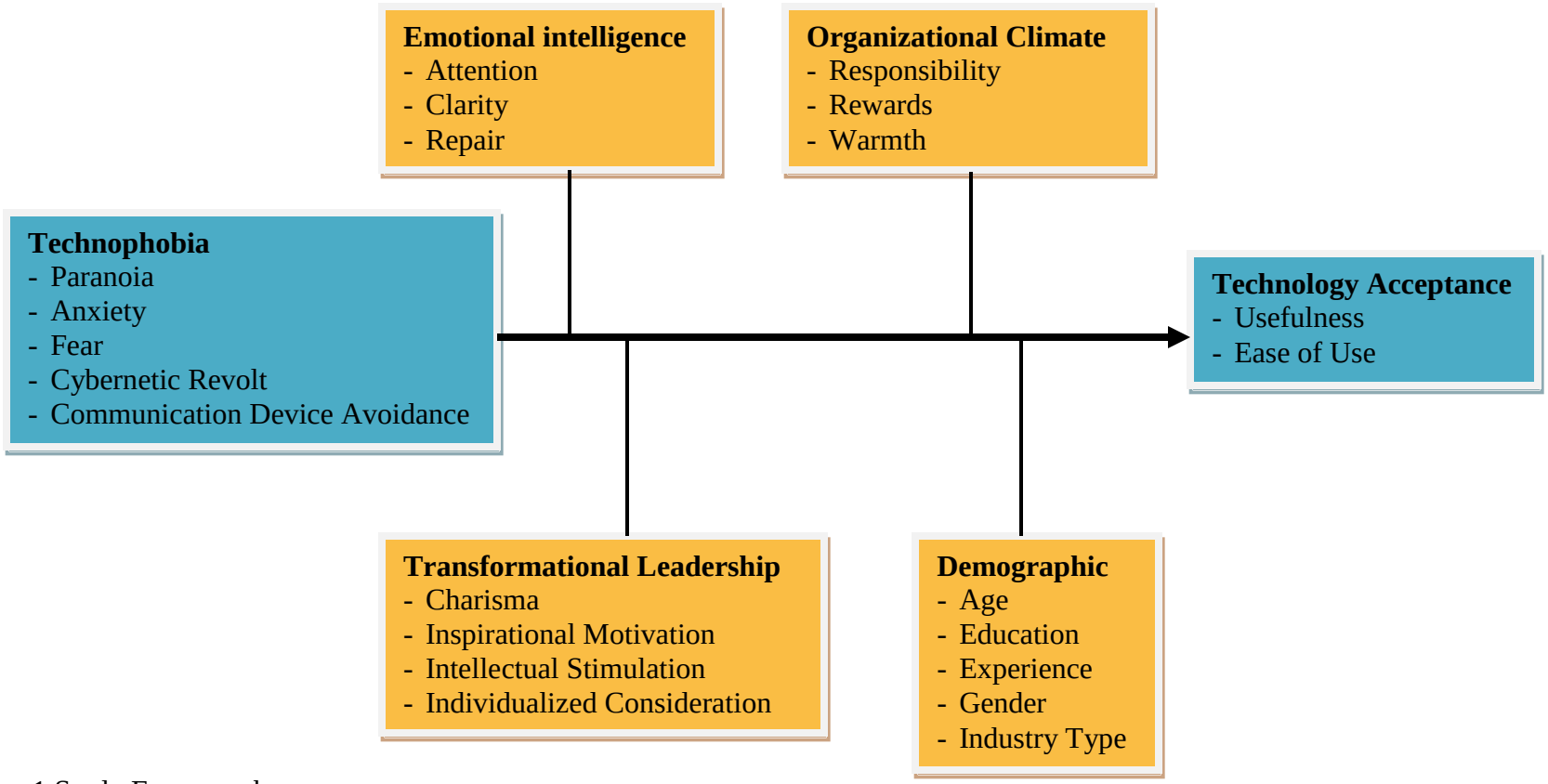

Figure 1 Study Framework

Definitions

Technophobia (computer anxiety): Bozionelos (2001) defined technophobia in the context of computer anxiety. For Bozionelos, technophobia refers to:

> Negative emotions and cognitions evoked in actual or imaginary interaction with computer-based technology. It has the nature of a trait that predisposes towards the state of psychological distress in situations that involve encounters with computers. (Deane, Henderson, Barrelle, Saliba, & Mahar, 1995; Maurer & Simonson, 1984) (p. 213)

Fear: "is the motivation associated with a number of behaviors that normally occur on exposure to clearly threatening stimuli" (Blanchard, Blanchard, Griebel, & Nutt, 2008, p.3).

Anxiety: "is the motivation associated with behaviors that occur to potential, signaled, or ambiguous threat" (Blanchard, Blanchard, Griebel, & Nutt, 2008, p. 3).

Technology: is defined by the American Association for the Advancement of Science (AAAS) (1993): "In the broadest sense, technology extends our abilities to change the world; to cut, shape, or put together materials; to move things from one place to the other; to reach further with our hands, voices, and senses" (AAAS, 1993, p. 41).

Phobia: is defined as the avoidance of a feared situation of a non-dangerous stimulus, which results in increasing the person's distress level and significantly changing his or her normal routine and relationships (Mohr et al., 2002; Sinkovics, Stottinger, Schlegelmilch, & Ram, 2002).

Technophobia as proposed by the current study is: *an irrational fear and/or anxiety that individuals form as a response to a new stimulus that comes in the form of a technology that modifies and/or changes the individual's normal or previous routine in performing a*

certain job/task. Individuals may display active, physical reactions (fear) such as avoidance and/or passive reactions (anxiety) such as distress or apprehension.

Technology Acceptance: is the motivational response that users form when they are exposed to new systems and system capabilities. Acceptance takes place after users form judgments about a technology and about how that technology is related to their jobs (Davis, 1985). Users' attitudes toward new technologies can include individuals' beliefs that the presented technology will enhance their job performance (i.e., perceived usefulness), and whether that new technology is free of mental and physical effort (i.e., ease of use) (Davis, 1985; Davis, 1989).

Perceived Ease of Use: is defined as "the degree to which an individual believes that using a particular system would be free of physical and mental effort" (Davis, 1985, p.26).

Perceived Usefulness: is defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance" (Davis, 1985, p.26).

Transformational Leaders: According to Bass (1985) a transformational leader is a leader who motivates his or her followers to accomplish more than they originally planned to. Higher performance can be achieved in three ways: raising followers' levels of awareness, transcending followers self-interest to include their team, and organization, and meeting followers needs (Bass, 1985).

Attributed Charisma: a charismatic leader is one who builds a relationship with his or her followers that is based on personal understanding not guided by organizational interest, which inspires and arouses his or her followers (Bass, 1985).

Inspirational Motivation: inspirational leaders are those who set higher standards for themselves, which motivates and inspires followers since it increases the level of awareness among followers (Bass, 1985).

Individualized Consideration: is displayed when leaders work to develop their employees' strengths, support employee needs, and delegate tasks as opportunities for their employees' growth (Bass, 1985)

Intellectual Stimulation: is displayed when leaders encourage employees to think critically and break from the old ways of thinking, to be more inventive, and creative (Bass, 1985).

Emotional Intelligence: Salovey and Mayer (1990) define emotional intelligence as "the subset of social intelligence that involves the *ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions*" (p. 189).

Organizational Climate: Litwin and Stringer (1968) define organizational climate as "a set of measurable properties of the work environment, perceived directly or indirectly by the people who live and work in this environment, and assumed to influence their motivation and behavior." (p.1)

Chapter 2: Literature Review

This study investigates the correlation between technophobia and technology acceptance. Several questions have been developed by the researcher regarding the relationships between technophobia and technology acceptance and the moderating impacts of transformational leadership, organizational climate, and emotional intelligence. With the exception of technophobia, all variables in this study have robust literature support. This chapter will provide a thorough review of the literature and conceptual support for the developmental process of each of the scales used in this study.

Technophobia versus Computer Anxiety

Computer anxiety among other terms, has been used as a surrogate concept for technophobia. Most research in this area has focused on computers and has not studied "technophobia" in its truest sense. This situation has caused a confusion between the terms "technophobia" and "computer anxiety." Research on technophobia, in the context of computer anxiety, has measured individuals' fear of and attitudes toward computers. The following section of this study will clarify and distinguish between "technophobia" and other terms used in reference to technophobia. First, this study will examine and present the literature relevant to computer anxiety. Then, literature on technophobia that supports the notion of the current study will be investigated and presented.

Some publications on technophobia are based on anecdotal evidence with no support of actual research; they are not included in this literature review.

Computer Anxiety

Among the first studies on "computerphobia" is Lee's (1970) nationwide study (Weil, and Rosen, 1995). Lee (1970) argues that computers challenge an individual's self-concept. Lee

explored the issue of why people have different attitudes toward computers by measuring six psychological attitudes: "familiarity with the world of business, interest in current affairs, receptivity to the new and different, intolerance of uncertainties and ambiguities, trustful optimism, and alienation" (p.56).

Jay (1981) is the first to define computerphobia (Rosen and Weil, 1990; Rosen and Maguire, 1990). Computerphobia is defined as "(a) resistance to talking about computers or even thinking about computers, (b) fear or anxiety towards computers, and (c) hostile or aggressive thoughts about computers" (Jay, 1981, p.47). Rosen and Weil (1990) also refer to individuals who have anxious reactions to actual or imaginary interaction with a computer as computerphobics. Jay's work is used as the backbone for more than 20 measurements of computer attitudes (Rosen and Weil, 1990). Based on Jay's work, Rosen and Weil (1990) provide a comprehensive definition of computerphobia from several perspectives and argue that computerphobia is evidence of one or more of the following: "(a) anxiety about present or future interactions with computer-related technology; (b) negative global attitudes about computers, their operation, or their societal impact; or (c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction" (p.276). According to Rosen and Weil (1987), someone may be labeled "computerphobic" if his or her reactions toward computers ranges from mild distress about one dimension (as identified above) to severe reactions to all dimensions. In some cases, this fear and anxiety reaches the extent of physiological reactions such as nausea, high blood pressure, or dizziness (Wienberg and Fuerust, 1984). Rosen and Weil (1997) give the example of "Henry" who felt sick when he used a computer for the first time.

Computer anxiety affects a large section of the population. For instance, in 1993, a study by the Dell Computer Corporation on 1,000 adults and 1,000 teenagers revealed that more than half of the population can be classified as technophobes (Weil and Rosen, 1997). They also showed that nearly 25% of the adults they sampled felt uneasy when setting their digital clocks (Rosen and Weil, 1995). In the context of computer anxiety, Celaya (1996) believed that technophobia hindered the advancement of the American workforce. In addition, Razak et al. (n.d.) argued that one of the reasons for low use of technology is attributed to technophobia.

In an attempt to find the cause of computerphobia, Lee (1970) found that an intolerance of uncertainty and ambiguity accounts for most of variance in individuals' attitudes toward computers. Also, Lee argues that the factors of education, income, and occupation have an important impact on individuals' attitudes toward computers. Lee believed that education helps individuals deal with uncertain and ambiguous situations. Many researchers use Lee's (1970) study to investigate computerphobia and learn how to assist computerphobic individuals. However, Lee (1970) points out that his study provides limited descriptive significance since it does not explain why different people react differently to computers. Meier (1985) argues that avoiding computers in the workplace is a result of fear and anxiety about computers. He also argues that individuals may avoid computers because they fear negative judgment from their peers. Computer anxiety or avoidance may originate from a previous negative encounter with computers (Rosen and Maguire, 1990; Weil, Rosen, and Wugalter, 1989). Rosen and Maguire (1990) argue that computer experience is the best predictor of computerphobia and anxiety. Based on Meier's (1985) study, Rosen and Maguire (1990) argue that they have measured and treated computerphobia. A description of Meier's (1985) study is provided below to facilitate a better understanding of the current literature on computerphobia.

Computer Aversion

Meier (1985) used the term "computer aversion" to refer to an individual's avoidance of computers. The use of the term "aversion" does not suggest any illness in an individual; it expresses a discomfort that interferes with one's adjustment to working with computers (Meier, 1985). In his study, Meier (1985) stated that individuals' psychological reactions toward computers might be affected by their sense of loss of control and low self-confidence. Meier argues that individuals with computer experience are more specific in their fears. In other words, they are not afraid of computers *per se*: they are afraid of specific computer programs or tools. He gives an example of individuals with computer experience who reject computer software-but not the computer itself.

To explain computer aversion, Meier (1985) integrated the expectancy concepts offered by Bandura (1977) and Rotter et al. (1972). Meier believed that three important cognitions emerge from that: efficacy expectancy, outcome expectancy, and reinforcement expectancy. Bandura (1977) defines "efficacy expectancy" and "outcome expectancy" as one's belief that he can perform a desired task and one's ability to link his behavior to a desired outcome, respectively. Meier (1983) defines "reinforcement expectancy" as the anticipation one has that a certain outcome will meet his goals. Meier illustrated how an individual's expectations may explain his reactions when using a computer, as shown in Table 1.

Table 1 Reaction to Computers by Expectancy Type (*Meier, 1985, p. 175*)

Psychological reaction	Types of Expectation		
	Efficacy	**Outcomes**	**Reinforcement**
Fear	Low	Low	Low
Apprehension	N/A	Low	Low
Opposition	N/A	N/A	Low

When comparing fearful and anxious individuals, Meier (1985) argues that individuals who are afraid of computers present the worst case scenario since they believe their encounters with computers will lead to negative consequences; this results in their avoidance of any interactions with computers. Individuals with computer anxiety are similar to those with computer fear in their expectations of negative results when dealing with computers; however, they are different in that they are fully aware of this shortcoming (Meier, 1985). Meier argues that anxious individuals have the knowledge they need to perform a job, but need to identify and avoid behaviors that lead to negative results. Anxious individuals experience both avoidance and apprehension behaviors toward computers, though avoidance is predominant (Meier, 1985).

Rosen and Weil (1990) utilized Meier's (1985) study to develop a treatment for the section of their sample that they described as computerphobic. Meier (1985) argues that different interventions should be used based on individuals' reactions (Weil, and Rosen, 1990). Rosen and Maguire (1990) argue that providing computer experience may not solve computer phobia and state that individualized psychological treatments have proved to be effective.

Rosen and Weil (1990) concluded (in their extensive review of the literature) that many researchers' beliefs about computerphobic people are inconclusive. Researchers have not shown consistent results on the relationships of age, gender, ethnicity, and computer experience to computerphobia (Rosen, and Weil, 1990; Rosen, Sears, and Weil, 1987; Rosen, and Maguire, 1990; Korukonda, 2005). Even though Rosen and Weil's sample was mainly college students, they point out that computerphobia is not just limited to students. Computerphobia can be found in any segment of society (Rosen, Sears, and Weil, 1987). Researchers have shown that computerphobia can affect businesspeople, housewives, and teachers (Rosen, and Weil, 1990). In their three-year study on the use of specific technologies (voice mail, fax, pager, cell phone,

computer, email, and internet) in the work place, Weil and Rosen (1998, 2000) categorized users into three groups: “early adopters,” “hesitant,” and “resisters.” Over the span of their study, they noticed that the percentages of hesitant and resistors increased while the percentage of early adopters decreased.

Rosen and Weil (1990) measured and treated computerphobia. In their study, they used the Computer Anxiety Rating Scale (CARS) and the Computer Thoughts Survey (CTS) to evaluate 1,617 participants (all college students) and found that 40% of the participants were found to be “at risk.” Several treatments were offered to the “at risk” group; 162 began one or more treatments; only 149 finished the treatments. Rosen and Weil conducted a post test to measure the improvements of all 149 participants; the researchers observed a great reduction in computerphobia and a marked increase in computer use.

Many measurement tools have been developed to measure computerphobia, computer fear, and computer anxiety: the Attitudes Toward Computers Questionnaire developed by Raub's (1981); the Computer Anxiety Rating Scale Form T (CARS-T) developed by Rosen, Sears, and Weil (1987) which included 75 questions about anxiety and “nervous level” on a scale from 1 (not at all) to 5 (very much); the Computer Anxiety Index (CAIN); the Standardized Test of Computer Literacy (STCL), developed by Maurer and Simonson (1984), which examines avoidance of, caution with, negative attitudes toward, and disinterest in computers; the Computer Attitude Scale (CAS), which assesses computer liking, confidence, and anxiety through a Likert attitude-measurement format developed by Lloyd and Gressard (1984); the Attitudes Toward Computers Scale Form T (ATCS-T), developed by Rosen, Sears, and Weil (1987), which includes 45 questions that help teachers rate their attitudes toward technology and computers on a five-point Likert scale (strongly agree to strongly disagree); and finally the Computer Thoughts

Survey Form T (CTS-T), developed by Rosen and Weil (1995), which includes 50 questions that help participants express how often they have a specified thought when using the computer.

Over the last decade, researchers have started to develop a new set of scales that measure individuals' attitudes towards robots. Nomura, Kanda, & Suzuki (2006) developed the "Negative Attitudes toward Robots Scale (NARS)." NARS includes 14 items that measure three dimensions: negative attitudes to interaction with robots, negative attitudes to the social influence of robots, and negative attitudes to emotions when interacting with robots. A five-point Likert scale is used in NARS (1: "I strongly disagree" to 5: "I strongly agree"). Like previous scales, this scale focused on robots.

In the literature review for her study, Chen (2012) attempted to provide distinct definitions of computerphobia, computer anxiety, cyber phobia, and technophobia. Chen relied on Jay's (1981) definition of computerphobia. Jay defines computerphobia as a negative attitude toward computers caused by computer anxiety. To define computer anxiety, Chen uses Cantrell's (1982) and Chua's et al. (1999) definitions, in which they define computer anxiety as negative feelings associated with computer use. For cyber phobia and technophobia, Chen utilizes Brosnan's (1998) definitions. According to Brosnan (1998), cyber phobia is a phobia of computers and technophobia is a phobia of technology in general.

These definitions still use computers as their main theme and provide nothing new when defining technophobia. After she provided her definitions, Chen (2012) stated that she would use the term "computerphobia" in her study when referring to technophobia and cyberphobia.

Researchers in the last decade have started using the term "Information and Communication Technology" (ICT) when referring to computer anxiety or technophobia. Achuonye and Ezekoka (2011) use ICT and computers as anchors for their study on

technophobia among undergraduate female students in Nigeria. Achuonye and Ezekoka relied on existing literature to build the framework for their study and used the terms "technophobia" and "computer phobia" interchangeably in their study.

Hilbert's (2011) study on information and communication technology (ICT) proved that (when controlling for income, education, and employment) women were more active in their use of technology than men. Hilbert's findings agree with Lee's (1970) prediction that education, income, and occupation influence an individual's attitude toward technology.

Tirban et al. (2012) states that college professors in Romania have an antagonistic attitude toward technological development and would become agitated when they heard computer-related words like "power point presentation."

Throughout the relevant technophobia literature, computers are the main focus of research. Few researchers have focused on such technologies as automated teller machines (ATMs), fax machines, email services, cell phones, the internet, videocassette recorders (VCRs), pagers, and voice mail services. Within this narrow context, researchers are only able to measure the anxiety associated with one specific technology.

The literature lacks a definition of technophobia in its truest sense (Korukonda, and Finn, 2003; Korukonda, 2005). Korukonda (2005) points out that even though technophobia is a long-lasting problem, the explanatory models presented to explain technophobia are contradictory and confusing. Korukonda (2005) also points out that the literature does not use the term "technophobia" consistently; "computer phobia" or other terms are used as surrogates for "technophobia."

> There is no consensus in the literature on the use of the terms computer anxiety, computer phobia, and technophobia. It would

> appear that technophobia is a broader attitude applicable toward technology in various forms, and that computer phobia is one such instance of technophobia applicable specifically to computer technology. However, such an interpretation, though intuitively appealing, is not consistent with the use of the terms in the literature (p. 310).

Also, there is no tool for measuring technophobia that is independent of a specific technology (Sinkovics et al., 2002; Celaya, 1996). Celaya (1996) asserts that if computer-related studies were removed from technophobia research, the remaining research would do little to explain technophobia.

This study provides an assessment tool for measuring technophobia in general. The current study suggests that "computerphobia" might be outdated because individuals' fear of computers has shifted to other technologies. As previous researchers have argued (Lee, 1970), individuals who use technology on a daily basis may develop specific anxieties or fears toward aspects of a technology but not the technology itself. Individuals are becoming more specific in their fear. They do not fear the computer itself but a rather a specific application on the computer; they may also be fearful or anxious about other technologies. This study argues that many individuals may be fearful or anxious of technology in general. In addition to providing a new definition of technophobia, this study will create a scale to measure technophobia within the context of new technologies in general without restricting it to a specific technology.

Technophobia

As a topic of interest, technophobia has been around for more than forty years. Some might even argue that technophobia goes back to the 19th century, as manifested by social

movement groups like the Luddites. Technophobia is a ubiquitous problem that has plagued companies ever since the introduction of technology. Owing to technophobia, it is estimated that (in the US alone) at least $4.2 billion in wages are lost to technophobia every year (Elder et al., 1987). In some cases, technophobia causes individuals to avoid change even though they are offered an incentive (Mitchell, 1994).

The automation of the workplace has continued to increase ever since the introduction of computers in the 1970s. From the 1970s to the 1990s, computers were the pinnacle of workplace technology. In the context of computers, technophobia is a barrier to a company's development; it is a major factor in hindering employees' adaption to new technologies (Rosen and Weil, 1995). Within this narrow context, 20% to 33% of Americans could be classified as technophobes (Celaya, 1996). Research on technophobia is dominated by studies on fear or anxiety toward computers. However, companies incorporate many new technologies (not just computers) into the workplace on an almost daily basis. Outside of computer-related studies, previous researchers in this field have provided very limited assessments of technophobia.

Researchers often use the terms "technophobia" and "computerphobia" interchangeably in their research (Korukonda and Finn, 2003; Anthony, Clarke, & Anderson, 2000; Korukonda, 2005; Thorpe, and Brosnan, 2007). Previous research has sought to provide practitioners with an understanding of technophobia in the context of computers and a few other technologies: automated teller machines (ATMs), email services, credit cards, and fax machines (Rosen, & Weil, 1995; Rosen, & Weil, 1990; Rosen, Sears, & Weil,1993; Rosen, Sears, & Weil, 1987; Korukonda and Finn, 2003; Brosnan, 1998; Celaya, 1996; Mcilory, Sadler, & Boojawon, 2007; Sami, & Pangannaiah, 2006; Brod, 1984; Sinkovics, Stottinger, Schlegelmilch, & Ram, 2002). In

this context, technophobia research and theories provide methodological tools that can help measure, predict, and treat computerphobia-but not technophobia.

Show-Hui and Wen-Kai (2010) state that the use of a new technology puts a great deal of pressure on a company's employees and may lead to poor performance. Luquire (1983) argues that whenever a technology change takes place in the workplace, employees' reactions should be considered from attitudinal or psychological viewpoints. Acknowledging the improvement that technology brings to our life, Rosen and Weil (1997) argue that this improvement creates fear in some people who use that technology. Cambre and Cook (1985) argue that the introduction of technological changes can provoke emotional and cognitive reactions; some individuals communicate fear and concern about how these changes might influence their lives. This fear and anxiety may manifest itself in the form of a phobia induced by technology.

New technologies may trigger a heightened degree of anxiety and fear in employees who have to use it. Fine (1982) and Sheridan (1980) argue that individuals' responses are targeted mostly toward the attributes of technology, not the technology itself (Sievert, Albritton, Roper, and Clayton, 1988). Meier (1985) links fear of computers to agoraphobia, i.e., fear or anxiety about multiple situations or places that can cause panic-like symptoms (Cornacchio, Chou, Sacks, Pincus, & Comer, 2015).

In an attempt to diagnose technophobia and classify it as a phobia, Thorpe and Brosnan (2007) investigated computer anxiety as a psychopathology. They examined the link between computer anxiety and spider phobia as defined by the Diagnostic and Statistical Manual-Fifth Edition (DSM-5). Thorpe and Brosnan (2007) believe that computer anxiety will not fade away with time since children who use technology daily report similar levels of computer anxiety as older generations (referring to Brosnan, 1998d, 1999b). Meier (1985) argues that the fear of

computers seldom reaches a debilitating level like that associated with agoraphobia or other simple phobias. The addition of "phobia" to the name may lead to the misconception that individuals will run away at the sight of computer, as other people with other phobias would do (Thorpe, and Brosnan, 2007). Thorpe and Brosnan (2007) believe that computer anxiety can be added to the problematic fear framework.

In the review of the relevant literature for this study, the paper by Salamzadeh et al. (2013) is the only study of technophobia in a general, without constricting it to a specific technology. Salamzadeh et al. (2013) utilized Hughes' (2010) definition of technophobia: "*technophobia is used to describe the fear, discomfort, or anxiety towards technology of various forms"* (p.21). To collect data, Salamzadeh et al. used semi-structured interviews as their main tool for data collection. The sample used in their study consists of randomly selected lecturers and students from an Iranian university. Salamzadeh et al. (2013) used an interviewer to manage the session and an expert observer to record non-verbal communication. According to their interviewers' remarks, they believe that technophobia could be the result of 14 factors which can be categorized into four groups. A description of these reasons and groups is provided below (Salamzadeh et al., 2013, p. 189):

1. Individual factors:
    a. lack of individual skills: a lack of abilities and skills, which prevent a person from doing his or her job.
    b. lack of communication skills: a lack of a series of skills which enable a person to communicate information in a way that he or she receive and comprehend it.

c. personality: emotional, mental and behavioral patterns, which can lead to a reluctance to use technology.
d. perceived complexity of use: the level at which a person believes that using a certain technology will cause more struggle and trouble for him or her.
e. perceived usefulness: the level at which a person believes that using a certain technology will cause more struggle and trouble for him or her.

2. Social factors:
    a. ethical problems: a mental evaluation of the unpleasant consequences of a technology application.
    b. cultural influences: an individual's amount of anxiety toward the entrance of a foreign culture, which results in cultural change due to new technology applications.
    c. norms: the impacts of customary rules, which can create a reluctance to do a task.
    d. habits change: how much a person prefers to maintain the current situation and avoids facing new and unfamiliar conditions.
3. Infrastructure factors:
    a. general changes in technology trends: the level-of-mind confusion due to the rapid development of technologies.
    b. laws and regulations: the impacts of shortages or the weaknesses of regulations on an individual's reluctance to apply a new technology.
4. Moderating factors:

a. lack of training: a person's level of inability to use a technology due to the lack of training.
b. experience: the impact of observing and experiencing a practical technology.
c. age: the impact of a person's age on his or her technology application reluctance.

Salamzadeh et al.'s (2013) study is a great example of an investigation of technophobia in general, but it is not enough. There are many limitations to Salamzadeh et al.'s study: the sample size is not mentioned, there is very limited literature review, some of the factors that they found were already identified in previous literature, and some of the reported variables are country-specific (Iran in this case). In addition, Hughes' (2010) definition of technophobia is overly simplistic and is customized to the study sample of his paper (the use of digital devices by elderly people). At the end of their paper, Salamzadeh et al. (2013) encourage researchers to further investigate technophobia.

Band and Fischer (2013) study is another example of a study that attempted to investigate technophobia. Even though the term "technophobia" is used in the title of their paper, Band and Fischer (2013) replaced it with "technosceptic" throughout their entire paper. Band and Fischer studied technophobia within a political context and focused on bipolarity in the belief and structure of "technosceptic" vs. "technophilic." Band and Fischer (2013) distinguish between "technophilic" and "technosceptic" thus: "The former suggests that technical solutions are the primary fix to environmental problems, while the latter favours changes in behaviour over technological remedies" (p.235). Band and Fischer (2013) attempted to explain the ontological differences between "technosceptic" and "technophilic," but their study did not provide useful

information for our current study; it is mentioned only to provide a holistic review of the relevant literature.

Although extant research on technophobia is valuable, previous studies suffer from limitations in both the technologies they analyze and in their attitudes towards these technologies. Previous researchers have focused on one technology at a time (i.e., ATMs, computers, email services, and fax machines). Another limitation is that the scales these researchers have developed may not be suitable for today's environment. Bozionelos (1996) points out that scales developed in the past may be inadequate for measuring the user dynamics of today's technologies because the issues measured in the past are not of current concern.

Recent research has yet to distinguish between computerphobia and technophobia. In Khasawneh and Bellamy (2014) study, computer related items did not reach significance. Results from their study suggest that technophobia has five main dimensions: communication devices avoidance, cybernetic revolt (or cybernetic fear), techno anxiety, techno fear, and techno paranoia. Khasawneh's and Bellamy's (2014) pilot study is described in the methodology section of this study.

Based on the results of Khasawneh and Bellamy's (2014) study, this current study defines technophobia is *an irrational fear and/or anxiety that employees/individuals form as a response to a new stimulus that comes in the form of a technology which modifies and/or changes the employee's/individual's normal or previous routine in performing a certain job/task. Employees/individuals may display active, physical reactions (fear) such as avoidance and/or passive reactions (anxiety) such as distress or apprehension.*

The link between some types of technology and anxiety is well established in the literature. Previous studies on computer phobia, computer fear, computer anxiety, cyber phobia,

and technostress have provided an empirical research foundation on the impact of computers on the behavior of individuals (Lee, 1970; Jay, 1985; Weil and Rosen, 1990; Rosen, and Weil, 1990; Rosen, Sears, and Weil, 1987; Rosen, and Maguire, 1990: Raub, 1981; Maurer, and Simonson, 1984; Loyd, and Gressard, 1984; Rosen, and Weil, 1995; Hilbert, 2011; Tirban et al., 2012; Chen, 2012; Brosnan 1998; Nomura, Kanda, & Suzuki, 2006; Achuonye and Ezekoka, 2011; Thorpe, and Brosnan, 2007). This created a solid ground that the phenomenon of "technophobia" is embedded in societies and needs further investigation. However, research on technophobia in its truest sense is scant. If we extend the categorical systems created by Rosen and Weil (1987) and define "technology" as an umbrella that covers all technologies (instead of just computers), the number of individuals who can be labeled as "technophobes" notably rises. The current study will investigate the relationship between technophobia and technology acceptance.

Technology Acceptance

The use of technology is critical to the success of any organization. Many researchers have paid attention to the acceptance and adoption of new technologies in the work place. In the field of information system research, employees' use of a new technology may be referred to as: "technology acceptance," "technology adoption," or "information system implementation" (Agawral & Prasad, 1998). For consistency, this study will use the term "technology acceptance" to refer to this issue.

Davis et al. (1989) point out that most of the time employees are unwilling to use a new technology even though it will significantly increase their performance. Swanson (1982) argues that users will choose to use a system based on the tradeoff between information quality and the cost to access this information. Addressing employees' adoption of new technologies, Davis et

al. (1989) argue that researchers and practitioners need to understand why employees resist new technologies in order to invent practical systems that predict how employees will respond and accept a new technology. Swanson (1982) and Christie (1981) suggested that intention models from psychology need to be used as theoretical foundations to guide research on technology users' behavior.

To investigate and explain the usage of new technologies, Davis adopted Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA). Davis (1985) adopted the TRA model because it provided great advantages: the capability to integrate numerous theories from psychology, and the function of providing a motivational linkage between external stimuli and consequential behavior. The TRA model was chosen as a reference paradigm for the development of the Technology Acceptance Model (TAM) (Davis, 1985; Davis et al., 1989). In his dissertation, Davis (1985) introduced the TAM model, a theoretical model that can be used to test systems' effects on users and predict their acceptance levels. Davis' two main objectives were:

> First, it should improve our understanding of user acceptance processes, providing new theoretical insight into the successful design and implementation of information system. Second, TAM should provide the theoretical basis for a practical "user acceptance testing" methodology that would enable system designers and implementers to evaluate proposed new systems prior to their implementation. (Davis, 1985, p.7)

Davis (1985) suggested that individuals consider two factors when they adopt a new technology: perceived ease of use and perceived usefulness. Davis (1985) defines perceived ease

of use as "the degree to which an individual believes that using a particular system would be free of physical and mental effort" (p.26). Perceived usefulness is defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance" (Davis, 1985, p.26). Davis (1985, 1989) found a causal effect between perceived ease of use and usefulness. The TAM model is the first to demonstrate that these psychological factors perceived (usefulness and ease of use) are central to employees' motivation to adopt a new technology (Schepers, Wetzels, and Ruyter, 2005).

The TAM model shows that, when using new technologies, users develop a sensitivity to the usefulness and ease-of-use of a technology, which can result in their actually using a new technology (Straub, Keil, & Brenner, 1997; Chen, Gillenson, and Sherrell, 2002). Tornatzky and Klein (1982) studied the relationships between the adoption of innovations and their characteristics; through their research, they further demonstrated the importance of perceived ease of use (Chuttur, 2009). Also, Schultz and Slevin (1975) argued that perceived usefulness is a reliable construct, which can predict employees' use of a technology. Replicating the work of Schultz and Slevin (1975), Robey (1979) confirmed that perceived usefulness highly correlates with system use (Chuttur, 2009).

In their study, Show-Hui & Wen-Kai (2010) examined how users' acceptance of a new technology is influenced if employees are forced to use the technology. Show-Hui and Wen-Kai (2010) argued that ease of use and perceived usefulness positively influence employees' attitudes toward the use of new technologies, which agrees with the findings from Davis (1989).

The issue of technology acceptance has haunted the workplace in the past and might affect the workplace in the future. Röcker's (2009) study on ambient intelligence technologies (AmI) provides a futuristic insight into how employees may react to technologies in a future

workplace. AmI is "the integration of tiny microelectronic processors and sensors into almost all everyday objects, which enables an environment to recognize and respond to the needs of users in an almost invisible way" (Röcker, 2009, p. 1). Rocker shows that employees are reluctant to use technologies that might become prevalent in a future workplace. This indicates that technology acceptance may turn into a serious issue in these environments.

Research on technology acceptance will help managers to understand the factors that promote employees' use of new technologies. A widespread adoption of technology will lead to great financial benefits for employers. Previous researchers provided several tools that measure technology acceptance (e.g., Bailey, & Pearson, 1983; Schultz, & Slevin, 1975), none of which received the same support and validity as the Technology Acceptance Model (TAM) developed by Davis (1989). To measure technology acceptance in companies in this study, we will adopt Davis' Technology Acceptance Model (TAM).

The Rationale for Using Technology Acceptance

Increasing employees' use of new technology is one of the most important issues for organizational success (Show-Hui & Wen-Kai, 2010). Hu et al. (1999) argue that technology acceptance is increasingly becoming a critical issue in technology implementation and management. A key factor in harnessing the increasing power of technology is to create technologies employees are willing to use (Davis, Bagozzi, and Warshaw, 1989). Because of organizational failures to adopt new technologies, researchers since the 1970s have been interested in predicting new technologies used by employees (Chuttur, 2009). Viswanath et al. (2004) point to the importance of users' adoption of new technologies and the associated costs. For example, the Internal Revenue Service (IRS) spent $4 billion on a new technology, just to steer away from it after users refused to use it (Viswanath, Morris, Ann Sykes, & Ackerman,

2004). This shows the amount of money that can be lost due to users' rejection of a new technology.

Swanson (1988) argues that one of the most difficult issues in information system research is understanding why employees reject or accept technology. Ackoff (1967) argues that designers make five unjustified assumptions when designing a new technology and that these assumptions lead them to design technologies employees refuse to adopt. The current study argues that technophobia correlates with employees' acceptance and use of new technologies. The novel approach to investigating technophobia used in this study may identify reasons for the acceptance or rejection behavior of employees toward new technologies. Investigating the correlation between technophobia and technology acceptance might influence developers of new technologies to change some features of their technology.

Organizational Climate

Brown and Brooks (2002) stress the importance of understanding the characteristics of an organization when diagnosing its problems and dysfunctions. Organizational-climate theories aim to understand human behavior in the workplace in order to motivate employees to work toward their organizations' goals. Forehand and Gilmer (1964) believe that organizational-climate characteristics have a lasting effect that influences employees' behavior. Before diving into the literature on organizational climate, the current study will provide a brief distinction between organizational climate and culture.

The body of relevant literature contains several attempts to provide a distinction between "organizational climate" and "organizational culture" (Denison, 1996; Gershon, Stone, Bakken, & Larson, 2004; Davidson, 2003; Ekvall, 1996). Davidson (2003), Ekvall (1996), and Dension (1996) all agree that "organizational culture" refers to deeper and more permanent values, norms,

and beliefs within organizations (measured by qualitative research), while organizational climate is directly observable within the organization (measured by quantitative research). Another distinction is that "organizational climate" is the way employees feel about their organization at any given time while "organizational culture" is the way the organization functions (Brown and Brooks, 2002). The current study investigates the moderating influence of organizational climate on the correlation between technophobia and technology acceptance.

Organizational climate has a variety of elements or dimensions: role clarity, respect, communication, reward system, career development, planning, and decision making. Though there is no unified definition of organizational climate, we will adopt Litwin and Stringer's (1968) definition in this study: "a set of measurable properties of the work environment perceived directly or indirectly by the people who live and work in this environment and are assumed to influence their motivation and behavior" (Litwin, and Stringer, 1968, p.1).

Over the past few decades, researchers have accumulated many tools for measuring organizational climate (Woodman and King, 1978). In their literature review, Koys and DeCotiis (1991) point out that there are more than eighty dimensions of organizational climate. Some notable scales include: the Organizational Climate Questionnaires (LSOCQ) designed by Litwin & Stringer (1968); the Organizational Climate Questionnaire, designed by Lawler, Hall, & Oldhman (1974); the Organizational Climate Measure designed by Patterson et al. (2005); the Organizational Climate Measure designed by Pena-Suarez et al. (2013); and the Organizational Climate Questionnaire designed by Furnham & Goodstein (1997).

The Litwin and Stringer Organizational Climate Questionnaire (LSOCQ) scale has been the focus of many studies and is listed as one of the most used scales for measuring

organizational climate (Woodman and King, 1978). The present study will utilize Litwin and Stringer's (1968) organizational-climate questionnaire (LSOCQ).

Litwin and Stringer developed their organizational-climate concept by applying McClelland and Atkinson's motivation theories in organizational environment (Litwin and Stringer, 1968). The collective work of McClelland and Atkinson provided the backbone for the Litwin and Stringer organizational-climate questionnaire. Atkinson's work focused on three intrinsic needs:

- The need for achievement, defined as the need to surpass expectations to reach higher internal standard
- The need for power, defined as the need to influence and have control over others
- The need for affiliation, defined as the need for friendly relationships and warmth (Atkinson, 1958).

Even though Litwin and Stringer improved their original scale and ended up with nine dimensions instead of six, the initial scale has shown to possess the properties of a trustworthy scale (Litwin and Stringer, 1968). Several researchers investigated the validity and reliability of Litwin and Stringer's LSOCQ and found it to be a practical instrument (Sun, Wen-Hao & Ye, 2012). After reviewing the items in Litwin and Stringer's scale, three dimensions, responsibility, warmth and support, and reward will be used in the current study. These will be used since they are the most relevant to the current study. Below is the description of each of these dimensions:

Responsibility: "the feeling of 'being your own boss'; not having to double-check all your decisions" (Litwin and Stringer, 1968, p.67). Holloway (2012) state that when employees are encouraged to take more responsibility they feel that they are their own bosses and tend to set

higher standards for themselves. Badawy (2007) argues that it is employees' responsibility to develop their skills and knowledge and build their careers.

Reward: "the feeling of being rewarded for a job well done; the emphasis on reward versus criticism and punishment" (Litwin and Stringer, 1968, p.67). Having a fair reward system creates a sense of fairness and justice in the work environment. Rewards, whether they are material or non-material, greatly influence employees' performances. In their meta-analysis of the importance of rewards in the workplace, Condly, Clark, and Stolovitch (2003) prove that a carefully implemented reward system can significantly improve employees' performance. The current study believes that rewards might alter the correlation between technophobia and technology acceptance.

Warmth and Support: "the feeling of general good fellowship and helpfulness that prevails in the organization" (Litwin and Stringer, 1968, p.67). Having an organizational climate that provides warmth and support to its employees will create a sense of good fellowship and result in lower turnover rates (Taylor, 1995). The current study argues that a sense of support within an organization might influence the strength and direction of the correlation between technophobia and technology acceptance.

Many researchers studied the influence of organizational climate on organizations' effectiveness and employees' behavior (Rota, Reynolds, & Zanasi, 2012; Noor, & Dzulkifli, 2013). However, the moderating impact of organizational climate on the relationship between technophobia and technology acceptance has never been investigated. This study will attempt to provide this missing piece to the body of literature on this subject.

The Rationale for Using Organizational Climate

Organizational climate provides a bridge between organizational theories and human motivation and behavior theories (Litwin and Stringer, 1968). Organizational climate affects a variety of variables: job satisfaction, commitment, absenteeism, psychological well-being, psychological risk, violence at the workplace (Pena-Suarez et al., 2013), and employees' behavior within organizations (Pena-Suarez, Muniz, Campillo-Alvarez, Fonseca-Pedrero, & Garcia-Cueto, 2013, Fleishman, 1953; Drexler, 1977). Brown and Brook (2002) stated that when working with organizations, employees gained emotional and social benefits in addition to money. Previous studies show the influence of organizational climate on employees' behavior. The present study argues that the variable of organizational climate can influence or moderate the relationship between technophobia and technology acceptance.

Emotional Intelligence

In Western culture, it is deeply understood that organizational efficiency is a rational and non-emotional activity. However, for the past two decades, research on emotions at the workplace is gaining increasing attention (Brown and Brook, 2002). The roots of the debate on the dichotomy of emotion and intelligence goes back to the first century, B.C., when Publilius Syrus stated "Rule your feelings, least they rule you." The belief that "emotional intelligence" is a paradoxical statement continued into the 20th century.

Many researchers argue that emotions are mainly visceral and negatively influence judgment since they lack cerebral control and have no purpose (Schaffer, Gilmer, and Schoen, 1940; Young, 1936, 1943). In his book, Elster (1985) wrote, "When emotions are directly involved in action, they tend to overwhelm or subvert rational mental processes, not to supplement them" (p. 379); (as cited in Salovey, Mayer, Goldman, Turvey, & Palfai, 1995, p.

126). Coming from this school of thought, Woodworth (1940) suggested that any scale used to measure intelligence should test for the lack of emotions such as inquiry, fear, anger, and grief and that their absence are a sign of intelligence. Wechsler (1958) defines intelligence as the capacity of an individual to think rationally, purposefully, and effectively about their environment. The term intelligence quotient (IQ) is used to refer to individuals' intelligence and can be a measurement of their success. IQ scores were once calculated by dividing one's mental age by their chronological age; however, this method is no longer in use (Neisser et al., 1996).

While it might be argued that IQ has a substantial supportive body of knowledge, people are different in the ways they adapt to their environments, comprehend difficult ideas, reason, and learn from experience (Neisser et al., 1996). Goleman (1995) states "IQ offers little to explain the different destinies of people with roughly equal promises, schooling, and opportunity" (p. 35). General intelligence, or IQ, accounts for 10% to 20% of individuals' success (in some sources this number is as low as 4%) leaving 80% to 90% for other factors such as emotional intelligence (EI) (Goleman, 1995; Mayer & Salovey, 1997). Other studies argue that individuals use only 1/10,000th of their brains' potential and capability (Cooper, & Sawaf, 1996). Neisser et al. (1996) state that even with all the research done on intelligence, there are still many areas (such as creativity, wisdom, practical knowledge, and social skills) that are still not fully understood because they cannot be assessed by tests created to measure intelligence. Since then, studies on emotions have revisited this school of thought.

Dissatisfaction with the narrow conceptualization of intelligence in the context of intelligence quotient (IQ) and academic capability has pushed researchers to pursue the concept of emotional intelligence (Ciarrochi, Chan, & Caputi, 2000).

Many psychologists have not recognized emotional intelligence as an important factor in business. Salovey et al. (1995) discuss how Western psychologists used to believe that logical thinking and emotional experience were contradictory; in order for individuals to think clearly, they have to keep their emotions in check. In 1948, Rober Leeper, pointed out that viewing emotions as a hindering factor rather than a motivator is a weakness in the field of psychology. He argued that there should be definitions of terms and a careful study of emotions that provided factual data, not just theories. Leeper suggested that any discussion of motivation should include a discussion about emotions "…emotional process operate primary as motives." (p. 17). Leeper's new approach paved the road for researchers to look at emotions from a different perspective. This new approach created the need for a distinct definition of "emotional intelligence" to distinguish it from "intelligence" (IQ).

The term "emotional intelligence" (EQ) was first introduced in Salovey and Mayer (1990) study. Salovey and Mayer (1990) stated that Wechsler's (1958) definition of intelligence, unlike other definitions, encompasses what is generally perceived as intelligence. They proposed emotional intelligence as a framework to help identify specific skills and understand how to adopt them.

Building on Edward Thorndike's (1920) work on social intelligence, Salovey and Mayer (1990) argued that emotional intelligence fits the conceptual boundaries of social intelligence and is a part of it. Thorndike distinguished social intelligence from other types of intelligence; he defines it as a person's ability to understand their own and others' emotions and based on that understanding, act wisely with others. In later studies, social intelligence falls under what Gardner (1983) refers to as "personal intelligence". According to Gardner, personal intelligence has two parts: intra- and inter- personal intelligence; however, like social intelligence, personal

intelligence includes knowledge of one's self and others (Salovey and Mayer, 1990). Gardner (1983) states:

> The core capacity at work here is access to one's own feeling life - one's range of affects or emotions: the capacity instantly to effect discriminations among these feelings and, eventually, to label them, to enmesh them in symbolic codes, to draw upon them as a means of understanding and guiding one's behavior. In its most primitive form, the intrapersonal intelligence amounts to little more than the capacity to distinguish a feeling of pleasure from one of pain .... At its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings ... to attain a deep knowledge of ... feeling life. (p.239); (as cited in Salovey and Mayer, 1990, p. 189)

Salovey and Mayer (1990) believe that their concept of emotional intelligence goes alongside Gardner's definition of personal intelligence. Emotional intelligence is a subset of Gardner's personal intelligence with the exception that it does not include the appraisal of others or a sense of self. Rather, it solves problems and controls behaviors by recognizing and using one's own and others' emotional states (Salovey and Mayer, 1990). Salovey and Mayer (1990) define emotional intelligence as a part of individual's social intelligence that they can control and use to guide their actions and feelings. Another, more comprehensive, definition of emotional intelligence is provided by Mayer and Salovey (1997), who define EQ as "the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions so as to promote emotional and intellectual growth." (p. 5)."

Research on emotional intelligence conceives it as either a trait (Baron, 1997; Goleman, 1995; Petrides & Furnham, 2000; 2001) or an ability (Salovey & Mayer, 1990). Emotional intelligence, as a trait, is considered an intrinsic characteristic that promotes well-being (Harms and Crede, 2010). Trait emotional intelligence is present at the lower level of the personality hierarchy (Petrides, Pita, & Kokkinaki, 2007). Emotional intelligence, as an ability, is considered significant for regulating and comprehending emotions, which are then translated into cognition (Harms and Crede, 2010).

Conte (2005) pointed to an increasing interest in emotional intelligence. Burns (1978) argued that emotions are important in the workplace and that leaders and managers need to pay attention to their feelings and not depend solely on feedback. Research on emotional intelligence has demonstrated the significance of emotional intelligence and its impact on employees' behavior. Thi Lam and Kirby (2002) argue that individuals' awareness of their emotional intelligence, not general intelligence, influences their productivity. Also, Sy, Tram, & O'Hara (2006) argue that emotional intelligence is a significant factor in the workplace environment and can be used as a predictor of employees' performance. Employees with high emotional intelligence are better at communicating ideas about projects because they present ideas more interestingly and make others feel better (Mayer & Salovey, 1997); they are more likely to make intuitive and coherent decisions (Bolte, Goschke, & Kuhl, 2003).

Harms and Crede, (2010) argue that the different definitions of emotional intelligence led to the development of several scales for measuring emotional intelligence. One example of an emotional intelligence scale is the Bar-On scale, which uses 133 items to measure individual traits such as self-awareness, self-regard, independence, problem solving, stress tolerance, optimism, and happiness (Bar-On, 1997; Conte, 2005). Other scales for measuring emotional

intelligence include the Emotional Control Questionnaire developed by Roger, & Najarian, (1989) and the Emotional Quotient developed by Goleman (1995). The most popular emotional intelligence scale is Salovey and Mayer's (1990) Trait Meta Mood Scale (TMMS) which measures attention to emotions, emotion clarity, and emotion repair. In later work, Salovey, Mayer, Goldman, Turvey, and Palfai improved the TMMS scale. In this study, we will measure emotional intelligence with Salovey et al.'s (1995) Trait Meta-Mood Scale (TMMS).

Salovey et al. (1995) developed the Trait Meta-Mood Scale (TMMS) because the scale that was previously used to measure emotions, the State Meta-Mood Scale (SMMS), only measured moment-to-moment feelings and not stable ones. The TMMS was developed to measure differences in three relatively stable emotions: attention to moods, clearly discriminating between them, and regulating them (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). The three components of the TMMS are: attention to feelings (individuals' attention to their intrinsic needs and emotional status); clarity of feelings (individuals' ability to understand and differentiate their feelings); and mood repair (individuals' ability to control emotions and change or repair negative emotions) (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Fitness, & Curtis, 2005).

The original TMMS adopted 48 items which were selected from a larger item set provided by Mayer, Mamberg, and Volanth (1988). These items were divided into five domains: clarity of emotional perception, strategies of emotional regulation, integration of feelings, attention to emotions, and attitudes about emotion. The items in each domain were divided into two halves; one half was worded negatively and the other half was worded positively. Items were randomly ordered and participants were asked to respond using a five point Likert scale ranging from "strongly disagree" as 1 to "strongly agree" as 5. Salovey et al. (1995) hoped that the factor

structure would map to three domains, which it did. These domains were “attention to feelings”, “clarity of feelings”, and “mood repair”. The TMMS used 21 items to measure attention, 15 for clarity, and 12 for repair.

Recent research advocates the continued study of emotional intelligence. This study will investigate the moderating impact of emotional intelligence on the relationship between technophobia and technology acceptance using Salovey et al.’s TMMS scale.

The Rationale for Using Emotional Intelligence:

Technophobia is a mix of primary emotions such as: fear, anxiety, and apprehension. These emotions (among others) impact the manner in which technophobia affects technology acceptance. Emotions play a major role in individuals’ decision-making processes in their daily lives (Bolte, Goschke, & Kuhl, 2003). In addition, research on emotional intelligence shows how emotions positively influence employees’ behavior. Employees’ emotional intelligence can be used as an antecedence of their performance (Sy, Tram, & O'Hara, 2006), a measurement of their ability to communicate their ideas (Mayer & Salovey, 1997), and their performance (Thi Lam, & Kirby, 2002). Employees’ awareness of their emotions might empower them to take control over some emotions, such as the fear and anxiety they might feel when using technology. The current study argues that employees’ emotional intelligence level might influence the relationship between technophobia and technology acceptance.

Transformational Leadership

When talking about leaders, Litwin and Stringer (1968) state that “His action, his personality, his leadership style all act to generate certain patterns of motivation” (p. 6). Leader and follower relationship is essential to organizational success (Zhu, Avolio, & Walumbwa,

2009). Responsibilities in organizations are in a downward movement; a higher level of autonomy for employees increases their need for transformational leaders.

Transformational leadership proved to be predominant in the modern workplace, so researchers in the 1980s moved from studying transactional leadership to transformational leadership (Walumbwa, & Lawler, 2003). Transformational leaders create a culture that enhances employees' abilities and transforms the organization (Givens, 2008). The real value of transformational leaders is that they inspire their employees to go beyond the previously expected performance levels and help their employees solve problems by approaching them from new and different angles, thereby increasing their practical and professional capabilities (Bass, 1985; Howell, & Avolio, 1993; Krishnan, 2005). Hickman (1997) states that the goal of a transformational leader is to "create and sustain a context for building human capacity by identifying and developing core values and unifying purpose, liberating human potential and generating increased capacity, developing leadership and effective followership, utilizing interaction-focused organizational design, and building interconnectedness" (Hickman, 1997, p. 2).

The concept of transformational leadership was first introduced by James M. Burns (1978). Prior to Burns work, the predominant research method was to examine the approaches that leaders take to successfully improve organizations. Burns, on the other hand, analyzed political leaders themselves. Burns stated that when a leader engages with employees and their morale is amplified and they are motivated to perform better, the leader is demonstrating transformational leadership. Building on Burns' original work, Bass (1985) argues that by raising employees' awareness of a job's significance, transformational leaders motivate employees to achieve more. Bass (1985) argues that his approach differs from Burns (1978) in that it expands

on the followers' needs and wants. Bass (1985) differs from Burns' (1978) approach; Burns saw transformational leaders as ones' who promote what is good rather than evil while Bass approach argues that the transformational leaders can cause good or bad transformations in followers. Bass (1985) states "Conceptually, we put the emphasis on the observed change in the followers and argue that the same dynamics of leaders' behavior can be of short- or long-term benefit *or cost* to the followers" (p.21). Building on the novel work of Burn (1978), Bass (1985) enhanced the theory of transformational leadership. In his model, Bass (1985) stated that transformational leadership has four dimensions: charisma, inspirational, intellectual stimulation, and individualized consideration.

Bass (1985) called for a paradigm shift by introducing the concept of transformational leadership as part of his Full-Range Leadership Theory. Bass (1999) states that "Changes in the marketplace and workforce over the two decades have resulted in the need for leaders to become more transformational" (p.9) Bass's work on transformational leadership consists of four behavioral components: individual consideration, intellectual stimulation, inspirational, and idealized influence (Bass, 1990; Bass, 1999; Smith, Montagno, & Kuzmenko, 2004). Idealized influence is also known as "attributed charisma." The four behaviors are defined thus:

> *Individualized consideration* – is displayed when leaders work to develop their employees' strengths, support employee needs, and delegate tasks as opportunities for their employees' growth (Bass, 1985).
>
> *Intellectual Stimulation* – is displayed when leaders encourage employees to think critically, break from their old ways of thinking, and be more inventive and creative (Bass, 1985).

Inspirational Motivation – is shown by leaders who set higher standards for themselves; this motivates and inspires followers since it increase their level of awareness (Bass, 1985).

Attributed Charisma – is exemplified by charismatic leaders who build relationships with their followers that are based on personal understanding; this inspires and arouses their followers (Bass, 1985).

These four characteristics build a relationship between a leader and their employees. Each dimension is unique from the others; below is a detailed description of each of the four dimensions as described by Bass (1985) and other researchers:

Attributed Charisma – Bass (1985) looks at charisma as a trait. According to Bass, a charismatic leader inspires and arouses their followers and builds a relationship based on personal understanding - not guided by organizational rules. Weber (1947) introduced the concept of charisma as a constitutive characteristic of a leader; Weber's contention had a profound impact on the field of sociology (Bass, 1990; Antonakis, 2012; Barbuto, 1997). Bass (1990) stated, "Weber saw charismatic leaders as being extremely highly esteemed persons who are gifted with exemplary qualities." (p. 184). Gardner and Avolio (1998) describe a charismatic leader as an extremely gifted individual who communicates the vision and the mission of the company to their follower and gain the trust, respect, and confidence of his or her employees. To have charisma, a leader must have the complete faith of his or her employees (Bass, 1990).

Among the four factors of transformational leadership, charisma receives a great deal of attention in the literature. However, there is currently no unified definition of charisma (Conger, & Kanungo, 1987). Rather, charisma has been studied as a set of behaviors (House, 1977; Fiol, Harris, & House, 1999). Conger and Kanungo (1987) provided a framework that looks at

charisma as an "attributional phenomenon" (p.639). Shamir et al. (1993) believe that the communication between charismatic leaders and their followers is very effective since it is based on strong tactics that link employees' actions with their previous experiences.

Inspirational Motivation – Bass (1985) argues that inspirational leaders set higher standards for themselves, a behavior that motivates and inspires their followers since it increases followers' levels of awareness. Inspirational leadership is a leadership style that "communicate[s] high performance expectations" (Bass, 1990, p. 218). Inspiration is displayed when employees identify with a leader who shows determination and confidence, can articulate a desirable future, and knows how to reach it (Bass, 1990; Bass, 1999). Inspirational leadership can be distinguished from charismatic leadership by how the leader's ability to inspire is perceived by employees. Bass (1990) posits that a charismatic leader is most likely to be an inspirational leader, but not vice versa. The ability to inspire others, particularly employees, is a quality seen in transformational leaders (Waldman, Balthazard, & Peterson, 2011). Bass refers to Downton's (1973) study, which distinguishes between inspirational and charismatic leaders.

Waldman et al. (2011) refers to the Bass & Bass (2009) work, including their argument for inspiration as central among leadership characteristics. Many scholars argue, on the other hand, that charisma is at the center of leadership behavior (Conger, Kanungo, & Menon, 2000; Conger, & Kanungo, 1987; Shamir, House, & Arthur, 1993).

Intellectual Stimulation – is displayed when leaders encourage employees to think critically, break out from old ways of thinking, and be more inventive and creative (Bass, 1985; Bass, 1990; Bass, 1999). A leader is described as an intellectual leader when his or her ideas enable their employees to revisit issues that were never questioned before (Bass, Avolio, and Goodheim, 1987). Dubinsky et al. (1995) argue that employees tend to be more critical in their

problem solving and have an enhanced thought process when they are lead by an intellectual leader. Intellectual leadership has not been discussed as much as charismatic or inspirational leadership (Deem, 2010).

Individualized leadership – Leaders display individualized consideration when they work to develop employee strengths, support employee needs, and delegate tasks as opportunities for their employees' growth (Bass, 1985; Bass, 1990; Bass, 1999; Bass, Avolio, & Goodheim, 1987). One characteristic of individualized leaders that Bass et al. (1987) point out is that they give personal attention to neglected employees.

Armandi et al. (2003) state that transformational leaders have charisma and inspire their employees, are aware of their employees' needs for development, and offer support for approaching problems in different ways. Transformational leaders behave like teachers who display the best in themselves to inspire the best in their students. Bass (1999) stated that a transformational leader "elevates the follower's level of maturity and ideals as well as concerns for achievement, self-actualization, and the well-being of others, the organization, and society." (p.11) Transformational leaders help their employees to come together to pursue long-term goals rather than immediate ones (Barbour, 2006). Employees might become transformational leaders themselves as a result of the support and empowerment they receive from their transformational leaders (Bass, and Riggio, 2006).

The literature on leadership is saturated with studies that examine transformational leadership impact or influence on different variables. The impact of transformational leadership on a variety of outcome variables has been studied extensively in the literature (Zhu, Avolio, & Walumbwa, 2009). Walumbwa and Lawler (2003) suggest that transformational leaders positively impact outcome variables such as withdrawal behavior, and employees' creativity

levels (Yildiz and Ozcan, 2014; Mumford, Connelly, and Gaddis, 2003; Mumford et al., 2002). Also, Bono and Judge (2004) linked transformational leadership to psychological factors such as extraversion, openness, agreeableness, and emotional stability. Harms and Crede's (2010) study supported claims of a positive relationship between emotional intelligence and transformational leadership but failed to support extreme claims that overstate the significance of this relationship.

Transformational leadership influences many variables in many environments. Afshari et al. (2012) study connected transformational leadership and its sub-dimensions to an increased use of information and communication technologies. Verma and & Krishnan (2014) studied the impact of gender on transformational leaders and organizational commitment and they found that transformational leadership enhances continuance commitment just when the leader is genderless.

Several studies investigate the relationship between technology acceptance and transformational leadership (Legris, Ingham, & Collerette, 2003; Straub, Keil, & Brenner, 1997; Dishaw, & Strong, 1999). Schepers et al. (2005) found that transformational leaders have a positive influence on their employees when it comes to user acceptance of new technologies.

The current study utilized the multifactor leadership questionnaire (MLQ) developed by Bass and Avolio (1985). Ozaralli (2003) argues that the MLQ is among the most validated and often-used scales of transformational leadership. The MLQ has strong internal consistency and factor loading (Avolio et al., 1995; Bass & Avolio, 1997; Bass & Avolio, 2000).

There is a plethora of research discussing transformational leadership (Bass, 1985; Bromley, & Kirschner-Bromley, 2007; Schepers, Wetzels, & Ruyter, 2005; Avolio, Bass, & Jung, 1999; Givens, 2008). Most research on transformational leadership has examined it as a predicting or independent variable. Transformational leadership as a moderating variable has

rarely been studied. There is a paucity of studies synthesizing research on transformational leaders, organizational climate, and emotional intelligence as collective factors that moderate the correlation between technophobia and technology acceptance.

The Rationale for Using Transformational Leadership

Transformational leadership has been proved to influence and moderate many variables such as employees' performance (Bass, 1997; Judge & Piccolo, 2004; Lowe & Gardner, 2000; Sosik, 2006). Transformational leadership received great support from the literature and is considered a strong influencing factor in companies. Investigating the moderating influence of transformational leaders on the relationship between technophobia and technology acceptance might give companies specificity when dealing with technophobic employees who might be technophobic. The current study will add insight into the influence that transformational leadership has on the relationship between technophobia and technology acceptance. This will prove very effective when treating technophobia. The current study argues that transformational leadership may have a positive influence on employees' technophobia.

Summary

This chapter provided a review of the relevant literature on the variables used in this study. Technology acceptance, emotional intelligence, transformational leadership, and organizational climate received a great deal of attention in the literature. Technophobia in its truest sense, on the other hand, did not. Only one study was found that actually approached technophobia in a similar manner as this study. Results from this study will be a great addition to the body of literature since it provides a missing piece to this body of knowledge.

Chapter 3: Methodology

This chapter will present: the pilot study used to develop the technophobia scale, the research design, the instruments used to measure different variables, and the data collection procedure. Also, this chapter will cover population, sample size, data analysis, and the Human subject approval.

Pilot Study: Scale Development

A 30-item survey which asked about a variety of technologies: robotics, software, operating systems, and cell phones were developed. A total of 92 completed surveys were sent back to the researchers. Version 22 of the Statistical Package for Social Science (SPSS) was used as the main statistical analysis tool. The participants in this study were mostly young individuals; 78.3% were younger than 45, with moderate experience; 70.9% had 1 to 11 years of experience. Table 1 provides a description of the demographics of the data collected and used in this study.

Table 2 *Technophobia Scale Demographic*

Demographic	Frequency	
Gender	Males (32)	34.8 %
	Females (60)	65.2%
Range of Years of Experience	1 to 57 years	
Range of Age, in Years	18 to 76 years	
Ethnicity	White (80)	87.0 %
	Caucasian (5)	5.4 %
	African American/Black (1)	1.1 %
	Indian (5)	5.4 %
	Missing (1)	1.1 %
Occupation	Administration	4
	Education	44
	IT companies	5
	Students	39

Factor Extraction

Latent factors may be extracted via two main techniques: principle component analysis (PCA) and factor analysis (FA). Even though both techniques are similar in their attempts to produce a smaller linear combination of the original variables (and produce similar results), authors have different recommendations on which technique to use (Pallant, 2007). Tabachnick and Fidell (2007) state that "If you are interested in a theoretical solution uncontaminated by unique and error variability…FA is your choice. If on the other hand you simply want an empirical summary of the data set, PCA is the better choice (p.635)" (from Pallant, 2007, p. 180). This study chose to use the principle component analysis technique to extract latent factors.

To measure the suitability of the intercorrelations among items in the scale an inspection of the correlation matrix was performed. Tabachnik and Fidell (2007) recommend considering coefficients greater than .3; if there is are few correlations above .3, factor analysis is not recommended (Pallant, 2007). This study chose to consider coefficients of .5 or greater since the number of items used in the scale was relatively small; 30 items.

Additional statistical measurements were provided by SPSS and used in this study; Bartlett's test and the Kaiser-Meyer-Olkin measurement. Bartlett's test of sphericity (Bartlett, 1954) and the Kaiser-Meyer-Olkin (KMO) (Kaiser, 1970; Kaiser, 1974) measure of sampling adequacy helped determine the existence of factors within a group of items. For items to be adequate for factor analysis, the Bartlett test should be significant ($p < .05$) and the KMO should range from 0 to 1, with .5 as the lowest acceptable value (Tabachnik and Fidell, 2007). KMO values of .5 are considered weak; .6 acceptable; .7 average; .8 good; and .9 very good (Cronbach, 1951). The KMO test is an excellent indicator of the existence of latent factors and whether or not they are significant.

Principle component analysis (PCA) was used to test the 30 items on the technophobia scale for hidden factors. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The KMO value was .803, which exceeds the .6 recommended by Kaiser (1970, 1974) and Cronbach (1951). Bartlett's test of sphericity (Bartlett's, 1954) reaches statistical significance at $p < .001$. Results of the Bartlett and KMO tests indicated latent factors within our 30 items scale.

Screeplot test (Catell, 1966) was reviewed to examine the number of latent factors in the scale (Catell, 1966). Examining this screeplot showed a break after the fifth factor (Appendix A). Principle component analysis revealed the presence of five components with eigenvalues exceeding 1, explaining 35.1%, 13.8%, 8.5%, 8.1%, and 6.5% of the variance respectively. The rotated factors matrix and suggested names for these factors are presented in Appendix C. This table shows the factors and the items that rotate on them.

Reviewing the items in the scale, common themes emerged which determined the naming of each factor. Below are the items in each of the factors:

<u>Factor 1</u>

1. I am fearful that someone is using technology to watch and listen to everything that I do. #9
2. I am terrified that technologies will change the way we live, communicate, love, and even judge others. #14
3. I am afraid of new technologies because one day it will make us (humans) obsolete. #15
4. I am fearful that new technologies will someday take over my job. #18
5. I am afraid to eat genetically modified food. #20

The questions that load highly on Factor 1 followed a theme of suspicion and mistrust of technology. This factor will be labeled *techno paranoia*. Techno paranoia is defined as an unjustified fearful feeling that an individual has toward technology that leads to their mistrust of technology (most of the time this fear is based on weak or no evidence).

Factor 2

1. I am afraid of new technologies because if something goes wrong with it (if it stopped working for some reason) we will go back to the Stone Age. #23
2. I am afraid of new technologies because they may interfere with my life emotionally, physically, and psychologically. #24
3. I am afraid to use some features in my cell phone. #25
4. I am afraid of using search engines such as Google. #26
5. I am terrified of being connected to the Internet, someone might be tracking me. #30

Questions that load highly on this factor seem to share the notion of "fear of technology". This fear is not technology specific; it is associated with a variety of technologies. For that reason, this factor will be labeled *techno fear*. Techno fear is defined as an unpleasant feeling an individual experiences in the presence of technology which could be perceived as threatening.

Factor 3

1. I feel restless when I have to use a new communication device. #5
2. I feel restless when I have to learn a new computer operating system (for example, changing from Windows 7 to Windows 8). #6

These questions lean toward anxiety more than fear. This factor will be labeled *techno anxiety*. Techno Anxiety is defined as the nervousness and unease an individual feels about the potential use of technology.

Factor 4

1. I am fearful that robots may take over the world. #8
2. I am afraid of websites such as Google, Yahoo, and Bing because they make it very easy for people to stalk me. #19

As in Factor 2, these questions are designed to measure a person's level of fear. However, in this factor, this fear is linked to the idea of an artificial intelligence, or a computer network, that spies on users with the aim of ruling humanity. This factor will be called *cybernetic revolt* (or cybernetic fear). Cybernetic revolt or fear is defined as the fear an individual feels because they believe technology may become self aware and take over the world.

Factor 5

1. I try to avoid using new technologies such as cell phones whenever possible. #2
2. I try to avoid changing communication devices (such as your cell phone) because it makes me nervous. #7

This last factor will be labeled *communication devices avoidance*. Communication device avoidance is defined as the action of avoiding certain communication technologies which results from individuals' fear or anxiety regarding these technologies.

The pilot study resulted in five factors that measure technophobia. Even though the survey contained items about computers, none of the factors or items was specifically about computers. This finding might suggest that the fear of computers might be outdated.

The current study investigated the impact of these factors on the correlation between technophobia and technology acceptance using these factors.

Research Design

The current study sought to investigate the influence that technophobia on technology acceptance in the workplace through quantitative cross-sectional survey research. The survey instrument used items that proved to have internal consistency which agrees with the quantitative research standards. Previous studies had used these items and met the standard of peer review. A sample of the survey used in the current study is provided in Appendix G.

Instruments and Measurements

The survey for this study began with an informed consent section (Appendix G). After that, the survey asked six demographic questions. The survey taker was then asked 62 questions related to the construct of this study. The survey was printed and distributed to participants; an online version was not provided. In order to use simple, unambiguous, and neutral language, we reworded some questions. The instruments and measuring tools used in this study are discussed below.

Reliability

A preliminary analysis was performed to ensure that there was no violation of assumptions of normality, linearity, and homoscedasticity (Appendix E). The Skewness and Kurtosis values were judged to be adequate for normality. Then, the reliability of the scales used was tested, as shown below.

Independent Variable: Technophobia. Since the relevant literature lacks scales that measure technophobia in its true sense, the current study used the technophobia scale developed by Khasawneh and Bellamy (2014). This technophobia scale uses 16 items to measure five dimensions; techno paranoia (five items), techno fear, (five items), techno anxiety (two items),

techno cybernetic revolt (two items), and techno communication device avoidance (two items). The current study uses a five-point Likert scale, ranging from "agree" as 5 to "disagree" as 1. Khasawneh and Bellamy (2014) reported the value of Cronbach's Alpha for their scale as .895.

The internal consistencies of these scales were measured using Cronbach's Alpha, utilizing SPSS (Version 22). Table 2 presents the Cronbach's Alpha values for this study's sub-dimensions of technophobia.

Table 3 *Technophobia Sub Scales Reliability*

Scale sub dimension	Cronbach's Alpha	Number of items
Technophobia	**.898**	**16**
Paranoia	.776	5
Fear	.806	5
Anxiety	.714	2
Cybernetic Revolt	.707	2
Communication Device Avoidance	.491	2

Excluding the "communication device avoidance" sub dimension, all of these technophobia sub dimensions satisfy the roles of Cronbach's Alpha (a value of .7 or higher). Having a low alpha value does not mean that a subscale should be removed, especially when it is highly correlated with the other sub dimensions in the scale. Tavakol and Dennick (2011) argue that the correlation of a subscale should be tested before removing it from the scale; if it has high internal correlation, it should be kept. Tavakol and Dennick (2011) add that a low alpha value can be attributed to a low number of questions; which is precisely the case in "communication device avoidance" sub-dimension. After further examination, it was decided to keep the "communication device avoidance" sub-scale, since it is highly correlated with the other factors; also, the removal of the two items in the "communication device avoidance sub dimension" would lower the Cronbach's Alpha of the "technophobia" scale.

Dependent Variable: Technology Acceptance. Employees' level of technology acceptance was measured with the Technology Acceptance Model (TAM) developed by Davis (1985). The TAM model uses 10 items to measure for two dimensions: "perceived ease of use" and "perceived usefulness". Davis (1985) reported that the reliability values for ease of use and usefulness are .93 and .97 respectively. This study adopted six items from the TAM to measure for ease of use (three items) and usefulness (three items). A seven-point Likert scale ranging from "strongly agree" as 7 to "strongly disagree" as 1, was utilized.

Table 3 presents the Cronbach's Alpha values for each of the technology acceptance sub-dimensions in this study.

Table 4 *Technology Acceptance Scale Reliability*

Scale sub dimension	Cronbach's Alpha	Number of items
Technology Acceptance	**.881**	**6**
Usefulness	.878	3
Ease of Use	.901	3

Moderating Variables: Transformational Leadership: This leadership style was measured using the Multifactor Leadership Questionnaire (MLQ) scale developed by Bass and Avolio (1995). The MLQ is one of the most extensively used and validated scales for measuring transformational leadership (Ozaralli, 2003). The MLQ used 36 items to measure four dimensions; charisma, inspirational motivation, intellectual stimulation, and individualized consideration. This study adopted 16 items from Bass and Avolio (1995). Bass and Avolio (1995) reported the Cronbach's Alpha value for their scale as .949. This study used four items to measure each of the transformational leadership dimensions: charisma, inspirational motivation, intellectual stimulation, and individualized consideration. The current study uses a five-point Likert scale, ranging from "agree" as 5 to "disagree" as 1.

Moderating Variables: Emotional Intelligence: Employees' emotional intelligence was measured using Salovey et al.'s (1995) Trait Meta-Mood Scale (TMMS). The TMMS uses 48 items to measures three dimensions: attention to feelings, clarity of feelings, and mood repair. The current study utilized 12 items from Salovey et al.'s (1995) TMMS to measure employees' emotional intelligence in all three dimensions: attention to feelings (four items), clarity of feeling (four items), and mood repair (four items). The reported Cronbach's Alpha values for these three sub dimensions (attention, clarity, and repair) are .78, .87, and .76, respectively (Salovey et al., 1995). The current study used a five-point Likert scale which ranged from "agree" as 5 to "disagree" as 1.

Moderating Variables: Organizational Climate: In the survey for this study, 12 items were adapted from the original Litwin and Stringer (1968) Organizational Climate Questionnaire (LSOCQ) to measure employees' levels of: responsibility (four items), reward (four items), and warmth (four items). In their study, Litwin and Stringer (1968) reported that these three sub-dimensions (responsibility, reward, warmth) have a reliability level of 0.5, 0.81, and 0.75, respectively. The current study uses a five-point Likert scale, ranging from "agree" as 5 to "disagree" as 1.

The resulting Cronbach's Alpha values of the scales used to measure the moderating variables are presented in Table 4.

Table 5 *Scales Reliability*

Scale	Cronbach's Alpha	Number of items
Transformational Leadership	**.964**	**16**
Attributed Charisma	.887	4
Inspirational Motivation	.929	4
Intellectual Stimulation	.896	4
Individualized Consideration	.897	4
Organizational Climate	**.764**	**12**
Responsibility	.347	4

Reward	.726	4
Warmth and Support	.644	4
Emotional Intelligence	**.752**	**12**
Attention of Feeling	.752	4
Clarity of Feeling	.686	4
Mood Repair	.864	4

In the current study, all the scales used had a good internal consistency. Therefore, no scale will be dropped.

Data Collection

A self-addressed envelope as well as a printed survey was distributed to participating businesses and companies. Contact information was provided in case any questions arose. Participants were asked to complete questions regarding their demographic information: age, gender, ethnicity, education level, years of experience, and industrial type. The approximate time required to complete this survey was 20-30 minutes. Participants were informed that their participation in this study was completely voluntary and they had the right to refuse to participate and/or leave the study at any time without penalty. Neither subjects' names nor email addresses were collected during this survey, making it impossible to link a response to a survey taker. The survey text is provided in Appendix G. The Statistical Package for Social Science was used to analyze the data collected.

Population, Sample, Subjects

The data for this study was collected via a survey that was distributed to small and local organizations in Southeast Michigan. Respondents to this survey included employees over 18 years of age who were willing to fill it out. Purposive sampling was used in collecting the data for this study; the sample consisted of workers who use a recently-implemented technology (or a variety of technologies) in the course of their day-to-day work. On April 22, 2015, the data collection concluded with a sample size of 113 participants from various industries: engineering,

construction, information technology, health services, accounting and finance, manufacturing, education, and government. Eight age range categories were used to gather data about participants' ages: 18-20, 21-24, 25-30, 31-34, 35-40, 41-50, 51-61, and over 61. None of the participants reported themselves in the 18 to 20-year-old age group. Seven participants (6.7% of the sample) reported themselves to be over 61 years old. The rest of the sample, 106 participants (93.3% of the sample) was almost equally distributed by age, with a slight increase between 25-30 years old (23.0% of the sample). Below is a bar chart that illustrates the number of participants from each industry.

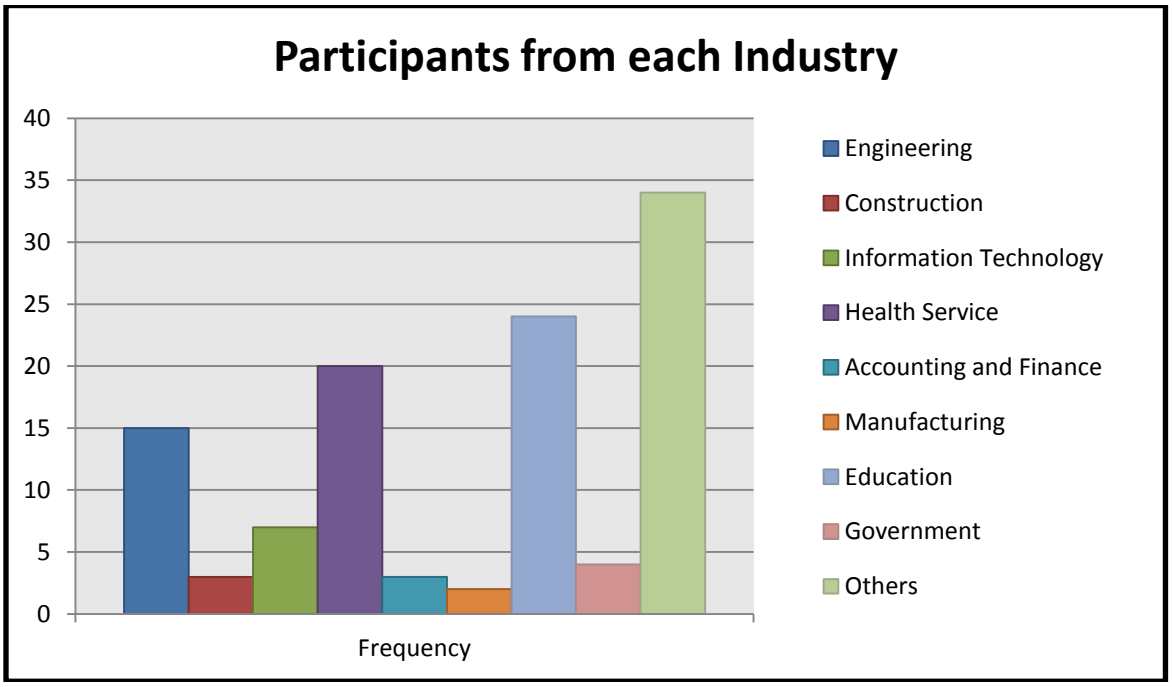

Figure 2 Number of Participants from each Industry

Data Analysis

Pearson bivariate correlation was utilized to determine the strength and direction of the relationship between technophobia and technology acceptance. All statistical procedures were performed using SPSS (Version 22). In addition, the moderating influence of transformational leadership, emotional intelligence, and organizational climate as well as the demographics

information collected; gender, age, education level, ethnicity, industry type, and years of experience were examined. Cronbach's Alpha coefficient was used to test the reliability and internal consistency of the scales in this study. Any scale that did not meet the reliability standards was dropped. Also, the data set was checked for missing variables and outliers.

To test their moderating influence on the correlation between technophobia and technology acceptance, the median value of each of the moderating variables (transformational leadership, organizational climate, and emotional intelligence) was split into "low" and "high" groups depending on the score.

Human Subjects

This study measured individuals' level of technophobia and its impact on their technology acceptance based on their responses to the survey. This study received Human Subject approval from the University Human Subject Review Committee on December 1, 2014 (Appendix D). A paragraph informing subjects of their rights was included at the top of each survey.

Summary

This chapter explained the methodology that was used in this study and a detailed description of Khasawneh and Bellamy (2014) pilot study where the technophobia scale was developed. Also, a list of the scales that were adopted from previous studies was presented as they were found to be reliable. This chapter presented the statistical procedures that were used to analyze the data. A total of 113 surveys were filled out and mailed (or handed back) to the researcher. The next chapter will attempt to provide answers to the research questions.

Chapter 4: Results

Descriptive Analysis of the Sample

The data collected has a good deal of diversity of different categorical descriptive variables which makes it ideal for studying technophobia among employees. The demographic information collected for the current study is presented in Table 6.

Table 6 *Study Demographics*

Demographic	Frequency	
Gender	Male (47)	41.6 %
	Female (65)	57.5 %
	Missing (1)	0.9 %
Age	18-20 (0)	0.0 %
	21-24 (66)	14.2 %
	25-30 (26)	23.0 %
	31-34 (17)	15.0 %
	35-40 (17)	15.0 %
	41-50 (19)	16.8 %
	51-61 (17)	15.0 %
	Over 61 (7)	6.2 %
	Missing (0)	0.0%
Education	No School (0)	0.0%
	Some school (0)	0.0 %
	High school (3)	2.7 %
	Technical training (1)	1.9 %
	Some college (21)	18.6 %
	Associate degree (4)	3.5 %
	Bachelor degree (39)	34.5 %
	Master degree (38)	33.6 %
	Doctoral degree (6)	5.3 %
	Missing (1)	0.9 %
Ethnicity	American Indian or Alaska Native (1)	0.9 %
	Asian (9)	8.0 %
	African American or Black (8)	7.1 %
	Caucasian or White (77)	68.1 %
	Native Hawaiian or other Pacific Islander (0)	0.0 %

	Others (18)	15.9 %
	Missing (0)	0.0 %
Industry type	Engineering (15)	13.3 %
	Construction (3)	2.7 %
	Information Technology (7)	6.2 %
	Health Services (20)	17.7 %
	Accounting and Finance (3)	2.7 %
	Manufacturing (2)	1.8 %
	Education (24)	21.2 %
	Government (4)	3.5 %
	Others (34)	30.1 %
	Missing (1)	0.9 %
Years of experience	Less than a year (5)	4.4 %
	1-4 years (41)	36.3 %
	5-9 years (21)	18.6 %
	10-14 years (20)	17.7 %
	15- 19 years (9)	8.0 %
	20-30 years (10)	8.8 %
	More than 30 years (7)	6.2 %
	Missing (0)	0.0 %

Moderating Variables Descriptive

Examining the moderating variables (transformational leadership, organizational climate, and emotional intelligence) revealed some remarkable findings that will be discussed later in this chapter. The median variable was used to divide the moderating variables into "high" and "low" groups. The descriptive data of the moderating variables is presented in Table 7.

For an individual to be working under a transformational leader, that leader score needs to score needs to fall under the "high" score part for transformational leadership scale. Based on the median value, scores of 67 or above are considered to be "high." Almost half of the sample, 48.7%, reported that they worked under a transformational leader.

For organizational climate, scores of 41 or above are considered to be "high". Again, almost half the sample, 47.8%, reported that they work in a supportive climate.

For the emotional intelligence, scores of 42 or higher were considered to be "high". Based on this grouping, 46% of the sample could be described as high in emotional intelligence.

Table 7 *Moderating Variables Descriptive*

Variable	Transformational Leadership	Organizational Climate	Emotional Intelligence
Min	16	12	12
Max	80	60	60
Min Reported	16	19	21
Max Reported	80	56	55
Mean	60.97	39.29	39.78
Median	66	40	41
Mode	80	43	44
Std. Deviation	18.608	9.139	8.038
Variance	346.258	83.530	64.602
Percentage (variable that fall below the Median)	51.3%	52.2%	54.0%

As mentioned before (based on the median variable), the standards of "high" and "low" for the moderating variables were used. The data collected for the moderating variables is almost equally divided between high and low; 51.3% of transformational leadership is low, 52.2% of organizational climate is low, and 54% of emotional intelligence is low. This data is ideal for providing a more realistic estimate of the influence technophobia has over technology acceptance when moderated by these variables.

Research Question One

1. Is there a relationship between technophobia and technology acceptance?

Examining the data collected for this study revealed that Technophobia and technology acceptance have a medium, negative significant correlation (r = -.310, n = 113, p <.01) as shown in Table 8. Technology acceptance dimensions are influenced differently by technophobia. Ease

of use seems to be less influenced by technophobia than usefulness (r = -.327, n = 113, p <.01; r = -.216, n = 113, p <.01, respectively). The next question will examine the dimensions of technophobia and how they influence the dimensions of technology acceptance.

Research Question Two

2. Is there a relationship between the sub-dimensions of technophobia and technology acceptance?

Examining the relationships between the sub-dimensions of technophobia and the sub-dimensions technology acceptance revealed very interesting findings. When it comes to user perceived usefulness, techno-paranoia and techno-avoidance seem to have no significant influence (r = -.104, n = 113, p >.05, and r = -.161, n = 113, p >.05, respectively) while techno-cybernetic revolt has the strongest influence with r = -.231, n = 113, p <.05. For users' perceived ease of use, all dimensions of technophobia reached statistical significance; techno-anxiety had the strongest correlation. Techno-anxiety has a moderately strong, negative influence on users perceived ease of use of new technology with r = -.408, n = 113, p <.01, as shown in Table 8.

These findings suggest that when working with a new technology, individuals may believe they have to work harder both physically and mentally to achieve high performances which increases their anxiety.

Table 8 *Technophobia and Technology Acceptance Sub-Dimensions Correlation*

	Technophobia	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.310**	-.178†	-.272**	-.345**	-.264**	-.277**
- Usefulness	-.216*	-.104†	-.222*	-.207*	-.231*	-.161†
- Ease Of Use	-.327**	-.198*	-.256**	-.408**	-.245**	-.332**

N=113, **p < .01, *p < .05, p < .1 †

Research Question Three

3. Does transformational leadership moderate the correlation between technophobia and technology acceptance?

The results for question one established that technophobia and technology acceptance correlate with each other. Results show that when employees work under a leader who is low in transformational leadership, the negative correlation between technophobia and technology acceptance increases, $r = -.423$, $n = 58$, $p < .01$, in comparison to $r = -.310$, $n = 113$, $p < .01$, as shown in Table 9. This finding suggests that working with a leader who is low on transformational leadership influences the correlation between technophobia and technology acceptance by increasing employee's technophobia and lowering their technology acceptance.

On the other hand, when employees work under a leader who is high in transformational leadership, the correlation between employee's technophobia and technology acceptance does not reach statistical significance ($r = -.249$, $n = 58$, $p < .1$), as shown in Table 10. This suggests that high transformational leadership behavior has a positive influence on the correlation between technophobia and technology acceptance. This finding suggests that employee's technophobia is lowered to the point that is does not impact their technology acceptance.

Table 9 *Moderating Influence of Low Transformational Leadership on the Correlation between Technophobia and Technology Acceptance*

Low TL	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.423**	-.256†	-.349**	-.430**	-.357**	-.328*
- Usefulness	-.297*	-.142†	-.262*	-.303*	-.314*	-.234†
- Ease Of Use	-.472**	-.305*	-.369**	-.500**	-.354**	-.379**

N=58, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 10 *Moderating Influence of High Transformational Leadership on the Correlation between Technophobia and Technology Acceptance*

High TL	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.249†	-.125†	-.282*	-.167†	-.269*	-.238†
- Usefulness	-.164†	-.085†	-.235†	-.021†	-.207†	-.071†
- Ease Of Use	-.229†	-.112†	-.210†	-.240†	-.217†	-.302*

N=55, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Four

4. Do the four dimensions of transformational leadership moderate the correlation between technophobia and technology acceptance?

This question investigates the moderating influence of: charisma, inspirational motivation, intellectual stimulation, and individualized consideration.

For charisma (as shown in Tables 11 and 12), having a leader who is low in charisma will slightly increase the strength of the negative correlation between technophobia and technology acceptance (r = -.315, n = 57, p < .05), Table 11, and having a leader who is high in charisma will faintly decrease the strength of the negative correlation (r = -.287, n = 53, p < .05), Table 12. This finding suggests that the leader's charismatic behavior slightly influences the negative correlation between employee's technophobia their technology acceptance but the correlation does not change direction and employee's technophobia might still impact their technology acceptance.

For inspirational motivation (as shown in Tables 13 and 14), having a leader who is low in inspirational motivation will increase the strength of the negative correlation between technophobia and technology acceptance (r = -.347, n = 59, p < .01), Table 13, and having a leader who is high in inspirational motivation will decrease the strength of the negative correlation to the point it does not reach statistical significance (r = -.234, n = 51, p < .1), Table 14. This finding suggests that the leader's inspirational motivation behavior have a great and positive influence on the correlation between employee's technophobia their technology acceptance and employee's technophobia might not impact their technology acceptance.

For intellectual stimulation (as shown in Tables 15 and 16), having a leader who is low in intellectual stimulation will increase the strength of the negative correlation between

technophobia and technology acceptance (r = -.405, n = 53, p < .01), Table 15, and having a leader who is high in intellectual stimulation will decrease the strength of the negative correlation to the point it does not reach statistical significance (r = -.227, n = 57, p < .1), Table 16. This finding suggests that the leader's intellectual stimulation behavior have a great and positive influence on the correlation between employee's technophobia their technology acceptance.

Finally, for individualized consideration (as shown in Tables 17 and 18), having a leader who is low in individualized consideration will increase the strength of the negative correlation between technophobia and technology acceptance (r = -.408, n = 58, p < .01), Table 17, and having a leader who is high in individualized consideration will decrease the strength of the negative correlation to the point it does not reach statistical significance (r = -.240, n = 52, p < .1), Table 18. This finding suggests that the leader's individualized consideration behavior have a great and positive influence on the correlation between employee's technophobia their technology acceptance.

Table 11 *Moderating Influence of Low Charisma on the Correlation between Technophobia and Technology Acceptance*

Low TL-Charisma	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.315*	-.160†	-.264*	-.404**	-.231†	-.241†
- Usefulness	-.218†	-.086†	-.223†	-.240†	-.230†	-.124†
- Ease Of Use	-.341**	-.180†	-.248†	-.492**	-.206†	-.313*

N=57, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 12 *Moderating Influence of High Charisma on the Correlation between Technophobia and Technology Acceptance*

High TL-Charisma	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.287*	-.147†	-.286*	-.289*	-.279*	-.324*
- Usefulness	-.183†	-.069†	-.206†	-.188†	-.192†	-.194†
- Ease Of Use	-.307*	-.181†	-.282*	-.306*	-.284*	-.358**

N=53, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 13 *Moderating Influence of Low Inspirational Motivation on the Correlation between Technophobia and Technology acceptance*

Low TL-Inspirational Motivation	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.347**	-.192†	-.289*	-.451**	-.290*	-.303*
- Usefulness	-.241†	-.100†	-.213†	-.311*	-.272*	-.211†
- Ease Of Use	-.386**	-.231†	-.307*	-.523**	-.270*	-.349**

N=59, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 14 *Moderating Influence of High Inspirational Motivation on the Correlation between Technophobia and Technology Acceptance*

High TL-Inspirational Motivation	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.234†	-.097†	-.258†	-.150†	-.294*	-.212†
- Usefulness	-.142†	-.047†	-.208†	-.041†	-.194†	-.055†
- Ease Of Use	-.238†	-.109†	-.214†	-.201†	-.285*	-.287*

N=51, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 15 *Moderating Influence of Low Intellectual Stimulation on the Correlation between Technophobia and Technology Acceptance*

Low TL-Intellectual Stimulation	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.405**	-.223†	-.359**	-.517**	-.260†	-.310*
- Usefulness	-.267†	-.138†	-.248†	-.323*	-.209†	-.193†
- Ease Of Use	-.430**	-.227†	-.367**	-.589**	-.263†	-.358**

N=53, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 16 *Moderating Influence of High Intellectual Stimulation on the Correlation between Technophobia and Technology Acceptance*

High TL-Intellectual Stimulation	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.227†	-.112†	-.210†	-.212†	-.264*	-.244†
- Usefulness	-.161†	-.046†	-.190†	-.131†	-.229†	-.127†
- Ease Of Use	-.241†	-.152†	-.183†	-.244†	-.239†	-.303*

N=57, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 17 *Moderating Influence of Low Individualized Consideration on the Correlation between Technophobia and Technology Acceptance*

Low TL-Individualized Consideration	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.408**	-.211†	-.303*	-.522**	-.360**	-.358**
- Usefulness	-.243†	-.086†	-.169†	-.360**	-.272*	-.238†
- Ease Of Use	-.486**	-.272*	-.369**	-.598**	-.392**	-.419**

N=58, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 18 *Moderating Influence of High Individualized Consideration on the Correlation between Technophobia and Technology Acceptance*

High TL-Individualized Consideration	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.240†	-.133†	-.293*	-.115†	-.229†	-.192†
- Usefulness	-.200†	-.109†	-.283*	-.031†	-.222†	-.077†
- Ease Of Use	-.202	-.114†	-.210†	-.159†	-.165†	-.239†

N=52, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Five

5. Does organizational climate moderate the correlation between technophobia and technology acceptance?

For a workplace that has low organizational climate, the negative correlation between technophobia and technology acceptance slightly increased (r = -.355, n = 59, p <.01), as shown in Table 19. However, for workers in a workplace with high organizational climate, the relationship between technophobia and technology acceptance does not reach statistical significance (r = -.229, n = 54, p > .05), as shown in Table 20. This finding suggests that organizational climate is a good moderating variable in the correlation between technophobia and technology acceptance since it positively influence the correlation.

Table 19 *Moderating Influence of Low Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

Low OC	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.355**	-.209†	-.272*	-.480**	-.213†	-.402*
- Usefulness	-.273*	-.155†	-.235†	-.323*	-.224†	-.238†
- Ease Of Use	-.362**	-.218†	-.254†	-.533**	-.160†	-.476**

N=59, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 20 *Moderating Influence of High Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

High OC	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.229†	-.110†	-.282*	-.133†	-.340*	-.077†
- Usefulness	-.109†	-.012†	-.212†	-.022†	-.215†	-.025†
- Ease Of Use	-.274*	-.161†	-.264†	-.229†	-.384**	-.126†

N=54, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Six

6. Do the three dimensions of organizational climate moderate the correlation between technophobia and technology acceptance?

Further examination of the organizational climate sub-dimensions: responsibilities, reward, and warmth and support, revealed some interesting results. Responsibility seems to have a great influence on the relationship between technophobia and technology acceptance.

In low responsibilities organizational climate, the negative correlations between technophobia and technology acceptance slightly increased, $r = -.376$, $n = 62$, $p < .01$ Table 21. While in high responsibility organizational climate the correlation does not reach statistical significance, $r = -.189$, $n = 50$, $p > .05$ Table 22.

For low rewards, the negative correlations between technophobia and technology acceptance slightly increased, $r = -.370$, $n = 56$, $p < .01$ Table 23. While in high rewards the correlation does not reach statistical significance, $r = -.281$, $n = 53$, $p < .05$ Table 24.

Finally, for low warmth and support, the negative correlations between technophobia and technology acceptance does not reach statistical significance, $r = -.235$, $n = 53$, $p > .05$ Table 25. While in high warmth and support the correlation reach statistical significance, $r = -.373$, $n = 58$, $p < .01$ Table 26.

These findings suggest that responsibility dimension is the only good moderating variables since it have positive influence on the correlation between technophobia and technology acceptance. In other words, employee's level of technophobia decreases and their technology acceptance increase to the point that the correlation between the two variables loses its statistical significance. Rewards reduce the strength of the negative correlation between technophobia and technology acceptance but it does not influence it enough to chance direction.

The results are different in the case of warmth and support. The findings suggest that warmth and support are not a good moderating variable to influence the correlation between technophobia and technology acceptance since it has a negative influence on the correlation. In other words, employees' technophobia will have higher negative impact on their technology acceptance if they work in a supportive workplace.

Table 21 *Moderating Influence of Low Responsibility - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

Low OC-Responsibility	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.376**	-.250*	-.354**	-.408**	-.222†	-.330**
- Usefulness	-.249†	-.135†	-.278*	-.235†	-.189†	-.170†
- Ease Of Use	-.380**	-.281*	-.318*	-.445**	-.187†	-.378**

N=62, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 22 *Moderating Influence of High Responsibility - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

High OC-Responsibility	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.189†	-.061†	-.110†	-.262†	-.308*	-.199†
- Usefulness	-.129†	-.027†	-.084†	-.159†	-.270†	-.130†
- Ease Of Use	-.218†	-.059†	-.111†	-.354*	-.325*	-.259†

N=50, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 23 *Moderating Influence of Low Reward - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

Low OC-Reward	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.370**	-.225†	-.260†	-.550**	-.301*	-.391**
- Usefulness	-.258†	-.141†	-.172†	-.419**	-.271*	-.229†
- Ease Of Use	-.410**	-.266*	-.298*	-.572**	-.270*	-.479**

N=56, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 24 *Moderating Influence of High Reward - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

High OC-Reward	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.281*	-.111†	-.394**	-.145†	-.298*	-.129†
- Usefulness	-.244†	-.072†	-.382**	-.073†	-.268†	-.146†
- Ease Of Use	-.244†	-.094†	-.304*	-.208†	-.276*	-.106†

N=53, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 25 *Moderating Influence of Low Warmth and Support - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

Low OC-Warmth and Support	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.235†	-.120†	-.147†	-.452**	-.146†	-.226†
- Usefulness	-.166†	-.070†	-.074†	-.364**	-.157†	-.159†
- Ease Of Use	-.256†	-.144†	-.189†	-.450**	-.108†	-.247†

N=53, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 26 *Moderating Influence of Low Warmth and Support - Organizational Climate on the Correlation between Technophobia and Technology Acceptance*

High OC-Warmth and Support	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.373**	-.215†	-.400**	-.222†	-.399**	-.303*
- Usefulness	-.288†	-.097†	-.361**	-.024†	-.306*	-.116†
- Ease Of Use	-.385**	-.233	-.314*	-.364**	-.388**	-.401**

N=58, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Seven

7. Does emotional intelligence moderate the correlation between technophobia and technology acceptance?

For individuals with low emotional intelligence a medium and negative correlation between their technophobia level and technology acceptance is observed, $r = -.348$, $n = 56$, $p < .01$, Table 27. On the other hand, the correlation between technophobia and technology acceptance does not reach statistical significance in with high emotional intelligence, $r = -.248$, $n = 57$, $p > .05$, Table 28.

These findings suggest that emotional intelligence is a good moderating variable on the correlation between technophobia and technology acceptance; low emotional intelligence negatively influence the correlation while high emotional intelligence positively influence it.

Table 27 *Moderating Influence of Low Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

Low EQ	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.348**	-.176†	-.343**	-.389**	-.294*	-.325*
- Usefulness	-.308*	-.160†	-.322*	-.274*	-.320*	-.245†
- Ease Of Use	-.319*	-.146†	-.294*	-.440**	-.227†	-.347**

N=56, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 28 *Moderating Influence of High Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

High EQ	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.248†	-.138†	-.167†	-.281*	-.246†	-.304*
- Usefulness	-.072†	-.021†	-.077†	-.096†	-.122†	-.126†
- Ease Of Use	-.335†	-.245†	-.199†	-.365**	-.284*	-.375**

N=57, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Eight

8. Do the three dimensions of emotional intelligence moderate the correlation between technophobia and technology acceptance?

For low attention to feelings the correlation between technophobia and technology acceptance did not reach statistical significance, $r = -.242$, $n = 65$, $p > .05$, as shown in Table 29, but for high attention to feelings a negative and moderately strong correlation was present, $r = -.407$, $n = 47$, $p < .01$, as shown in Table 30.

Having a low or high clarity of feeling had a low influence on the strength of the correlation between technophobia and technology acceptance, low clarity of feeling: $r = -.314$, $n = 53$, $p < .05$, Table 31, high clarity of feeling: $r = -.323$, $n = 59$, $p < .05$, Table 32.

For the mood repair dimension, the correlation between technophobia and technology acceptance did not reach statistical significance for low mood repair, $r = -.250$, $n = 54$, $p > .05$, Table 33, while a moderately strong correlation between technophobia and technology acceptance reached for high mood repair, $r = -.429$, $n = 58$, $p < .01$, Table 34. These findings suggest that employees who are optimistic and can control their emotions might be less willing to use new technologies in the workplace.

These findings suggest that the introduction of new technology might have dual impact on employees, depending on their awareness of their emotional status. Employees who are unaware of their intrinsic needs and emotional status may have an elevated technophobia level and a decreased level of technology use while employees who are aware of their intrinsic needs and emotional status might not be affected. The isolated influences of each of the emotional intelligence dimensions indicate that a high score in one dimension might have a moderating influence on employee's technophobia and technology acceptance which might lead to high

technophobia and low technology acceptance. However, when the influence of emotional intelligence is studied as a whole, it positively influences the correlation between employees' technophobia and technology acceptance. This finding suggests that employees with higher total score on emotional intelligence can balance their feelings and manger their technophobia which make gives them a level of confidence in their attitudes toward new technologies in the workplace.

Table 29 *Moderating Influence of Low Attention to Feelings - Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

Low EQ- Attention to Feelings	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.242†	-.096†	-.231†	-.295*	-.186†	-.262*
- Usefulness	-.143†	-.028†	-.162†	-.126†	-.187†	-.165†
- Ease Of Use	-.271*	-.118†	-.231†	-.396**	-.154†	-.298*

N=65, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 30 *Moderating Influence of Low Attention to Feelings- Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

High EQ- Attention to Feeling	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.407**	-.272†	-.351*	-.408**	-.395**	-.317*
- Usefulness	-.312*	-.189†	-.311*	-.315*	-.313*	-.168†
- Ease Of Use	-.420**	-.300*	-.320*	-.419**	-.397**	-.401**

N=47, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 31 *Moderating Influence of Low Clarity to Feelings - Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

Low EQ- Clarity of Feeling	**Technophobia**	**Paranoia**	**Fear**	**Anxiety**	**Cyber**	**Avoidance**
Technology Acceptance	-.314*	-.145†	-.269†	-.438**	-.289*	-.214†
- Usefulness	-.292*	-.116†	-.265†	-.396**	-.316*	-.186†
- Ease Of Use	-.290*	-.136†	-.234†	-.438**	-.238†	-.224†

N=53, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 32 *Moderating Influence of High Clarity to Feelings - Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

High EQ- Clarity of Feeling	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.323*	-.222†	-.264*	-.264*	-.242†	-.418**
- Usefulness	-.138	-.090†	-.156†	-.016†	-.133†	-.167†
- Ease Of Use	-.370**	-.259*	-.261*	-.393**	-.249†	-.490**

N=59, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 33 *Moderating Influence of Low Mood Repair - Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

Low EQ- Mood Repair	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.250†	-.151†	-.163†	-.367**	-.197†	-.293*
- Usefulness	-.200†	-.102†	-.159†	-.257†	-.220†	-.197†
- Ease Of Use	-.248†	-.154†	-.133†	-.418**	-.147†	-.340*

N=54, ***p<.001, **p < .01, *p < .05, p < .1 †

Table 34 *Moderating Influence of Low Mood Repair - Emotional Intelligence on the Correlation between Technophobia and Technology Acceptance*

High EQ- Mood Repair	Technophobia	Paranoia	Fear	Anxiety	Cyber	Avoidance
Technology Acceptance	-.429**	-.236†	-.430**	-.363**	-.386**	-.305*
- Usefulness	-.275*	-.130†	-.338**	-.162†	-.274*	-.143†
- Ease Of Use	-.424**	-.249†	-.378**	-.411**	-.362**	-.340**

N=58, ***p<.001, **p < .01, *p < .05, p < .1 †

Research Question Nine

9. Do age, gender, education level, and years of experience moderate the relationship between transformational leadership and technology acceptance?

After the demographic data was examined, some interesting findings emerged.

Age as a moderator: The moderating influence of age in the relationship between technophobia and technology acceptance reaches statistical significance in three of the eight age categories provided. Age proved to have a strong and negative moderating influence on the relationship between employees' technophobia and their technology acceptance in the following age categories: 35-40 (where r = -.526, n = 17, p <.05), 41-50 (where r = -.549, n = 19, p <.05), and 51-60 (where r = -.511, n = 17, p <.05), as shown in Table 35.

Table 35 *Moderating Influence of Age on the Correlation between Technophobia and Technology Acceptance*

Age	N	Correlation
21-24	16	-.321
25-30	26	-.285
31-34	11	-.055
35-40	17	-.526*
41-50	19	-.549*
51-61	17	-.511*

N=113, ***p<.001, **p < .01, *p < .05, p < .1 †

Education level as moderator: Responses on education level clustered into three main categories: Some college (21), Bachelor's degree (39), and Master's degree (38). Each of these categories had a large enough sample size to perform the necessary statistical procedures for studying their moderating influence on the relationship between technophobia and technology acceptance. When individuals reported having "Some College" as their education level, the moderating influence of education on the relationship between technophobia and technology acceptance did not reach statistical significance (r = -.040, n = 21, p >.05), as shown in Table 36.

However, when individuals reported having a "Bachelor's Degree" or a "Master's Degree", their education level had a moderately strong and negative influence on the relationship between technophobia and technology acceptance, which did reach statistical significance (r = -.345, n = 39, p <.05 and r = -.370, n = 38, p <.05 respectively), as shown in Table 36.

Table 36 *Moderating Influence of Education on the Correlation between Technophobia and Technology Acceptance*

Education	N	Correlation
Some College	21	-.040
Bachelor Degree	39	-.345*
Master Degree	38	-.370*

N=113, ***p<.001, **p < .01, *p < .05, p < .1 †

In other words, the strength of the negative correlation between technophobia and technology acceptance increases with higher education.

Years of experience as a moderator: Responses on their years of experience were grouped into three main categories: 1-4 (41), 5-9 (21), and 10-14 (20), as shown in Table 37. Years of experience had no influence on the correlation between technophobia and technology acceptance.

Table 37 *Moderating Influence of Years of Experience on the Correlation between Technophobia and Technology Acceptance*

Years of Experience	N	Correlation
1-4 years	41	-.175
5-9 years	21	-.065
10-14 years	20	-.372
15-19 years	9	-.843**
20-30 years	10	-.499

N=113, ***p<.001, **p < .01, *p < .05, p < .1 †

Industrial type as a moderator: Responses on this category of the survey are scattered all across the board, but Engineering was the only industrial type that has moderating influence on the correlation between technophobia and technology acceptance. Engineering as an industry

type has a strong influence on the negative correlation between technophobia and technology acceptance, r = -.612, n = 15, p < .05, Table 38.

Table 38 *Moderating Influence of Industrial Type on the Correlation between Technophobia and Technology Acceptance*

Industrial Type	N	Correlation
Engineering	15	-.612*
Health Service	20	-.159
Education	24	-.276
Others	34	-.309

N=113, ***p<.001, **p < .01, *p < .05, p < .1 †

Based on the data collected for this study, there is no definite way of knowing why such an impact takes place.

Gender as a moderator: Measuring the moderating influence of gender between technophobia and technology acceptance received a lot of attention in the literature because of the stigma that women are more technophobic than men. The sample for this study had 65 individuals who reported to be female, 47 who reported as male, and one who did not specify gender.

For this moderating variable, an independent-sample t-test was conducted to determine whether the difference in technophobia scores between males and females is statistically significant. This yielded to the conclusion that there is no significant difference in scores for men (M = 32.53, SD = 12.369), women (M = 32.11, SD = 12.872), and t (110) = -.175, p = .86 (two tailed). The same procedure was repeated for technology acceptance, which yielded the same results for men (M = 32.06, SD = 7.176), women (M = 33.28, SD = 6.463), and t (110) = .936, p = .351 (two tailed).

After establishing that the difference in means between males' and females' scores in technophobia and technology acceptance is not statistically significant, the study moved to

measure the correlation between technophobia and technology acceptance for males and females. The results contradict the common belief that women have higher technophobia than men. In fact, the results of this study suggest that even though gender has a significant and negative influence on the correlation between technophobia and technology acceptance, males have higher levels of technophobia than females (r = -.338, n = 47, p <.05 and r = -.281, n = 65, p <.05 respectively), as shown in Table 39.

Table 39 *Moderating Influence of Gender on the Correlation between Technophobia and Technology Acceptance*

Gender	N	Correlation
Female	65	-.281*
Male	47	-.338*

N=112, ***p<.001, **p < .01, *p < .05, p < .1 †

To provide further insight into the moderating influence of gender, the study tested the statistical significance of the difference between the correlations in males (-.338*) and females (-.281*). This function is not provided by SPSS and needed to be calculated manually. Pallant (2007) provides the necessary steps for perform this test; the equation for this procedure is found in Pallant (2007, p.139):

$$Z_{obs} = \frac{Z1 - Z2}{\sqrt{\frac{1}{N1-3} + \frac{1}{N2-3}}}$$

Where Z is the standard score; the standard score can be obtained by crossing the r value with the z value in the 'transformation of r to z' table in Edwards (1997), and N is Sample size. After solving this equation Z_{obs} = 0.347. This falls in the range of -1.96 < Z_{obs} < 1.96, which led the study to conclude that the difference in the correlation between males and females is not statistically significant.

Researchers have seen mixed results in studies on this issue; some argue that women are more technophobic than men while others argue that men and women have the same levels of

technophobia. The correlation between technophobia and technology acceptance is slightly higher for men than women.

Summary

Based on the data collected for this study, this chapter argues that technophobia and its sub-dimensions are significantly and negatively correlated with technology acceptance and its sub-dimensions. This study refuted some previously -held beliefs about this topic- and supported others. The moderating variables chosen for this study proved to be good influencers on the correlation between technophobia and technology acceptance. An in-depth discussion of the findings is provided in the next chapter.

Chapter 5: Discussion

This final chapter reviews this study and discusses the main findings. Also, a brief discussion of the limitations of this study, future research suggestions, implications, and concluding remarks will be presented.

Discussion

The findings of this study revealed a number of original and significant findings in this area. A discussion of the findings in this study is presented below.

The first finding of this study is that technophobia has a negative correlation with technology acceptance in the work environment. The findings of the study suggest that individuals are more general in their technophobia and computer or computer anxiety is not the only predictor of technophobia or employee's acceptance of new technology. In addition, employees may be afraid of technologies that are not even hosted on computers, such as cell phones or GMOs.

The advancement of technology has made individuals more conscious and aware of the opportunities and potential threats associated with different technologies. This has made some individuals more skeptical when dealing with new technologies that are introduced into their work environments. These personal feelings and beliefs appear to influence individuals' acceptance of new technologies. Further examination of the sub-dimensions of technophobia's correlations with the sub-dimensions of technology acceptance revealed a moderate correlation between most of these sub-dimensions. The strongest relationship of the sub-dimensions of technophobia and technology acceptance is between ease of use and anxiety. This may indicate that new technologies are perceived by individuals as tools that require more physical and mental effort which increases their nervousness and apprehension.

This study examined the moderating influence of three variables: transformational leadership, organizational climate, and emotional intelligence. Below is a discussion of the moderating influence of these variables.

To answer questions three and four in this study, the researcher attempted to measure the moderating influences of transformational leadership and its sub-dimensions on the relationship between technophobia and technology acceptance. Transformational leadership proved to be a good moderating variable between technophobia and technology acceptance. Transformational leaders' behavior seems to help individuals overcome their technophobia and be more accepting of technologies. Transformational leadership lessens the negative correlation between employee's technophobia and their technology acceptance. The moderating influence of transformational leadership dimensions; charisma, inspirational motivation, intellectual stimulation, and individualized consideration, was examined. Charisma had the least moderating influence on the correlation while intellectual stimulation and individualized consideration had the highest. This seems to indicate that when a leader shows a personal interest in his or her employee's overcoming an obstacle in the workplace, the employee might feel a pressure that might elevate their technophobia which impacts their technology acceptance.

To answer questions five and six of this study, the researcher attempted to measure the moderating influences of organizational climate and its sub-dimensions on the relationship between technophobia and technology acceptance. Results from this questions reveled interesting results. While organizational climate diminishes the negative correlation between employees' technophobia and technology acceptance each of its dimensions has a different influence.

When employees have more responsibilities they seem to have more control over their technophobia level, which appears to decrease, while their acceptance to new technologies increases. Having a just reward system does not provide enough influence on the correlation to a point that assist employees to overcome their technophobia and be more accepting to new technologies. Interestingly, working in a supportive workplace seems to have the opposite influence on the correlation where employees' technophobia has a greater impact on accepting new technologies. The researcher argues that employees might perceive the extra support they receive from their workplace as a sign that they are incompetent for doing their job which might increase their anxiety toward the new technology.

Emotional intelligence was examined in questions seven and eight. The findings suggest that high emotional intelligence is a good moderating variable that influences the relationship between technophobia and technology acceptance. Separately, each dimension of emotional intelligence negatively influences the correlation between technophobia and technology acceptance; having a high score in one dimension increases technophobia and decrease technology acceptance. However, when the impact of all dimensions is examined as a whole, emotional intelligence positively influences the correlation between technophobia and technology acceptance. The findings in this study suggest that employees who understand and control their emotions are optimistic about the introduction of new technologies into the workplace and may be better able to overcome their technophobia than others.

All of the moderating variables used in this study proved to have an influence on the relationship between technophobia and technology acceptance. High transformational leadership, organizational climate, and emotional intelligence decreased employees' technophobia and increased their technology acceptance level.

Question nine addresses the moderating influence of demographic variables: age, gender, education, years of experience, on the relationship between technophobia and technology acceptance. The current study will be the first to provide any insight into the influence of demographic variables on technophobia (in its truest sense) and whether they impact the correlation between technophobia and technology acceptance. The examination of the moderating influence of demographic variables revealed some interesting results. Below is a discussion of these findings.

Using age as a moderating variable between technophobia and technology acceptance, reveled that the correlation between technophobia and technology acceptance in younger age groups (20-34) did not reach statistical significance. However, findings also suggest that the correlation between technophobia and technology acceptance reaches statistical significance in individuals in the ages groups of: 35-40, 41-50, and 51- 61.

The current study suggest that younger employees in the 20-34 age group may not be in a position of responsibility in which they would be held accountable for any mishaps involving new technologies; technology is not seen as a threat, so their technophobia is kept to a minimum. Individuals between the ages of 35-40, 41-50, and 51- 61 have gained experience and moved up the leadership ladder. These employees may be a management position in which they are responsible for the use and implementation of new technologies in the workplace. Any technology-related mishaps would have a great influence on their work outcomes and professional career. Employees who belong to this age group are aware of the consequences and problems associated with the misuse of new technology, which may increase their technophobia.

Next, this study measured the moderating influence of employees' education level on their technophobia and technology acceptance. In the case of low education, the correlation

between technophobia and technology acceptance did not reach statistical significance. The researcher suggests that individuals with lower education levels may not deal with complex technologies in their workplaces. On the other hand, in the case of high education, the correlation between technophobia and technology acceptance reach statistical significance. This study suggests that individuals with higher education levels may be exposed to more technologies which heighten their awareness of the consequences of misusing technology. This might increase their technophobia, making them less likely to accept and use new technologies.

This study also examined the moderating influence of experience level on the correlation between technophobia and technology acceptance was investigated. Findings of this study show that high experience increases the strength of the correlation between technophobia and technology acceptance.

This study also collected data on the type of industry or work individuals perform in their workplaces. Industries were categorized into: Engineering, Construction, Information Technology, Health Services, Accounting and Finance, Manufacturing, Education, Government, and Other (in case an individuals' workplace did not fit any of the previous categories). When the type of industry reported was engineering, correlation between technophobia and technology acceptance did reached statistical significance. The current study cannot speculate the reason why such an impact happens.

During the data collection phase of this study, a survey taker commented, "Technophobia! I do not have technophobia." When asked by the researcher, "Why do you believe or think you do not have technophobia?" the survey taker responded, "Because I'm an engineer." This may be attributed to the possibility that technophobia or being called a "technophobe" is seen as a threat to their reputation as "smart" engineers. This may be due to a

social impact rather than the technologies introduced in the workplace. Technophobes are viewed as being less intelligent than their peers, so being described as a technophobe might question the status quo of individuals within the company. The social stigma that engineers are smart and should have no problem adapting to new technologies puts extra pressure on them in the form of increased technophobia and decreased technology acceptance.

The final demographical variable observed in this study was gender. The data analysis, examined the differences in the relationship between technophobia and technology acceptance between men and women. The difference in technophobia levels between men and women has been well-researched previously and is surrounded by conflicting findings. Some researchers argue that women are more technophobic than men. However, in the data collected for this study, both men and women can be classified as technophobes (with men having higher scores in technophobia than women). A simple t-test was used to measure the difference in means between men and women but this did not reach statistical significance. In an attempt to provide a significant contribution to this existing argument in literature, this study went beyond simply answering the question of "Who has higher technophobia, men or women?" as most studies did. The current study investigated whether the difference in the correlation between technophobia and technology acceptance in men and women is statistically significant. It was concluded that even though men have higher technophobia than women, this difference in the correlation between technophobia and technology acceptance in men versus women does not reach statistical significance. This study argues that technophobia influences men and women in the same way.

Limitation

Like any other study, this study is not limitation-free. It should be noted that the limitations of this study do not affect the integrity and the validity of its findings. However, they do serve as cautionary signs for its application.

The first limitation of this study was the sample; the population of this study included local companies and small businesses in Southeast Michigan. If this study were replicated on another sample, the results might not be the same. The second limitation is that the study could not measure for every technology available in the workplace. Some technologies were not measured for their influence or contribution to technophobia level among individuals. A third limitation is the personal biases of the sample, which cannot be controlled for or predicted. The fourth limitation is the methodology used in this study. The current study used a descriptive methodology; future researchers might like to use more a qualitative approach to measure technophobia.

Future Research

Future research on technophobia should focus on technologies other than the computer as causes of technophobia. This study has shown that technophobia exists among many employees; however, some technologies may cause more technophobia than others. Previous researchers have extensively studied computers; future researchers may want to examine contemporary technologies - or technology in general.

Another possible future study is to validate the scale developed by Khasawneh and Bellamy (2014). It is recommended to measuring the reliability of the technophobia scale against other scales that are used to measure computer anxiety.

This study, investigated technophobia's correlation with individuals' technology acceptance and the moderating influence of: transformational leadership, organizational climate, and emotional intelligence on that relationship. Future researchers might want to examine the moderating or mediating influences of other variables, or even measure technophobia against other dependent variables. Future researchers can use technophobia as moderating or mediating variable and study its influence on the correlation between other variables.

Research Implication

The results of this study demonstrate the importance of companies understanding of their employees' level of technophobia before implementing new technologies. This understanding may help companies anticipate the likelihood of employee's use of new technologies and help them change their strategies and approaches for implementing new technologies. This study found that transformational leadership, organizational climate, and emotional intelligence are good moderating variables that significantly influence the correlation between technophobia and technology acceptance. Companies understating of these variables within their workplace might influence their approach to technophobia and technology acceptance.

This dissertation has contributed to the body of research in the technology management area in several ways. First, this study investigated technophobia in a novel approach. Second, the current study provided a clear and distinctive definition of technophobia; previous researches point out that literature is missing a clear distinction between technophobia and computer anxiety. Third, this study provided a measurement tool that can be used to assist technophobia level. Fourth, technophobia's impact on technology acceptance was investigated. In addition, the moderating influence of several variables was examined.

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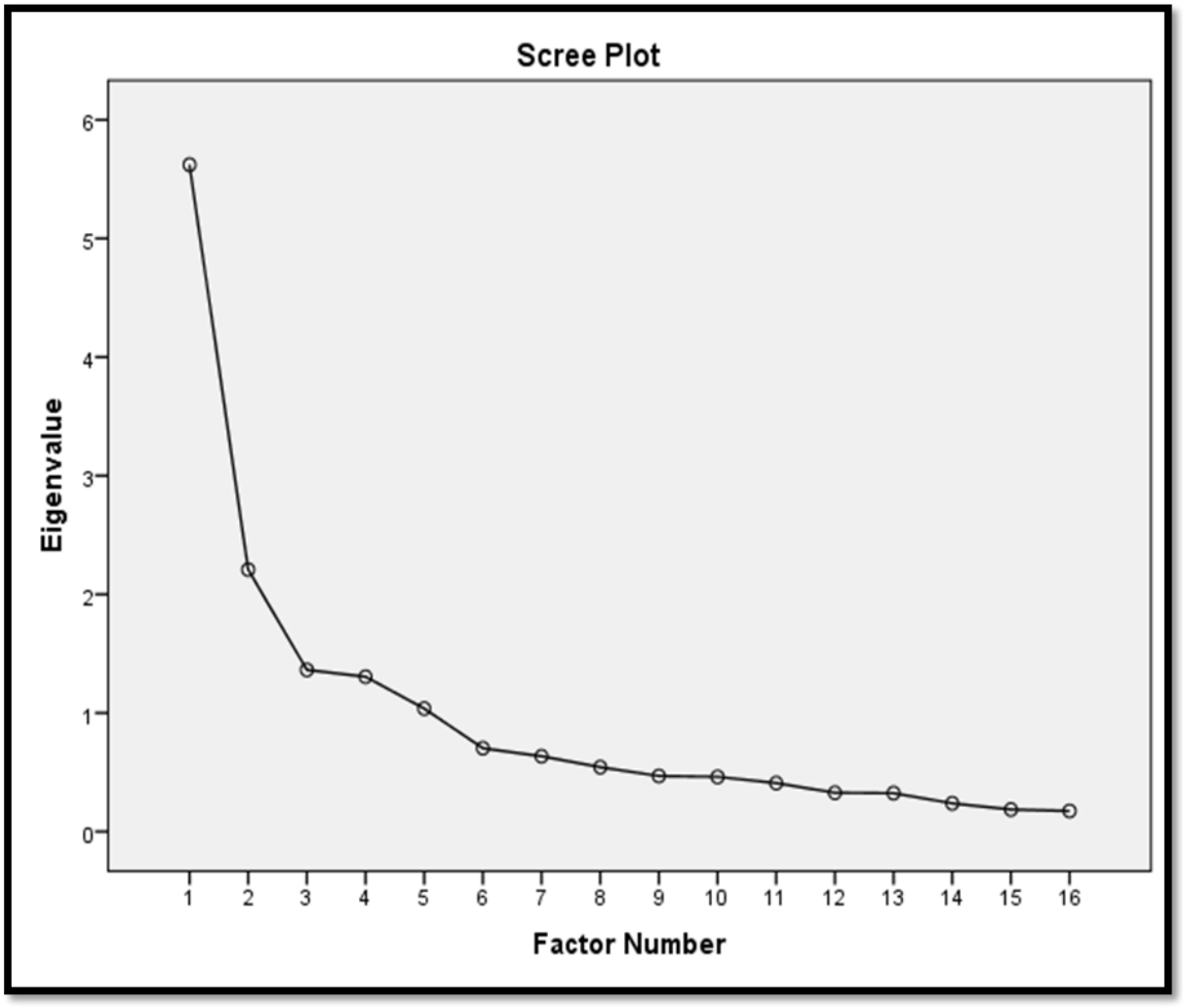
Appendix A: Technophobia Scale Development – Scree Plot



Scree plot of technophobia factors

Appendix C: Technophobia Scale Development - Factor Matrix

	Factor				
	1	2	3	4	5
PHOBIA18	.710				
PHOBIA14	.703				
PHOBIA15	.694				
PHOBIA20	.649				
PHOBIA9	.615				
PHOBIA30		.689			
PHOBIA24	.557	.616			
PHOBIA26		.577			
PHOBIA23		.569			
PHOBIA25		.557			
PHOBIA6			.790		
PHOBIA5			.739		
PHOBIA8				.717	
PHOBIA19				.669	
PHOBIA7					.648
PHOBIA2					.571

Techno Paranoia

Techno Fear

Techno Anxiety

Cybernetic

Communicati on Device

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Appendix D: Human subject approval

RESEARCH @ EMU

UHSRC Determination: EXEMPT

DATE: December 1, 2014

TO: Odai Khasawneh
College of Technology - PhD
Eastern Michigan University

Re: UHSRC: # 682393-1
Category: Exempt category *B2*
Approval Date: December 1, 2014

Title: The Impact of Technophobia on Technology Acceptance and the Moderating Influence of Transformational Leadership, Organizational Climate, and Emotional Intelligence

Your research project, entitled **The Impact of Technophobia on Technology Acceptance and the Moderating Influence of Transformational Leadership, Organizational Climate, and Emotional Intelligence,** 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,

Paul Majeske
Chair
COT Human Subjects Review Committee

Appendix E: Normality Testing

Technophobia	Statistics
Mean	32.3438
Median	31.0000
Variance	154.796
Std. Deviation	12.44172
Skewness	.812
Kurtosis	-.022

Technology Acceptance	
Mean	32.3438
Median	31.0000
Variance	154.796
Std. Deviation	12.44172
Skewness	.812
Kurtosis	-.022

Transformational Leadership	
Mean	61.4792
Median	66.0000
Variance	279.831
Std. Deviation	16.72815
Skewness	-.712
Kurtosis	-.497

Emotional Intelligence	
Mean	40.375
Median	41.0000
Variance	46.658
Std. Deviation	6.83066
Skewness	-.272
Kurtosis	-.138

Organizational Climate	
Mean	16.9583
Median	17.0000
Variance	30.882
Std. Deviation	5.55720
Skewness	.197
Kurtosis	-.562

Appendix G: Survey Instrument

This survey is being conducted by the school of technology and advanced services department at Eastern Michigan University. The information you provide will remain completely confidential. Your identity will remain completely anonymous. Your participation in this study is completely voluntary and you have the right to refuse to participate or stop and leave the study at any time without any penalty. There are no foreseeable risks to you by completing this survey, as all results will be kept completely confidential. If you choose to fill the survey, Please return the survey to the researcher.

This survey should take approximately 15-20 minutes of your time. Thank you for your participation!

Gender: ___ Female ___Male
Age:
___18-20 ___21-24 ___25-30 ___31-34 ___35-40 ___41-50 ___51-60 ___over 60
Education:
___No School ___Some school ___High school ___Technical training ___Some college

___Associate degree ___Bachelor degree ___Master degree ___Doctoral degree
Ethnicity:
_____ American Indian or Alaska Native
_____ Asian
_____ African American or Black
_____ Caucasian or White
_____ Native Hawaiian or other Pacific Islander
_____ Others

What type of industry does you current company service?
___ Engineering ___ Construction ___ Information Technology ___Health Services

___ Accounting and Finance ___ Manufacturing ___ Education ___ Government
Other (please specify) _____

Years of Experience:
_____ Less than a year.
_____ 1-4 years.
_____ 5-9 years.
_____ 10-14 years.
_____ 15- 19 years.
_____ 20-30 years.
_____ more than 30 years.

Please use the following scale when responding to the following items. Place the number that best represents your opinion alongside each item.	**5**	**-**	**Agree**
	4	**-**	**Slightly Agree**
	3	**-**	**Neither Agree/Disagree**
	2	**-**	**Slightly Disagree**
	1	**-**	**Disagree**

1. ___We don't rely too heavily on individual judgment in this organization; almost everything is double-checked
2. ___Around here management resent your checking everything with them; if you think you've got the right approach you just go ahead
3. ___There is not enough reward and recognition given in this organization for good work
4. ___You won't get ahead in this organization unless you stick your neck out and take a chance now and then
5. ___You wouldn't get much sympathy from higher-ups in this organization if you make a mistake
6. ___We have a promotion system here that helps the best man to rise to the top
7. ___There is not enough reward and recognition given in this organization for doing good work
8. ___A person doesn't get the credit he deserves for his accomplishment in this organization
9. ___A very friendly atmosphere prevails among the people in this organization
10. ___This organization is characterized by relaxed, easy-going working climate
11. ___There is a great deal of criticism in this organization
12. ___The philosophy of our management emphasized the human factor, how people feel, etc.
13. ___ I don't pay much attention to my feelings
14. ___I never give in to my emotions
15. ___I don't usually care much about what I'm feeling
16. ___ one should never be guided by emotions
17. ___I am usually very clear about my feelings
18. ___I am rarely confused about how I feel
19. ___ I almost always know exactly how I am feeling
20. ___ I feel at ease about my emotions
21. ___ Although I am sometimes sad, I have a mostly optimistic outlook
22. ___ No matter how badly I feel, I try to think about pleasant things
23. ___ When I became upset I remind myself of all the pleasures in life
24. ___ I try to think good thoughts no matter how badly I feel

For this section, whenever you see the term "<u>new technology</u>", think of the most resent technology implemented in your workplace.

Please use the following circle the number that best represents your opinion about each item	**7 - Strongly agree** **4 - Neither Agree/Disagree** **1 - Strongly Disagree**

25. The new technology implemented enables me to accomplish tasks more quickly.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

26. The new technology implemented has improved my job performance.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

27. The new technology implemented is useful in my job.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

28. Learning to use this new technology was easy for me.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

29. I find it easy to get this new technology to do what I want it to do.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

30. It was easy for me to become skillful at using this new technology

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree/ Nor Disagree			Strongly Agree

Please judge how frequently each statement describes your supervisor/manager. Use the following rating scale:

Please use the following scale when responding to the following items. Place the number that best represents your opinion alongside each item.	**5**	**-**	**Agree**
	4	**-**	**Slightly Agree**
	3	**-**	**Neither Agree/Disagree**
	2	**-**	**Slightly Disagree**
	1	**-**	**Disagree**

31. ___My supervisor considers the moral and ethical consequences of his/her decisions.
32. ___My supervisor goes beyond his/her self-interests for the good of the group.
33. ___My supervisor act in ways that build others' respect for him/her.
34. ___My supervisor help others to develop their strengths
35. ___ My supervisor talks optimistically about the future
36. ___ My supervisor talks enthusiastically about what needs to be accomplished.
37. ___ My supervisor articulates a compelling vision of the future.
38. ___ My supervisor expresses confidence that goals will be achieved.
39. ___ My supervisor re-examines critical assumptions to question whether they are appropriate.
40. ___ My supervisor seeks differing perspectives when solving problems.
41. ___ My supervisor look at problems from many different angels.
42. ___ My supervisor suggests new ways of looking at how to complete assignments
43. ___ My supervisor spends time teaching and coaching.
44. ___ My supervisor treats employees as individuals rather than just as a member of a group.
45. ___ My supervisor considers the different needs, abilities, and aspirations of each of his/her employee's.
46. ___ My supervisor help his/her employees to develop their strengths.

Please use the following scale when responding to the following items. Place the number that best represents your opinion alongside each item.	**5**	**-**	**Agree**
	4	**-**	**Slightly Agree**
	3	**-**	**Neither Agree/Disagree**
	2	**-**	**Slightly Disagree**
	1	**-**	**Disagree**

47. ___I am fearful that someone is using technology to watch and listen to everything that I do.
48. ___I am terrified that technologies will change the way we live, communicate, love, And even judge others.
49. ___I am afraid of new technologies because one day it will make us (humans) obsolete.
50. ___I am fearful that new technologies will someday take over my job.
51. ___I am afraid to eat genetically modified food.
52. ___ I am afraid of new technologies because if something goes wrong with it (if it stopped working for some reason) we will go back to the Stone Age.
53. ___ I am afraid of new technologies because they may interfere with my life emotionally, physically, and psychologically.
54. ___ I am afraid to use some features in my cell phone
55. ___ I am afraid of using search engines such as Google
56. ___ I am terrified of being connected to the internet, someone might be tracking me
57. ___I feel restless when I have to use a new communication device.
58. ___I feel restless when I have to learn a new computer operating system (For example, changing from Windows 7 to windows 8).
59. ___ I am fearful that robots may take over the world
60. ___ I am afraid of websites such as Google, yahoo, and ping because they make it very easy for people to stalk me.
61. ___ I try to avoid using new technologies such as cell phones whenever possible
62. ___ I try to avoid changing communication devices (such as your cell phone) because it makes me nervous.