

**A QUALITATIVE CASE STUDY TO INVESTIGATE THE TECHNOLOGY
ACCEPTANCE EXPERIENCE OUTLINED IN THE TAM USING THE KÜBLER-ROSS
STAGES OF GRIEVING AND ACCEPTANCE**

A Dissertation Presented in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Computer Science

By

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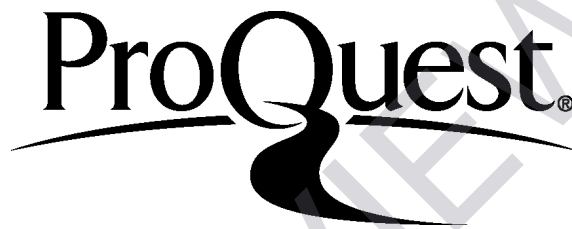
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PREVIEW

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Abstract

The Technology Acceptance Model (TAM) has been an important model for the understanding of end user acceptance regarding technology and a framework used in thousands of researched scenarios since publication in 1986. Similarly, the Kübler-Ross model of death and dying has also been used as a model for the study of acceptance within the medical community. The focus of this dissertation was to use the Kübler-Ross model of death and dying as a framework to further investigate the TAM. The proposal for research was an investigative case study of technology acceptance using the five core themes of the Kübler-Ross model of death and dying: denial, anger, bargaining, depression, and acceptance. A qualitative purposeful case study was completed during which the researcher engaged 16 participants in semi-structured interviews. This process allowed for the collection and analysis of the themes related to the technology acceptance experience. This study investigated the five themes associated with acceptance, then enhanced those themes through a qualitative investigation of the technology acceptance experience. The data collected revealed additional elements: force, emotions triggered by interaction, how the introduction of the technology occurred, organic acceptance, relationship, cost, small wins, societal perspective, avoidability, social adoption, supported infrastructure, loss of freedom, finality and rejection, dependency, euphoria, and anxiety. This investigation allowed participants to discuss their technology acceptance experience through a detailed interview. The researcher was able to provide evidence with the validation of the Kübler-Ross model and discovered additional themes to add to the body of knowledge.

Dedication

This dissertation is dedicated to the memory of my grandfather Edward John Sotelo and to the rest of my family including my wife Kelly, my three children Alexandria, Jayelynn, and Charles, my parents, and my cousins, whom without their love and support this dissertation would have never reached completion.

PREVIEW

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CHAPTER ONE

The conceptual foundation for understanding technology acceptance derives from the technology acceptance model (TAM) (Davis, 1986). TAM was initially developed to understand a user's intent toward acceptance or rejection of technology. This study offers evidence that enhances the understanding of technology acceptance through the use of the Kübler-Ross model of acceptance (i.e. death and dying) (Kübler-Ross, 2003). The researcher identifies several similarities to the five stages of acceptance, including the similarity of finality. This study utilizes the concept of *technology* in a grander scope of the term. There is not a single type of technology widening the scope of technology acceptance to include a multiple of technologies. The technology discussed through the interviews included the following: personal computers, smartphones, servers, network technologies, and software applications. During this study, there was an identification of the underlying theme of perceived or implied force.

The two models, individually, have been thoroughly researched and studied. This study addresses technology acceptance as an overarching framework that encompasses various levels of adaptation. The two models create a foundation for the investigation of technology acceptance expanding on previous research and offering the further future study of the technology experience. The parallels identified from the Kübler-Ross model form an investigative platform to further the understanding of technology acceptance.

The five themes of Kübler-Ross created the foundation for this case study and enhanced the investigation of technology acceptance. Force, explicit or implied, became the sixth theme to be observed and included in the framework that allowed the researcher to engage participants through a semi-structured case study and interview process. The initial themes sparked additional questions that drove each interview into a continued conversation that then uncovered additional

themes. The foundation of this study resonates with the tradition of the TAM and furthers the understanding of technology acceptance.

Topic Overview/Background

Dr. Fred Davis alluded to technology acceptance as the root of technology advancement with his research on the technology acceptance model (TAM) and the quest to improve our understanding of the technology acceptance process (1986). The premise of TAM research seeks to understand why people accept or reject technology outlining one of the most challenging issues in the fields of information technology (Davis, Bagozzi, & Warshaw, 1989). Through the course of this study, the researcher presented insight into how individuals achieve technology acceptance through the identification of themes. Technology acceptance continues to be a focus of discussion within the technology communities. This case study addressed technology acceptance from a different perspective, identifying the themes associated with death and dying and seeking to observe those concepts within the context of experiences during technology acceptance. By using the Kübler-Ross model for death and dying, the proposed research begins with the themes identified in The Kübler-Ross model. The proposal for research was to investigate technology acceptance using the Kübler-Ross model's five core themes: denial, anger, bargaining, depression, and acceptance.

The technology acceptance model (TAM) has been an important model for the understanding of end user acceptance of technology, a framework that has used thousands of times in research since its publication in 1986. The Kübler-Ross model, an important model for the medical community and the foundation for the acceptance of death and dying, is proposed as a model that is similar to TAM due to the parallels in conceptualization. This study uses the Kübler-Ross model of death and dying as a framework to further investigate the TAM.

In addition, Davis's research identified that the working environment plays a critical role in technology acceptance or rejection. The working environment has many underlying requirements for end users. The researcher used this premise; expanding the study to include the theme of perceived force, where technology acceptance could be the product of forced acceptance as a requirement for continued employment.

The study of technology acceptance continues in parallel with the evolution of computers, smartphones, and other technologies, reflected in the citations of the TAM, along with other areas of Davis's research. According to Google Scholar, at the time of this study, there were 2,551 direct citations. Also, thousands of others have addressed the concept of technology acceptance. Former researchers (Amberg, Hirschmeier, & Wehrmann, 2004; Carroll, 1997; Durndell & Haag, 2002; Goodhue, 1995; Sari, Sen, & Kilic, 2007; Venkatesh & Bala, 2013; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2012), have expanded and enhanced models of technology acceptance.

The researcher used Davis' original technology acceptance model (TAM, 1986) throughout the course of this study. Technology acceptance is the product of behavioral intention, by which behavioral intent is the collective sum of an individual's perceived ease of use and the perceived usefulness of a given technology. The research effort generalized technology acceptance to all applicable technologies and also generalized Kübler-Ross as a model for the finality of acceptance. The researcher attempted to enhance the understanding and the individual's acceptance of the technology. The researcher investigated and presented evidence that supported the identified themes found in the Kübler-Ross model. The researcher identified additional themes that emerged as force, emotions triggered by interaction, how the introduction of a given technology, organic acceptance, relationship, cost, small wins, societies

perspective, avoidable, social adoption, supported infrastructure, loss of freedom, finality and rejection, dependency, euphoria, and anxiety. The researcher based the individual's technology acceptance experience on the acceptance of a particular technology that was selected by the interviewee, with the only requirement being a technology that had a strong emotional impact on the participant.

Problem Opportunity Statement

This study served as an investigation into the experience of the end user and the identification and validation of themes within the Kübler-Ross model that relate to acceptance or rejection of technology in the life of a user. The process of using a case study allowed for the discovery of additional themes related to the human experience of technology acceptance. The premise of this study identifies that TAM and its preceding models have missed a crucial aspect of technology acceptance, the human experience to understand why technology is either rejected or accepted. Through this dissertation, the researcher addresses that experience, in part by addressing the "How" of technology acceptance, thereby identifying the process. This study also as validates the application of Kübler-Ross as a model that could be used to define technology acceptance.

The TAM and each of its descendent models, (TAM2, TAM3, UTAUT, UTAUT2, HCI, TTF, CAM, TALC, AHP, and research of computer self-efficacy), address the basis of technology acceptance on the key variables of perceived usefulness and perceived ease of use. The degree to which the acceptor experiences these variables equal behavioral intent that then leads to technology acceptance. The evidence presented in this study shows that technology acceptance did not happen in a vacuum, rather through a series of stages that progress over time, thus building on the existing literature. Kübler-Ross's research changed the medical community,

with her research on the acceptance of death and dying creating a new understanding and level of empathy for terminally ill patients. The stages of death and dying have been applied far beyond the medical community (see Brounen ,Verschoor, & Würdemann, 1983; Holleman, 2000; Passmore, 1989; Chao, 2008; De Miranda, 2003;Wylleman, Alfermann, & Lavallee, 2004; Sánchez & Campus, 2005; Boerboom, 2008; Sachdeva, 2009; Moncur & Waller, 2010; Kane, 2011;Massimi , 2011; Miller, 2012). The stages are:

- Stage 1 - Denial
- Stage 2 - Anger
- Stage 3 - Bargaining
- Stage 4 - Depression
- Stage 5 - Acceptance

The Kübler-Ross model eventually evolved into a model and framework for general acceptance. The opportunity for this research attempted to portray technology acceptance through the lens of the Kübler-Ross model, thereby extending the existing technology acceptance research.

Purpose Statement

The purpose of this dissertation was to offer evidence, details, and an enhancement of the understanding of technology acceptance. Through this dissertation, the researcher attempted to answer the question of "How" individuals accept the technology. The researcher used a case study to present technology acceptance interviews and experiences of a selected group of end users. The qualitative research method allowed for increased visibility into the end user experience, including their thoughts, feelings, and themes associated with technology acceptance.

Acceptance by definition “is the act of accepting something or someone,” and “the quality or state of being accepted or acceptable” (Merriam-Webster, 2014). This study sought to analyze the process of acceptance, through the identification of parallel themes between acceptance of death and dying and technology. The basis for this study determined that the Kübler-Ross model could be used as an overarching model for acceptance, as outlined in the literature review. The application of the Kübler-Ross model has transcended beyond the medical community. The researcher speculated that this model, when applied to technology acceptance, could identify common themes between the conceptual frameworks, as experienced by the end user.

The reach of the work of Kübler-Ross extends into various fields of research and academia. The Kübler-Ross legacy continues to be applied to fields such as real estate (Brounen, Verschoor, & Würdemann, 1983), termination and unemployment (Passmore, 1989; Chao, 2008), technology education (De Miranda, 2003), education (Adrienne, 2003), career transitions in sports, (Wylleman, Alfermann, & Lavalley, 2004), human experience (Sánchez & Campus, 2005), agriculture communities and research, (Boerboom, 2008), change management and business (Sachdeva, 2009), computer science and digital footprints, (Moncur & Waller, 2010), government and finance (Kane, 2011), social media, (Massimi, 2011), and assessment-based decision making (Miller, 2012).

Research Question(s)

The following research questions were the focus of this research effort:

Q1: What are the identified themes using the Kübler-Ross model in relation to technology acceptance?

Q2: How does the Kübler-Ross model, stages of death and dying, relate to and enhance the visibility to the human experience for technology acceptance?

Q3: What are the experiences of users in the acceptance of technology?

Proposition

The following proposition utilized a case study methodology to conduct a series of interviews cataloging the experiences of adults as related to their acceptance of technology. Each interview consisted of an initial six semi-structured questions, five derived from the Kübler-Ross model, with the sixth question inquiring if force, implied or otherwise, played a significant role in technology acceptance. Further questions were created organically through the course of the interviews. The interviews were then transcribed and coded. Analysis of the transcriptions identified overlapping themes that both validated the Kübler-Ross model as suitable for acceptance and increased the visibility of technology acceptance.

Theoretical Perspectives/Conceptual Framework

The framework of this case study was a new perspective for the realization and collection of data about technology acceptance. Kübler-Ross created a model that allowed for visibility into the acceptance of death and dying. The researcher believed that this model of acceptance served as a framework for technology acceptance, thereby formulating questions around each of the five stages of the Kübler-Ross model. This study revealed the end users conceptual thinking through their emotions and experiences of technology acceptance.

The Kübler-Ross model for acceptance has been a widely adaptable model that outlines the context of examining the human experience of death and dying. The Kübler-Ross acceptance model contrasts to the more rigid models investigated and researched in acceptance of technology in computer science (TAM, TAM2, TAM3, UTAUT, UTATU2, HCI, TTF, CAM,

TALC, AHP, and research of computer self-efficacy). The Kübler-Ross model identifies themes and experiences that apply to the human condition. This study looked at the similarity of the model of accepting a human condition, death and dying, against the acceptance of technology.

Assumptions/Biases

Assumptions that impact this study include the achievement of technology acceptance and its finality. The researcher proposes that once each participant achieves technology acceptance, they then cannot reject it. Further assumptions include the use and integration of technology on a constant basis. Technology has consumed the American culture becoming a critical component of everyday communication.

The achievement of technology acceptance does not happen simply through perceived ease of use and perceived usefulness, as suggested by the technology acceptance model though these are important areas of research and analysis. It is conjectured that they are not the only factors necessary to understand the human experience of technology acceptance. The assumption of technology acceptance continues to evolve organically. Achieving technology acceptance includes a deeper understanding of the human experience. Perceived ease of use and perceived usefulness articulate the beginning to our understanding of technology acceptance, however, the current models (i.e. TAM) simply scratch the surface.

Biases include the impact of social media and the cultural understating of technology acceptance. The qualitative case study identifies an inherent bias due to the limited number of participants. The primary influences on this study include family, social media, working environments, and the individuals perception of technology, which are also beneficial to the study due to the identified organic process of technology acceptance. The participants identified their biases toward acceptance through the course of each interview, adding to the overall

conceptual design of the study. These biases were both drivers and transformers identified through the technology acceptance process.

Significance of the Study

The importance of this study potentially opens the possibility that achieving technology acceptance occurs as an emotional and methodical process experienced by the end user, based on a set of stages to acceptance. The focus of this study was on "how" an individual gains acceptance. The data collected through this study began as interviews that were recorded, transcribed, and then analyzed through the coding process. This study was a critical first step in the understanding of the human experience for technology acceptance, where the acceptance of technology occurs as the result of the individual progressing through a series of emotional stages.

The Kübler-Ross model for acceptance is a seasoned framework originally established in 1969 and has been identified by the researcher as extremely flexible and adaptable for furthering research on technology acceptance. The five stages of death and dying, stated as denial, anger, bargaining, depression, and acceptance, outline the inevitability of acceptance. The research proposed that that technology acceptance experience consists of additional themes and variables that will then enhance our understanding.

Delimitations

The defined boundaries of this study began with adult end users from the United States, who had already achieved acceptance of some technology. The focus of this study enhances the understating of the technology acceptance experience through interviews where the participant articulated their experience to achieve technology acceptance of their selected technology. The definition of technology acceptance for this study is stated as an individual that uses their phone, hardware, or software on a daily basis, and if a phone, do more than use their phone for voice

conversation. These individuals have fully embraced technology by leveraging applications (software), computers, mobile technologies, or various other forms of technology for business or pleasure.

Limitations

The focus of this study was the experiences related to technology acceptance. The researcher used a purposeful sample in the selecting of the first five participants. The original five referred the additional 11 participants, for a final total of 16. The participants included individuals that were not representative of a particular group or demographic, rather individuals that wanted to articulate their experience with technology acceptance and participate in this research. Each participant had already accepted technology on an individual level. A qualitative study utilizes purposive sampling to reach out to prospective interviewees. Other limitations included outside influences, such as social media, users' habits, or the end user experiences related to the interview process.

Definition of Terms

The following terminology is unique to this research study and defined as follows:

- *Kübler-Ross Model* - The Kübler-Ross model (1969), as defined in her book on death and dying, introduced the five stages of grief and the acceptance of death and dying.
- *Kübler-Ross 5 Stages* - Stage 1: Denial, Stage 2: Anger, Stage 3: Bargaining, Stage 4: Depression, Stage 5: Acceptance
- *Technology* – As used in this study, include the following: personal computers, servers, PC hardware, smartphones, software, applications, or other user technologies.

- *Technology Acceptance Model (TAM)* - Technology Acceptance Model as defined by Davis in his 1986 dissertation and 1989 Article "User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models."
- *Technology acceptance* - Technology acceptance is defined according to Davis and the TAM; the foundation of an individual's achievement of technology acceptance is the sum of perceived ease of use and perceived usefulness.

General Overview of the Research Design

This research utilized a case study of 16 individuals to explore their experience and emotions about technology acceptance. There were originally six questions, five based on the Kübler-Ross model of death and dying, creating a framework for the validation of the themes: Denial, anger, bargaining, depression, and acceptance. The addition of force, either perceived or implied, formed the sixth question. The researcher uncovered additional themes about technology acceptance. The initial six questions were asked in an interview scenario using the Kübler-Ross model as a framework to investigate the experience of technology acceptance, with follow-up questions generated throughout the interview process.

Summary of Chapter One

This chapter outlined the basis for the study, identifying both the premise and the purpose of this research. The two models of TAM and Kübler-Ross identified the possibility of an investigative platform that allowed the researcher to collect data and enhance the current understanding of technology acceptance. This study enhances our understanding of technology acceptance through the use of the Kübler-Ross model of death and dying. This study furthers the TAM, a cornerstone of technology acceptance research, by embracing the use of a qualitative case study to investigate the human experience of technology acceptance.