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Examining Small Business Adoption of Computerized Accounting Systems Using the Technology Acceptance Model.

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Abstract

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MBA, The Ohio State University, 1988

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Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Small business owners who fail to adopt modern technology risk placing themselves at a competitive disadvantage. Drawing on Davis's technology acceptance model, the purpose of this study was to examine how small business owners in Central Ohio come to accept and use computerized accounting systems (CAS). The research question addressed the correlation between perceived ease of use, perceived usefulness, and the intent to adopt CAS using multiple linear regression. Data were collected using a survey mailed to 347 small business owners which yielded a sample size of 71 respondents. Results showed a positive correlation between perceived ease of use, perceived usefulness, and the intent to adopt CAS; therefore, the null hypothesis was rejected. The model predicted about 71% of the variations in intent to adopt CAS. Using the portion of the sample where small business owners had not yet adopted CAS (n = 34), the model was able to predict about 63% of the variation, and in the portion where small business owners had already adopted CAS (n = 37), the model was able to predict about 70% of the variation. However, when splitting the sample between small businesses whose owners had already adopted CAS and those who had not yet adopted CAS, importance of ease of use and usefulness changed. Usefulness is more important to nonadopters and ease of use is more important for continued use. The implication for social change is the potential to reduce business failures. The study showed that 83% of small businesses over 5 years old currently use a CAS and only 56% under 5 years old use a CAS. Society could benefit from an increase in the number of successful small businesses, which would then contribute to economic expansion.

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Dedication

I would like to dedicate this work to Nada, my wife, my life-long partner, the love of my life, and best friend. Thank you for your support, encouragement, and unwavering faith.

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I would like to thank my Chair Dr. Mary Dereshiwsky for her guidance and support through this journey. Your support and words of encouragement kept me focused on the end result. I would also like to thank my committee member Dr. Roger Mayer for his valuable input and expertise in the field of accounting. Finally, thank you Dr. Matthew Knight for providing an additional set of eyes, which helped keep everything in perspective.

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Section 1: Foundation of the Study

Small businesses comprise over 99% of employer firms in the United States (Small Business Administration, Office of Advocacy, 2014). The number of small firm annual births declined from 644,122 in 2005 to 409,040 in 2011 (Small Business Administration, Office of Advocacy, 2014). During the same period, the number of small firm bankruptcies increased from 39,201 in 2005 to an estimated 48,000 in 2011 (Small Business Administration, Office of Advocacy, 2014). Many factors lead to small business bankruptcy including lack of business experience, the business owners' failure to acquire debt, and general economic conditions (Alsaaty, 2012; Carter & Auken, 2006). Additional factors leading to bankruptcies include the failure of the business owner to adopt technologies and the lack of accounting information (Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011; Okoli, 2011). There is an extensive amount of information about the causes of small business failure; however, a gap exists about the role that computerized accounting systems (CAS) may play in reducing business failure. The use of accounting technology by small businesses could create a sustainable competitive advantage and improve the likelihood of small business success (Alsaaty, 2012).

Background of the Problem

Small businesses are an essential part of the economy of the United States. According to the Small Business Administration (2012), small businesses comprise 99.7% of all employer firms in the United States, account for 63% of all new private sector jobs, and employ 48.5% of the private sector workforce. Moreover, small firms are responsible for nearly half of the non-farm jobs in the private sector and 40% of the

high technology jobs (Shore, Henderson, & Childers, 2011). Small firms also produce 13 times as many patents per employee than do larger firms (Shore et al., 2011). Despite their prevalence in the U.S. economic system, 30% to 50% of small businesses fail within 5 years of conception (Graham, 2011). Thus, understanding the factors that contribute to the success of small businesses is relevant to numerous stakeholders in the U.S. economy.

The strength of the small business community is an essential part in the prosperity and economic stability of the United States. A declining business birth rate and the increasing bankruptcy rate could threaten economic stability. Gale and Brown (2013) examined the role of how federal taxation and public policy subsidize small businesses through credit and lending programs. Small business survival increases with the availability of tax credits and guaranteed loans (Gale & Brown, 2013). Similarly, strategies that lead toward continuous innovation are also necessary for the long-term survival of small companies (Robinson & Stubberud, 2012).

Government policy and business strategy are strong influencers of small business success, but they do not act in isolation from business leaders. Tahir, Mohamad, and Hasan (2011) identified a number of personal owner characteristics and factors that contributed to the success of small businesses, including honesty, assertiveness, and self-confidence. However, Tahir et al. (2011) focused on personal characteristics associated with small business owners and did not address nonpersonal aspects such as technology, management systems, and accounting in their study.

Small businesses are an essential part of the economy of the United States. Providing small business owners with accounting tools and information could reduce the

risk of failure. Therefore, the goal of this study was to examine the use of CAS by small business owners in Central Ohio toward enhanced business success.

Problem Statement

Small business owners who fail to adopt modern technology such as CAS into their business operations risk placing themselves at a competitive disadvantage (Alsaaty, 2012; Marston et al., 2011). A recent government report showed an estimated 48,000 small firms filed bankruptcy in 2011 compared to 39,201 in 2005 (Small Business Administration, Office of Advocacy, 2014; U.S. Department of Commerce Census Bureau, 2012). The general business problem is that the slow adoption of technology innovation by small businesses often leads to business failure (Edison, Manuere, Joseph, & Gutu, 2012). The specific business problem is that some small business owners do not understand the relationship between perceived ease of use and perceived usefulness with the intent to adopt CAS.

Purpose Statement

The purpose of this quantitative correlation study was to examine the relationship between perceived ease of use and perceived usefulness with the intent to adopt CAS. The independent variables were perceived ease of use and perceived usefulness. The dependent variable was the intent to adopt CAS. The target population was small business owners located in Central Ohio with membership in a local chamber of commerce. The implication for positive social change includes the potential for small business owners to understand the correlates of technology acceptance and CAS which could help increase small business success.

Nature of the Study

A quantitative methodology was appropriate for this study. The quantitative method allows researchers to determine relationships among variables and is a process for testing objective theories and determining relationships (Frels & Onwuegbuzie, 2013). Additionally, quantitative studies use statistical models to transfer observable information from a sample into numerical data to infer results to a larger population (Bryman, 2012). Conversely, qualitative research is a means for exploring, describing, and understanding a phenomenon from an individual or group perspective (Zachariadis, Scott, & Barrett, 2013). Exploring, understanding, or describing a phenomenon was not the purpose of this study. Therefore, a qualitative method was not appropriate. Mixed methods research combines elements of both quantitative research and qualitative research. Mixed methods research works well where the strengths of deductive and inductive methods add benefit to the study (Bryman, 2012; Venkatesh, Brown, & Bala, 2013). The complexity of mixed methods research design was not appropriate because it would extend the scope of the study beyond the stated purpose. Therefore, a quantitative method was appropriate for this study.

Specifically, a correlation design was appropriate for this study. A correlation design is useful when the purpose is to assess the strength and direction of a relationship that might exist between variables (Bryman, 2012; Leong & Austin, 2006). Other designs including experimental and quasi-experimental are appropriate when the purpose is to determine cause and effect using experimental or control groups (Bryman, 2012). Experimental and quasi-experimental designs were not appropriate for this study because

there was no experimental or control group nor was there any determination of cause and effect (Bryman, 2012). Therefore, a correlation design was optimal for this study.

Research Question

The following research question addressed the relationship between the independent variables (perceived ease of use and perceived usefulness) and the dependent variable (intent to adopt CAS) and guided this study.

RQ1: Does the linear combination of perceived ease of use and perceived usefulness significantly relate to intent to adopt CAS?

Hypotheses

The null and alternative hypotheses are:

H_0: No correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

H_1: A correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

Survey Questions Information

The data collected for this study derived from a survey instrument designed to address the research question. The questions were adapted from a similar TAM study (Carter, Shaupp, Hobbs, & Campbell, 2011) and they measure the independent variables, perceived ease of use of technology and perceived usefulness of technology, and the dependent variable, intent to adopt CAS. See Appendix A: Permission to Adapt Survey Instrument for permission to use the survey. The literature review provides a means of structuring the questions in a manner consistent with other TAM researchers (Carter et

al., 2011; Holden & Rada, 2011; Venkatesh et al., 2011). See Appendix B for the TAM Survey Instrument. Consistent with similar TAM survey questionnaires, a Likert-type scale measures the participant's degree of agreement for each question (Holden & Rada, 2011; Liao & Liu, 2012; Panda & Narayan Swar, 2013).

Theoretical Framework

The unified theory of acceptance and use of technology (UTAUT) model grounded this study. Venkatesh, Morris, Davis, and Davis (2003) developed the theory to explain user indentations to adopt and use technology or technology systems and subsequent user behavior. In this context, the user is a company employee or business owner.

The foundation of UTAUT began with the technology acceptance model developed by Davis (1989) as the core of his doctoral dissertation. In the original model, Davis sought to determine how users come to accept technology through the concepts of perceived ease of use and perceived usefulness (Davis, 1989). The UTAUT model is appropriate for this study because the theory aligns with the independent variables (perceived ease of use of technology and perceived usefulness of technology) and the dependent variable (intent to adopt CAS) of the study.

Researchers updated and expanded the technology acceptance model as new applications and factors emerged. In the first expansion by Venkatesh and Davis (2000), four longitudinal field studies moved the model to TAM2 in an effort to explain perceived usefulness and usage intentions using social influence and cognitive instrumental processes. The social influence processes include subjective norms,

voluntariness, and image while the cognitive processes include job relevance, output quality, result demonstrability, and perceived ease of use (Venkatesh & Davis, 2000).

The next major revision occurred in 2003 and moved TAM2 to the UTAUT model (Venkatesh et al., 2003). This collaboration combined eight other models into one unified view. The eight models reviewed and combined were: (a) the theory of reasoned action, (b) the technology acceptance model, (c) the motivational model, (d) the theory of planned behavior, (e) the model of personal computer (PC) utilization, (f) the innovation diffusion theory, (g) a model combining the technology acceptance model and the theory of planned behavior, and (h) the social cognitive theory (Venkatesh et al., 2003). Employee acceptance of technology and employee use of technology is the result and focus of the UTAUT model. The most recent expansions and innovations of the UTAUT model created the UTAUT2 construct. Consumer acceptance of technology is the focus of UTAUT2 (Venkatesh, Thong, & Xu, 2012). Carter et al. (2011) successfully demonstrated the flexibility of the various TAM models by using elements of both the UTAUT model and the UTAUT2 model to study consumer adoption of online tax filing.

Operational Definitions

The content of this study is small businesses and the adoption of technology. As such, there are terms and acronyms which may be unfamiliar to readers. The following descriptions provide contextual meaning to what may otherwise be unfamiliar terms.

ERP systems. Enterprise resource planning systems are systems designed to provide a clear, concise, accurate, and complete picture of a company's results and cash flows (Radu & Marius, 2012).

Micro business. A micro business enterprise is one that employs fewer than 20 individuals (Alsaaty, 2012).

SaaS. Software as a service is a deployment model where software programs reside on vendor servers and clients rent access to the program through an Internet connection (Lin, 2010).

Small business. The Small Business Administration (SBA) classifies small businesses within industry classifications. The largest small business classification has fewer than 1,000 employees. Other classifications have fewer than 500 employees (SBA, 2014).

SME. Small and medium sized enterprises (Sharma, Garg, & Sharma, 2011).

TAM. The technology acceptance model developed to measure and predict user propensity to accept a technology (Davis, 1989).

UTAUT. The unified theory of acceptance and use of technology developed as an expansion and unification of eight variations of the original technology acceptance model (Venkatesh et al., 2003).

Assumptions, Limitations, and Delimitations

Disclosing the assumptions, limitations, and delimitations related to this study provide reviewers with the information necessary for clarity and comprehension (Ellis & Levy, 2009). Disclosure also provides information to future researchers about the methods, conclusions, and findings. Assumptions are certain elements that are unconfirmed, but assumed to be true (Ellis & Levy, 2009). These assumptions carry the risk of potentially faulty conclusions if later determined to be false. A limitation is a

threat to the internal validity of the study that is outside the control of the researcher (Ellis & Levy, 2009). Disclosing limitations of the study provides reviewers with the potential weaknesses of the study. The delimitations inform the scope and boundaries of the study and serve to provide information about what the researcher is not going to do (Ellis & Levy, 2009).

Assumptions

The primary assumption is that business owners understand the need for accounting and record keeping. The simplest systems are paper-based check registers and bank statements whereas more sophisticated systems use computerized integrated management information and ERPs (Pasaoglu, 2011). Although business owners understand the need for record keeping systems, lack of accounting experience and weak computer skills may prevent business owners from using systems that are more complex (Edison et al., 2012).

An additional assumption is that all companies use some form of accounting system. The business owner chooses the form and structure of the system based upon such factors as personal understanding, skills, knowledge of available systems, and preference. There is no assumption about the use of external accounting resources such as certified public accountants (CPAs) or bookkeeping services. A mitigating point is that business owners are sufficiently capable of recognizing and understanding basic accounting functions and the concept of profit and loss.

Another assumption is that the business owner will answer survey questions honestly and objectively. Self-reporting bias occurs when the personal experiences and

work environment of the respondent influences the response (Fink, 2013). Asking for honest and objective answers, helps mitigate self-reporting bias.

Limitations

A limitation to the study is the practical limitation of accessing all small businesses in Central Ohio. Statistical sampling is a method used to mitigate this limitation (Fields, 2013; Fink, 2013). Since the anticipated sample frame consists of business owners who maintain membership in local chambers of commerce, the number of business owners surveyed may not be representative of the entire population of Central Ohio business owners.

Another possible limitation is that the anticipated sample is not sufficiently different in culture, socioeconomic level, and other considerations. Willingness to participate and the business owners' availability may affect the actual sample. Future researchers can validate the strength of the study by using different study participants, which will increase the validation in the data collected.

Delimitations

The sample frame includes only companies located in Central Ohio that fall within the context of small businesses as defined by the United States SBA. Additionally, the participant selection criterion includes membership in a local Central Ohio chamber of commerce and willingness to participate in the survey. The criterion provides easier access for sampling and is a form of convenience sampling (Fink, 2013). Large publically held organizations were outside the bounds and scope of this study. The

use of particular accounting standards and the applicability of such standards is outside the scope and bounds of the study.

Assumptions, limitations, and delimitations provide readers with information relevant to understanding the scope and bounds of the study. Providing mitigation factors for assumptions provides clarity and reduces potential bias. Addressing limitations and delimitations provides readers with a means of objective evaluation.

Significance of the Study

Small and medium sized enterprises often represent over 90% of the companies in the countries in which they operate (Gunasekaran, Rai, & Griffin, 2011). Because of their important contributions to economic health, small business failure continues to be a critical issue (Carter & Auken, 2006). Businesses that use CAS stand a better chance of success because of the information and tools provided by these systems (Edison et al., 2012). Researchers who use the technology acceptance model to examine business failures study the benefits of technology adoption and the risks of nonadoption (Edison et al., 2012).

Contribution to Business Practice

The significance of the study is in the recognition that successful small businesses contribute to society and the economy (Graham, 2011; Shore et al., 2011). Small businesses are conduits for innovation and social interaction (Armstrong, 2010). Although a significant amount of research exists using the technology acceptance model in the study of small businesses (Cheng, Yu, Huang, Yu, & Yu, 2011; Fillion, Braham, &

Ekionea, 2012), a gap exists in the use of the TAM model for studying the acceptance and use of a CAS.

Small business owners could benefit from this study and gain a better understanding about how incorporating and using CAS within their business operations could enhance employee collaboration, improve information flow, and reduce the potential for failure (Alsaaty, 2012). Through information provided in this study, business owners could gain an understanding of the benefits of technology. Greater knnowledge and understanding could better equip business owners to expand the business, create job opportunities within the community, and contribute to positive social change.

Implications for Social Change

The implication for positive social change is the potential to reduce business failures. The substantial percentage of total business enterprises within the economy and the effect these small businesses have on job creation have profound implications (Shore et al., 2011). In the United States, small businesses create two out of three new jobs (Yallapragada & Bhuiyan, 2011). In Malaysia; small businesses represent 99% of all businesses and employ more than three million workers (Sam, Hoshino, & Tahir, 2012). In the Czech Republic, small businesses represent 62% of all companies (McLarty, Pichanic, & Srpova, 2012), whereas in Asia over 95% of companies fall in the category of small and medium sized enterprises (Sharma et al., 2011).

The possibility of economic growth through fewer business failures has the potential for a positive effect on society and the overall economy. Business owners could

gain an understanding of the usefulness of technology adoption. Society could benefit from successful companies and economic expansion.

A Review of the Professional and Academic Literature

Examining the relationship between perceived ease of use of CAS and perceived usefulness of CAS and business owners' intent to adopt CAS was the purpose for this quantitative correlation study. The literature review is the supporting documentation for the theory used in this research study. Additionally, the literature review is the basis readers use to evaluate the depth of inquiry.

The 156 references that comprise this study include 141 scholarly peer-reviewed articles representing 90.38% of the total, three non-peer reviewed articles representing 1.92%, five government websites representing 3.21%, and seven books representing 4.48%. The total references published within the past 5 years are 134, which is 85.89% of the total number. The literature review contains 72 references, with 69 references published within the past 5 years, representing 95.83%, and 70 from scholarly peer-reviewed sources, representing 97.22%.

The literature review organization is by topic. The first section addresses the survival and failure of small businesses and the role small businesses play in the economy in which they operate. This section emphasizes the historical and present view of small businesses including trends in small business births and deaths, determinants of small business success or failure, and the impact of small businesses on the economy.

The second section is a view of technology acceptance using the technology acceptance model and the associated extensions such as UTAUT. This section informs

the reader how business owners and technology users evaluate and accept technology. A comparison of alternative viewpoints surrounding the design and the method chosen provides the reader with a rationale for the method chosen. Included here is the literature-based support for the research questions and hypotheses.

The third section reviews CAS and the value of financial information to the success of small businesses. This section provides readers with information about the importance of financial information to small business success. Included here is a discussion of technology acceptance factors and the benefits of CAS.

Walden University's online library databases served as the primary source of literature retrieval. The electronic databases included EBSCO Host's Business Source Complete, EBSCO Host's Applied Sciences Complete, ProQuest's ABI/INFORM complete, and Emerald Management Journals. The primary search strategy was to limit most searches to peer-reviewed articles and journals and restrict the date search to the most recent 5 years. Other resources included United States Government web sites, and relevant books.

Small Business Survival and Failure

This section of the literature review provides the reader with current and historical information about survival and failure rates of small businesses within the economies in which they operate. Information presented emphasizes the importance and significance of small businesses to employment and growth. This section also includes a literature-based review of the factors leading to success or failure of small business.

Significance of small business. The number of employer firms can be an expression of the economic benefit of companies (Alsaaty, 2012). Given this view, small businesses are the most significant contributors to the economy by representing over 99% of the employer firms in the United States (Anderson, 2009; SBA, 2012). Additionally, small firms have created 60% to 80% of all net new jobs over the past decade (Anderson, 2009). Although the information is readily available for publically held companies through government reporting requirements, critical information about small and private companies is more difficult to obtain. Through information acquired through the Internal Revenue Service (IRS) and the SBA, Anderson (2009) estimated total implied market value of private companies in the United States to be $10.8 trillion in 2002 while the implied market value of publicly held firms was $3.4 trillion. Anderson makes a distinction that not all private firms are small; noting that in 2006, the 394 private companies with sales in excess of one billion dollars collectively had sales of $1.25 trillion, and employed 4.4 million people. Even with these figures, 99.9% of all firms in the United States meet the SBA designation threshold of small in terms of employee size and revenue generation (SBA, 2012).

Another category called micro businesses comprises about 89% of all employer firms within the standard definition of small business (Alsaaty, 2012). Micro businesses are enterprises that employ fewer than 20 individuals. The large percentage of micro businesses further emphasizes the importance of small and micro businesses to the overall economic and social construct of the United States. Although micro businesses are easy to start, they are the most fragile and have low long-term success rates (Alsaaty,

2012). From 2000-2007, the number of firm births was 4,182,871, and the number of firm deaths was 3,787,397, representing a survival rate of 9.5%. According to recent information provided by the SBA (2012), the survival rate is decreasing while small firm bankruptcies are increasing from 39,201 in 2005 to 60,837 in 2009.

Research studies of small business survival are common, with many researchers placing emphasis on the elements of failure (Hamrouni & Akkari, 2012). The most frequently identified causes of failure for start-up companies include (a) lack of business experience, (b) weak management skills, (c) competition, (d) inability to obtain debt, and (e) limited capital resources (Hamrouni & Akkari, 2012; Hassman, Schwartz, & Bar-El, 2013). Research in Korea on technology oriented companies found three related factors (Kang, 2012). Kang lists these as market and innovation technology, management's financial commitment to human resources, and ethical considerations of commercialization through research and development budgeting.

Cader and Leatherman (2011) found that much of the research on business births and deaths correlated to overall industry conditions and regional economic conditions. Further, Cader and Leatherman found birth and death are often considered simultaneously without regard to the time interval between them. The weakness of this approach as highlighted by Cader and Leatherman is that due to the limited amount of information available on closed companies, the study gives consideration only to companies that have survived.

Hamrouni and Akkari (2012) took a closer look into the process of success or failure using a life cycle approach and applied the theory of organizational ecology. No

consensus exists in the literature about what stages to include in a company lifecycle. Some researchers use a three-stage process (Abatecola, 2013) and some researchers use a four-stage process (Jooste, 2011). Other researchers use a five-stage process (Dickinson, 2011; Lipi, 2013). Hamrouni and Akkari adopted the five-stage process, which includes birth, growth, maturity, decline, and revival. The adopted life cycle does not include death since failure can occur at any stage of the life cycle depending on the causal factor.

A little-studied aspect of firm deaths is the part of government bailouts or public policy (Cai & Li, 2013). New ventures have a significant impact on the economy at all levels of government (Alsaaty, 2012). For this reason, governments place more attention on firm creation than on firm deaths. Literature and research often link firm creation and firm deaths together (Campbell, Heriot, Jauregui, & Mitchell, 2012). The idea of economic freedom is a combination of political policies and outcomes related to the size of government (Campbell et al. 2012). Research by Campbell et al. (2012) indicated that greater economic freedom allowed more companies to start up, but also resulted in more company failures. One reason cited is that competition exposes the weaknesses along with the strengths of small businesses (Biswas & Baptista, 2012; Campbell et al., 2012).

A general theme throughout the literature is that the beginning stages of the business are the most vulnerable (Dunn & Liang, 2011). Many failures occur within the first 6 years, due to poor financial planning and poor management (Dunn & Liang, 2011). Frazer (2012) found the failure rate for restaurants is even higher, with nearly 67% failing within the first 3 years.

The global value of small business. Lussier and Halabi (2010) noted the global phenomenon of small business failure. Ncwadi (2012) supported the promotion of entrepreneurship in South Africa and recognized that new business startups failed at a rate of 70% to 80%. Although the government of South Africa created a support structure to assist small and medium sized enterprises, the failure rate continues (Ncwadi, 2012). Ncwadi examined the impact of government intervention and support rather than the causes and impact of the small business failure. Since the study showed little or no improvement in the SME failure rate, Ncwadi concluded that the government sponsored support structure had no impact on small businesses. The depth of detail in such factors as the use of technology, management capability, competition, and business experience did not provide substantive information about the impact these factors have on successful companies.

In a study of Nigerian manufacturing enterprises, Obokoh and Asaolu (2012) also examined the role of government intervention in the success or failure of small businesses. Obokoh and Asaolu considered growth in the manufacturing sector as the primary driver of job creation and poverty reduction, and with the government-sponsored liberalization of financial markets, expectations were that SMEs in this sector would thrive. The authors triangulated the data collected from questionnaires and semi-structured interviews with secondary data received from the Central Bank of Nigeria and used Statistical Packages for Social Sciences 16 as the primary tool for analysis. A widely recognized cause of small business failure is the lack of access to capital and financial markets (Hamrouni & Akkari, 2012). The purpose of the government

intervention policy was to provide SMEs with opportunities and access to previously inaccessible financial markets. The results of the study showed the opposite effect. The liberalization of economic and financial policy and the competitive free-market rates hindered SMEs ability to obtain the necessary capital and, therefore, failed to stem the rate of small business failure in Nigeria (Obokoh & Asaolu, 2012). Obokoh and Asaolu paid little attention to the use of technology as a business success factor; however, Subair and Salihu (2011) found that foreign direct investment in technology could have a significant impact on the economy. This finding further strengthens the need for additional research on technology adoption.

Much of the current research focuses on business failures in developed countries (Atkinson, 2012; Cader & Leatherman, 2011; Parsa, Self, Sydnor-Busso, & Yoon, 2011). However, Philip (2010) conducted research to determine the success factors for SMEs in underdeveloped countries such as Bangladesh. Dependable information on business size, profit measurement, and the number of establishments is difficult to obtain in Bangladesh. SMEs dominate the industrial area and are estimated to comprise over 90% of all industrial units (Faridy, Copp, Freudenberg, & Sarker, 2014). Philip estimated that these units contribute between 80–85% of all industrial employment and 23% of total civilian employment. Philip found the contributions SMEs make to employment in developing countries varied between 70%–95% in Africa and 40–70% in countries in the Asia-Pacific region.

In Bangladesh, SME's comprised over 90% of the industrial sector companies (Philip, 2010). Within this sector, SMEs placed emphasis on cost, reliability, and service

as key metrics to success (Philip, 2010). Despite the attention to cost, reliability, and service, Philip noted that the way business owners adapt to technology has a significant effect on long-term success. Other important factors included the method or way of doing business, the external environment, and financial resources (Philip, 2010).

Small businesses in Iran face problems not commonly found in countries with free market economies. According to Arasti, Zandi, and Talebi (2012), small Iranian businesses faced the added problems associated with the government focus and policymaking decisions based upon large enterprises. Statistics reported for business failure such as high first-year failures extending to 6 years are similar to other developed countries (Arasti et al., 2012). Rather than focus on the traditional determinants of failure such as management experience, financial resources, or competition, Arasti et al. (2012) looked toward more qualitative features and soft skills such as motivation, personal characteristics, capabilities, and other skills including marketing experience and crisis management. Research determined crisis management to be the most important individual factor affecting small business failure (Arasti et al., 2012). The lack of crisis management skills is more devastating to small business success than with more established businesses (Arasti et al., 2012). Tahir et al. (2011) supported these findings and included other individual factors and personal skills affecting business success including marketing skills, human resources skills, and financial management skills.

The global phenomenon of small business failure was the inducement for Lussier and Halabi (2010) to examine why some businesses succeed while others fail. Lussier had developed a predictive model of success or failure in 1995 and tested the model in

the United States and Croatia (Central Eastern Europe), achieving similar predictive validity (Lussier & Halabi, 2010). In this current study, Lussier and Halabi tested the model in Chile and found the predictive model maintained validity in the Chilean economy and culture. Given this cross-cultural and multi-country validity, Lussier and Halabi determined that many factors contributed to business success or failure. One important aspect is the businesses' need for access to capital and the business owners' ability to manage, track, and control the financial aspects of the business. Lussier and Halabi proposed government policy makers provide small business owners' with no cost access to advisors. The advisors would provide an understanding of the capital needs to start and maintain a business and how to keep accurate accounting records and implement financial controls.

The difficulties and constraints small businesses face include high raw material costs, sales and marketing costs, inadequate human resources, service and product quality, and lack of capital (Tambunan, 2012; Vasilescu & Popa, 2010). Financial difficulties, including lack of capital, have the most devastating effect on the viability of the business (Vasilescu & Popa, 2010). In cultures and countries throughout the world, small businesses are prominent and a significant portion of the economy (Faridy et al., 2014; Pauna, 2014). Within the European Union, small businesses comprise 99% of all enterprises, and they provide approximately 65 million jobs (Vasilescu & Popa, 2010). Because of the economic importance of small businesses and because businesses do not typically fail overnight, the use of early warning signs helps to identify the needed action to preserve these businesses. Taking early action provides support for the entrepreneur

and represents a better result than eventually selling off the assets to satisfy creditors (Vasilescu & Popa, 2010). The early warning signs identified by Vasilescu and Popa (2010) fall into two categories, internal warning signs and external warning signs.

The internal early warning signs mirror the previously identified major causes of business failure. These include management expertise, performance monitoring, and finances. Primary external signs are the restrictions and difficulties associated with credit and credit terms (Tambunan, 2012; Vasilescu & Popa, 2010). Including financial management as both an internal warning sign and external warning sign adds depth to the study. Using an appropriate accounting system provides owners and managers with the ability to track and monitor financial information such as revenues and expenses (Tambunan, 2012).

Ennis and Tucci (2011) suggested entrepreneurs place as much emphasis on internal auditing as they do on management skills. Their findings suggest that owners do not adequately monitor the business finances either from current cash flow position or future planning requirements. An important component of the accounting information system is to provide owners with accurate information about cash inflows in the form of receivables and cash outflows in the form of accounts payable. Additional potential areas of burden are cash flows related to human resources, such as wage and hour compliance, and those outflows related to tax at the federal, state, and local levels (Ennis & Tucci, 2011).

Small business survival has a significant effect on the economies in which they operate (Shore et al., 2011). In countries throughout the world, governments and

businesses recognize the contributions of small businesses to employment and gross domestic production (Gunasekaran et al., 2011). Successful entrepreneurs must overcome difficulties not faced by larger companies including financial, competitive, and management challenges in forms that are unique to smaller businesses (Hamrouni & Akkari, 2012). Business owners must not overlook the competitive advantages attained with technology such as CAS (Edison et al., 2012). The timely acquisition, interpretation, and use of information are as important as cash to the success of small business (el-Dalabeeh & ALshbiel, 2012).

The Technology Acceptance Model

This section of the literature review informs the reader about the history and development of the technology acceptance model. Included is information across cultures, industries, and business type to illustrate the flexibility, adaptability, and significance of the model. The literature review also provides information about the empirical evidence on the relationships that exist between the independent variables perceived ease of use and perceived usefulness and the dependent variable intent to use technology.

The development of the model. The acceptance and use of technology innovation is a widely studied theory (Fillion et al., 2012). Pantano and Di Pietro (2012) stated the increased number of variables and the nature of technology advances presents challenges to researchers and businesses. A consistent thread in technology acceptance models is the focus on behaviors that influence the user's intent to accept or adopt a given technology (Huang & Martin-Taylor, 2013). At the core of all TAM research, the

constructs of ease of use and usefulness stand as the two primary variables (Davis, 1989). Cheng et al. (2011) added more variables to expand the context and content of the study such as social influence and facilitating conditions. Liao and Liu (2012) incorporated elements of other models such as the perceptions of innovation characteristics model and the theory of planned behavior to compare how the models interrelate.

The theory of technology acceptance first gained momentum in 1989 when Davis presented the technology acceptance model. Davis used the theory of reasoned action and the theory of planned behavior to develop the technology acceptance model by adding the two constructs, perceived ease of use and perceived usefulness (Chen, Li, & Li, 2011). Davis (1989) describes perceived ease of use as the belief that using the technology or application will be free of effort, and perceived usefulness as the belief that using the technology or application will increase the users' performance. There are many studies testing the technology acceptance model in the information systems area and further research in the area of information management (Brown, Venkatesh, & Goyal, 2014; Hess, McNab, & Basoglu, 2014; Kirs, Bagchi, & Tang, 2012; Shinjeng, Zimmer, & Lee, 2014). As the model has evolved, and extensions added to make usability and applicability more meaningful, the core features of ease of use and usefulness remain constant. The theory of reasoned action and the theory of planned behavior are both capable of exploring system usage by incorporating subjective norms, however, the TAM model and related extensions are more appropriate for more specific ease of use and usefulness variables (Chen et al., 2011).

Although the TAM model is widely used to study user acceptance of technology, the tripartite model of attitude provides another comprehensive framework for studying user acceptance of technology (Hong, Thong, Chasalow, & Dhillon, 2011). The tripartite model of attitude is rooted in knowing, feeling, and acting, which are the three main facets of human experience (Hong et al., 2011). Hong et al. (2011) found that the tripartite model works well when measuring users' intent to use future features of an already accepted model and the TAM models work well for the initial user acceptance.

Using the TAM model to study computerized accounting system adoption incorporates the two key concepts perceived ease of use and perceived usefulness. Brown, Dennis, and Venkatesh (2010) presented a model integrating theories from collaboration research with the UTAUT model. Brown et al. (2010) theorized that collaboration technology characteristics, individual and group characteristics, task characteristics, and situational characteristics are predictors of performance expectancy, effort expectancy, social influence, and facilitating conditions in the UTAUT model. Brown et al. further theorized that the UTAUT constructs predict intentions to use collaborative technology, which in turn predicts actual use. Although the findings of Brown et al. supported this theory, Ilias and Zainudin (2013) found that in order to ensure maximum benefits, the acceptance of the system is crucial from both a user perspective and an organizational context. Ilias and Zainudin found that an initially accepted system based on perceptions of ease of use and perceived usefulness does not determine actual usage by the users. Elbanna (2010) supported Ilias and Zainudin and said that the simplicity of the TAM model hinders research on more complex issues. The underlying

premise of the TAM model is the linear relationship of intent to adopt the technology to the actual adoption of the technology (Venkatesh et al., 2003). Elbanna studied an e-procurement system and found that the relationship does not always hold. The business in the study initially accepted the system because of perceived usefulness and then rejected the system after actual use showed difficulties in use. The implication being ease of use and usefulness does not ensure adoption (Elbanna, 2010).

The original TAM included perceived ease of use and perceived usefulness as the constructs of evaluation (Davis, 1989). Perceived ease of use in this context is a measure of effort where the person using the system perceives the system to be free of effort. Perceived usefulness is a measure of performance where the user perceives the easier a system is to use the more useful it can be and, therefore, enhances job performance. The primary use of the model is to predict the acceptance, adoption, and use of information technologies and other technology-specific constructs (Chen et al., 2011). Davis (1989) developed the TAM to predict adoption and use of new technologies. Substantial empirical support over the past several decades validates the success of the model (Brown et al., 2014; Carter et al., 2011; Cheng et al., 2011; Fields, 2013; Venkatesh, et al., 2003). According to Venkatesh and Bala (2008), as of December 2007, the Social Science Citation Index listed over 1,700 citations, and Google Scholars listed over 5,000 citations to the journal article that introduced TAM.

The extensive use of the TAM model over the past 30 years has resulted in the model undergoing modification to provide research flexibility (Gilstrap, 2013; Huang & Martin-Taylor, 2013). The TAM2 model begins with the original TAM model and adds

both social influence processes such as subjective norm, voluntariness, and image; and cognitive instrumental processes such as job relevance, output quality, results demonstrability, and perceived ease of use (Venkatesh & Davis, 2000). The next step in the evolution of TAM came about in 2003 with the UTAUT model (Venkatesh et al., 2003). The UTAUT model consists of four core determinants of user acceptance, which are performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh, Thong, Chan, Hu, & Brown, 2011). In this model, performance expectancy is synonymous with perceived usefulness and effort expectancy is synonymous with ease of use (the essential core of TAM). Adding social influence brings in an element of TAM2, and facilitation conditions replace the cognitive aspects of TAM2.

Venkatesh and Davis (2000) argued that individuals will form early perceptions of perceived ease of use based on different anchors related to their general beliefs regarding computers and computer use and developed a model of determinants of ease of use. The determinants added by this model are computer self-efficacy, perception of external control, computer anxiety, and computer playfulness. TAM3 evolved by combining these determinants with perceived enjoyment and objective usability (Fillion et al., 2012; Venkatesh & Bala, 2008).

Using UTAUT in longitudinal field studies of employee acceptance demonstrates validity and reliability (Zarmpou, Saprikis, Markos, & Vlachopoulou, 2012). According to Venkatesh et al. (2012), UTAUT studies have explained about 70% of the variance in behavioral intention to use technology and about 50% of the variance

in technology use. Based on the validity and reliability of past studies of employee acceptance of technology, researchers are beginning to apply the models to consumer behavior (Zarmpou et al., 2012.) Accommodating the consumer context, Venkatesh et al. (2012) modified the UTAUT model and added three new constructs including hedonic motivation, price value, and habit. The motivation for these new constructs rests in the consumer desire for enjoyment (hedonic), consumer price sensitivity, and habit as a consumer trait, which often drives decisions (Venkatesh et al., 2012). The resultant modification, UTAUT2, is successful in explaining consumer behavioral intent. According to Venkatesh et al., when compared to UTAUT, the extensions proposed in UTAUT2 produced a noticeable improvement in explaining the variance in behavioral intention from 56% to 74% and technology use from 40% to 52%.

The global acceptance of the TAM model. Researchers use the models in many industries and across many cultures with consistent results (Carter et al., 2011; El-Qirem, 2013; Faqih, 2013; Fonchamnyo, 2013). Cross-cultural and international studies use the models to gain a view of similarities and differences in technology acceptance across and within industries. Among these are e-learning and online banking in Taiwan (Chu-Fen, 2013; Liao & Liu, 2012) and enterprise resource planning systems in Turkey (Pasaoglu, 2011). Similarities include the consistency with which perceived ease of use and perceived usefulness act as predictors of technology adoption. However, other researchers found that when adding additional variables such as attitude and trust, the complexity of the technology being measured impacted ease of use (Chu-Fen, 2013; Pasaoglu, 2011; Pham, Cao, Nguyen, & Tran, 2013).

The banking industry provides researchers with many technologies to investigate. For example, El-Qirem (2013) used UTAUT to analyze e-banking service adoption in Jordanian banks and found the predictive results of ease of use and usefulness similar to those of Fonchamnyo (2013) who also used a modified TAM model to study e-banking adoption in Cameroon. Pham et al. (2013) used UTAUT to compare cultural differences in online banking adoption between developed and developing countries and found that in both developed and developing countries, attitude toward use is a more important factor than ease of use or usefulness. Similarly, Dalhatu, Abdullah, Ibrahim, and Abideen (2014) found that developing countries faced the same adoption issues as developed countries. The similar results between the cultures of developed and developing countries and the consistency in predictive value support the strength and flexibility of the various TAM models (Pham et al., 2013).

Mangin, Bourgault, León, and Guerrero (2012) used the TAM model and added the external latent variables of control, innovation, and enjoy onto the internal latent variables ease of use, usefulness, attitude towards using, and intention to use in an examination of the North American French banking environment. The research showed that control has an effect on ease of use and attitude toward use, while innovation has an effect on intention to use. Additionally, enjoy has an effect on ease of use, attitude toward use, and intention to use (Mangin, 2012). Also within the banking industry, Giovanis, Binioris, and Polychronopoulos (2012) combined UTAUT and innovation diffusion theory (IDT) and examined the security and privacy risk of Internet banking in Greece and found similar results about attitude and compatibility. In another study,

researchers found lack of trust and privacy inhibited adoption even when ease of use and usefulness are regarded positively (Kazi, 2013). The consistent results within the global banking industry support the validity of the model even when researchers combine other theories such as innovation diffusion theory (Giovanis et al., 2012) and external latent variables (Mangin et al., 2012).

Although, the original model has undergone many changes over the past several decades, there are current uses for each extension and update. The newest extension, UTAUT2, works well to understand consumer behavior because of the model's focus on consumer attributes (Carter et al., 2011). The UTAUT2 focus on consumer attributes does not preclude using other variations of the model for consumer purposes. For example, Faqih (2013) used the original TAM model to examine perceived risk and Internet self-efficacy on consumer online shopping, and Yang, Weng, and He (2012) used the original TAM model to study online box lunch ordering. Additionally, Aghdaie, Sanayei, and Etebari (2012) used the original TAM model to examine consumer trust in viral marketing, and Andrews, Cacho-Elizondo, Drennan, and Tossan (2013) used an adaptation of the UTAUT2 model to study consumer acceptance of text messaging technology in a smoking cessation and intervention plan. Carter et al. (2011) used UTAUT to study consumer acceptance of online tax filing and Zhou (2012) used UTAUT rather than UTAUT2 to study location-based services from a consumer perspective. The e-file adoption study by Carter et al. (2011) successfully integrated personal perceptions on trust, efficacy, and security into the UTAUT model to create a parsimonious yet explanatory model. The additional elements of perceived risk (Faqih,

2013), consumer trust (Andrews et al., 2013), and self-efficacy (Carter et al., 2011) illustrate the flexibility of the models across industries and purpose. Similarly, Meharia (2012) found that privacy, risk, and trust impacted consumer acceptance in a study of mobile payment systems.

The articles used to examine the current and past research on the evolution, development, and uses of the TAM models in a global context show a range of researcher acceptance and use in a variety of industries and countries. However, the TAM models are not the only models used to predict the ease of use and usefulness of technology. Davis (1989) developed the original model to determine how perceived ease of use and perceived usefulness affected technology adoption. Hong et al., (2011) showed how attitude affects technology adoption, and Rogers (2003) showed how diffusion of innovation affects technology adoption. Although all the models work effectively in different circumstances in predicting initial user acceptance of technology, the models might not predict continued acceptance (Bagozzi, 2007).

Limitations of the TAM model. The TAM model is not without criticism and limitation. One of the criticisms of the TAM model is that the data used is self-reported use data instead of actual system use data (Fletcher, Sarkani, & Mazzuchi, 2014; Moghawemi, Salleh, Wenjie, & Mattila, 2012). Fletcher et al. (2014) further pointed out the difference between studies designed to predict the voluntary use of the system versus those designed to consider mandatory use. In many organizations, managers decide on the system use and require user acceptance regardless of ease of use or usefulness (Fletcher et al., 2014). Additionally, in mandatory settings ease of use might have a more

significant impact than perceived usefulness (Fletcher et al., 2014). The contrasting results show differences between voluntary versus mandatory settings (Davis, 1989).

Another limitation highlighted by Bagozzi (2007) is the theoretical strength of the intention-actual link. Bagozzi argued that the intention to use might not be representative enough to actual use because of the period involved between intention and adoption. Bagozzi further stated that TAM is a deterministic model and therefore assumes an individual's actual act drives the intention to act.

Additional weaknesses include the limited set of technologies, sample sizes, and populations used in prior studies (Aggorowati, Iriawan, Suhartono, & Gautama, 2012; Fletcher et al., 2014; Goh Say, Suddin, Mohd Zulkifli, Ag Asri Hj Ag, & Amboala, 2011). Past studies used similar populations such as education, government, and healthcare management employees. However, the model has extensive use in technology studies (Venkatesh & Bala, 2008).

Computerized Accounting Systems

Accounting is the function of collecting, organizing, recording, and reporting of financial transactions into useful quantitative information. The accounting system is the process used to accomplish the tasks of accounting (Ilias & Razak, 2011a). All businesses, regardless of size, use an accounting system; however, not all businesses use a formal or computerized accounting system. Factors such as cost, employee technical skills, vendor support, value of information, and implementation challenges are among the factors cited by business owners when selecting a new accounting system (Elbarrad, 2012). The benefits of technology adoption and risks associated with non-adoption are

among the factors studied by researchers examining business failures (Edison et al., 2012).

The importance of financial information. Information and the ability to obtain relevant and timely information are key factors to the success of small businesses. Accounting information systems are an integral part of the overall information system managers and business owners' use to make relevant, timely, and accurate decisions (el-Dalabeeh & ALshbiel, 2012). The value of efficient and accurate information systems extends throughout the company by contributing to cost control, quality control, customer information, vendor relationships, and government compliance measures (Lee & Cobia, 2013). In addition, an organization can improve competitive advantage through the ability to access the right information at the right time (el-Dalabeeh & ALshbiel, 2012).

Prior to the proliferation of personal computers, businesses used manual systems to keep track of accounting and financial data (Amidu, Effah, & Abor, 2011). These systems could be as simple as a checking account where the business owner keeps track of sales through the deposit records and expenses through the checking account records. Other manual systems used extensive journals to track and record revenues by customer and record expenses by expense classification. The systems were often cumbersome, tedious, inaccurate, and labor intensive. As personal computers became more commonplace and affordable, businesses of all sizes began to see the benefits of more accurate, precise, and timely information. The simple accounting systems of ledgers and journals gave way to complete subsets of information systems within the overall management information system. This movement began the integration of financial

service information, customer demographic information, manufacturing information systems, and human resource information systems. The computer and the related software components are critical to the function of information processing and retrieval at the speeds required by today's businesses (el-Dalabeeh & ALshbiel, 2012).

Small business sustainability is one of the major challenges in the United States and many other countries (Hamdan, 2012). The business owner's inability to provide the necessary funds or expertise to implement or acquire computerized systems can overshadow the benefits such systems provide. The business owner often fails to recognize the value such systems offer, or chooses to retain a current manual system because of the unknown aspects of ease of use and usefulness (Sam et al., 2012). According to Hamdan (2012), to effect change in small business often requires the manager or owner to increase knowledge and skills outside their level of expertise, which can create an area of resistance.

Increasing competition and the high demands of a global economy are forcing many small business owners to take a softer approach to change. With additional financial information, better customer information, the ability to provide lenders with complete and timely information, and lower costs of implementation, business owners are finding practical benefits to computerization (Elbarrad, 2012). As the cost of implementation and hardware acquisition continues to decline, more small businesses are willing to take technological risks.

Global studies support the increase in adoption and use of computerized accounting and information systems (Amidu et al., 2011; Elbarrad, 2012; el-Dalabeeh &

ALshbiel, 2012; Sam et al., 2012). The declining prices of computers and software systems moves the decision away from acquisition and implementation costs and toward more people related costs such as ease of use, usefulness, and computer experience. Prior research found a lack of experience in working with and within the computerized systems caused adoption reluctance (Said, Ghani, & Ibrahim, 2011). Additional research confirmed this view and found that dificulty in system maintenance also caused adoption reluctance (Okoli, 2011). The use of computers in businesses for tasks other than accounting, such as company email systems, online vendor access, and web browsing has increased business owners' propensity to adopt new systems. Said et al. (2011) found that, of the companies they surveyed, 100% had a computer, but less than 26% used a computer for accounting purposes while 84% used a computer for word processing. Similarly, Okoli (2011) found many businesses use computers for simple word processing and email tasks but do not take advantage of the full usefulness of computer power. The perception of ease of use often causes business owners to lose the usefulness of computer power in financial analysis, planning, and reporting (Okoli, 2011).

Technology adoption factors. The factors influencing the adoption of CAS are consistent throughout the literature and the global economy (ALshbiel & Al-Awaqleh, 2011; Said et al., 2011). Among the decision factors found in the literature, efficient work process, ease of use, accuracy of the information, adequate amounts of information, and automation ranked high (Yallapragada & Bhuiyan, 2011). Ease of use stands alone as one of the TAM model variables (Said et al., 2011). Variations of usefulness include efficient work process, accuracy of the information, adequate amounts of information,

and automation. Some researchers adopt specific elements such as management concepts and human needs theory within one main variable to gain a clearer understanding of the subsets involved in the decision process (Çakmak, Benk, & Budak, 2011; Yeh & Teng, 2012). The added concepts increase the credibility and flexibility of the TAM model and related extensions.

There are differences in the concepts influencing the adoption of computerized systems and the concepts affecting the applicability of those systems. Some researchers looked at the broader adoption concepts such as the relationship to the TAM model variables or the theory of reasoned action (Chen et al., 2011). Others studied infrastructure, human resources, cost, and the decision to change as factors affecting the applicability of the computerized accounting system (ALshbiel & Al-Awaqleh, 2011). ALshbiel & Al-Awaqleh found that the infrastructure, human resources, and the decision to change have a positive impact on applicability and cost has a negative impact on applicability. Additionally, ALshbiel and Al-Awaqleh showed no statistically significant impact of managerial performance on the application of CAS. ALshbiel & Al-Awaqleh supported previous TAM findings by Said et al. (2011) where adoption concepts such as ease of use and usefulness are often related to applicability concepts such as the decision to change and cost.

External and internal variables influence small business owners' adoption decisions about new technology (Amidu et al., 2011). The external variables include peers and outside consultants such as accountants or other professionals (Ifinedo, 2011). The internal variables include the personal characteristics of the owner, the availability of

financial and human resources, and perceived competitive advantage (Ifinedo, 2011). Sam et al. (2012) studied the relationship between the adoption of CAS and the personal characteristics of the CEO toward innovation. Sam et al. showed a significant negative relationship between CEO innovativeness and the adoption of accounting systems and a significant positive correlation to the variables of perceived ease of use and perceived usefulness when faced with the decision to adopt CAS. CEOs, regardless of their personal knowledge of technology, recognize the need for innovation and use common variables such as ease of use and usefulness as a component of the decision process (ALshbiel & Al-Awaqleh, 2011; Sam et al., 2012).

Although the goal of CAS is to provide accurate and timely financial information to organizational decision makers, additional benefits of automated and computerized systems could include many non-financial elements (Radu & Marius, 2012). As shown by Al-omari and Al Turani (2012), integrated automated systems could provide improved customer service and assist in inventory control. Al-omari and Al Turani showed some improvement in service and inventory as expected and indicated a willingness of consumers to adapt to certain self-service technologies. The consumer willingness to adapt to new technologies resulted from the ease at which consumers were able to use the service. The increased benefit of inventory control resulted from the ease at which the system was implemented (Al-omari & Al Turani, 2012).

Edison et al. (2012) took a different approach to technology adoption by investigating the factors that affect non-adoption of computerized accounting information systems by SMEs. The primary non-adoption factors identified in the study include

acquisition cost, lack of a government support structure, financial constraints, and system complexity. With the exception of a government support structure, all the non-adoption factors identified in the study can be view as adoption factors if studied differently. For example, by applying TAM models to the non-adoption factors, other than government support structure, system complexity fits within the ease of use construct. Cost and financial constraints can fit within the usefulness variable if viewed from a cost-benefit analysis. The core concept of cost-benefit requires that the costs of acquisition and usage be less than the benefits derived from the product or service. Many problems arise when measuring perceived benefits and placing monetary values to factors such as accuracy and completeness.

Software providers are offering software as a service (SaaS) solutions to help mitigate the cost of acquisition and take advantage of current hardware configurations within the company (Lin, 2010). Lin (2010) noted 33 applications across 26 vendors in the accounting and finance field with additional applications available in other disciplines. SaaS is a cloud-based solution where companies rent access to the software through an Internet connection rather than purchase the application. The application resides on the vendors' servers, which minimizes hardware costs, upgrade costs, and potential downtime. In addition, companies experience faster and shorter rollout times and experience both short-term and long-term cost benefits (Lin, 2010). Researchers used the flexibility of the UTAUT model to examine the ease of use and usefulness of SaaS solutions in tax filing (Carter et al. 2011), accounting systems (Lin, 2010), mobile payment services (Thakur, 2013), and other technology applications.

Edison et al. (2012) argued that the non-adoption of technology by SMEs has a negative affect because they lose the benefits inherent with the use of CAS. Edison et al. further stated that some SMEs have even failed to survive because of non-adoption. Although non-adoption of CAS can have negative consequences, these consequences are only negative if the costs of acquisition and implementation exceed the benefits derived. A drawback to the traditional quantitative cost-benefit analysis is the difficulties associated with measuring employee satisfaction in terms of job performance and job satisfaction (Edison et al., 2012).

Business owners often find advantages of using CAS after system implementation. Ilias and Razak (2011b) noted difficulties with direct measurement of system quality and effectiveness but found indirect measurement through end user satisfaction is the best measure of the relationship between the management of an organization and the information or accounting system. Danciu and Deac (2012) found efficiency to be a primary motivator and justification for businesses to implement computerized systems. Research studies conducted over the past three decades support this position (Ilias & Razak, 2011b).

Benefits of computerized accounting systems. The effects of implementing a computerized accounting system extend outside the company. One of the primary beneficiaries of the adoption of computerized accounting system is the company's outside accounting firm (Kapp & Heslop, 2011). Some of the reasons presented include information that is more accurate, better efficiency, easier compliance to government regulations, the ability to share information, tighter internal control, and better financial

management. Kapp and Heslop (2011) showed that the adoption of CAS helps prevent internal fraud through better reporting and internal controls. Additionally, the accounting firm's desire to maximize billings while simultaneously minimizing client contact hours allows for greater efficiency and accuracy within the accounting firm (Kapp & Heslop, 2011).

Accountants advise that better internal control often enhance the ability to detect fraud as a primary benefit to CAS (Arvind, Pranil, & Joyti, 2010). The three elements of an efficient internal control structure are the control environment, the information system, and the internal controls in place (Arvind et al., 2010). The control environment consists of the policies and procedures set in place by the organization's management with policies on information technology cited as an important control element. The information system is the set of procedures that provide information for decision makers. Sophisticated information systems are computerized systems that provide management and accountants with timely and relevant information. Internal controls are those policies and procedures designed to provide proper segregation of duties, authorization of transactions, proper safeguards over documents and sufficient documents and records (Arvind et al., 2010). Many small businesses lack personnel and resources to fulfill all the functions of internal control. In this environment, a computerized system combined with a working relationship with external accountants can mitigate some of the risks of fraud (Hrncir & Metts, 2012).

Business growth increases the need for accurate audit information from both internal and external views. Internally, business owners and managers need larger

quantities of information and more timely information. Externally, banks, government agencies, and other outside stakeholders require greater amounts of detail not provided by bulky manual systems. The early stages of the business lifecycle are where the business is most vulnerable and least likely to have adequate internal controls and computerized systems (Hamrouni & Akkari, 2012). The use of computerized accounting and information systems has a significant impact on the organization and management of financial information (Radu & Marius, 2012). Cost was a significant consideration in the decision to computerize accounting information systems (Sharairi, 2011). Poonpool and Chanthinok (2011) found that competency in CAS by external auditors adds to the efficiency of audit work and assists the business owner in managing and controlling financial information.

The ability to manage and control the financial aspects of the business does not rest with a computerized financial accounting system alone (Hrncir & Metts, 2012). A management accounting system (MAS) working in tandem with the financial accounting system using the same data sources provides business owners with the ability to manage, control, and report financial information and non-financial information without duplicating efforts or activities (Bai, & Krishnan, 2012). Using information technology provides business owners with many tools to manage and control various aspects of the business. Finance, accounting, marketing, manufacturing, human resource management, and government compliance all use information technologies. Determining which technologies provide the most benefit for the least cost is a challenge to businesses (Dumitras, 2011). The implementation and use of a computerized accounting system has

a significant impact on the organization and management of the systems. Dynamic changes occur as managers move the business from obsolete processes to integrated ERP systems (Radu & Marius, 2012). These systems provide management with a clear, accurate, and complete picture of the business's results and cash flows.

Computerized systems provide efficiencies in management, accounting, financial reporting, and internal control. A difficulty many businesses encounter is deciding which system best fits the organizations' needs and budget. In a rapidly changing business environment, the choice of software, hardware, and configuration presents challenges not previously encountered (Bai, & Krishnan, 2012). Businesses can recognize the current and future benefits of computerization and often look beyond the initial cost and implementation factors when evaluating the internal environment, external environment and the organizational objectives. Radu and Marius (2012) found positive results in organization and management, control, and audit while AlShibly (2014) found using an electronic document management system to be more efficient than a manual system. Dumitras (2011) supported these findings and found government agencies in Romania require software vendors to conform to internal control, external control, and minimum requirements, thereby moving some of the burden of compliance away from the business and into the purview of the developers. Examples include critical areas such as legislative changes, privacy concerns, procedural processing verification, legal compliance, restoration of data, forms compliance, and many others.

Transition and Summary

Section 1 began with information about the background of the problem undertaken for the study. The elements of section 1 include the problem statement, purpose statement, research question, and hypotheses. The literature review provides in-depth information about current and past research in the area of small business failure, a detailed description of the theory used in the study, and information about the use of CAS by small businesses.

Section 2 begins with information about the research method and design chosen for the study. The section continues with a definition of the population and the planned sampling methods. Additional information related to data collection technique, data organization, instrument used, and data analysis technique completes the section. Section 2 ends with a statement on reliability and validity and a transition into section 3.

Section 2: The Project

In section 2, I describe the details of the study and methods used to carry out the project. The section begins with a restatement of the purpose followed by a description of the role of the researcher. Next, I include a restatement of the research method and design with support and justification through the literature review and previous research. Also included is a description of the population and access method. This section also includes data collection, organization, and analysis techniques. Section 2 ends with a brief discussion of reliability and validity.

Purpose Statement

The purpose of this quantitative correlation study was to examine the relationship between perceived ease of use and perceived usefulness with the intent to adopt CAS. The independent variables were perceived ease of use and perceived usefulness. The dependent variable was the intent to adopt CAS. The target population was small business owners located in Central Ohio with membership in a local chamber of commerce. The implication for positive social change included the potential for small business owners to understand the correlates of technology acceptance and CAS, which could help increase small business success.

Role of the Researcher

The role of the researcher is to collect, organize, analyze, and report results in a scholarly, ethical, and unbiased manner (Bernard, 2012; Bryman, 2012). My role was to maintain these standards and adhere to the basic ethical principles outlined in the Belmont Report (U.S. Department of Health and Human Services, 2014). The basic

principles of the Belmont Report include respect for persons, beneficence, and justice (U.S. Department of Health and Human Services, 2014).

In this quantitative study, I adopted the UTAUT model survey instrument used by Carter et al. (2011). The original survey instrument used by Carter et al. (2011) included several independent variables not included in this study. As such, I did not include any questions unrelated to either the independent variables of this study or the dependent variable of this study. To tailor the questionnaire to my study, I eliminated the references to online tax filing and replaced them with CAS, and I adjusted demographic information to fit this TAM study. The resultant survey questions are consistent with those used in other TAM studies (Çakmak et al., 2011; Davis, 1989; Holden & Rada, 2011; Venkatesh et al., 2011).

As a business owner in the target population, I might meet members who are personal clients or former clients. Personal associations could create bias or the perception of bias (Gorrell, Ford, Madden, Holdridge, & Eaglestone, 2011). I solicited the participants' anonymous engagement through an introductory letter outlining the purpose of the study and provided participants the ability to withdraw if necessary or by choice. The participants could ask questions and voice concerns. I used a consent form to disclose background information, procedures, the voluntary nature of the study, the risks of being in the study, the benefits of the study, payment information, privacy statement, contact information of the researcher, and contact information of Walden University.

Participants

There are an estimated 27.9 million small businesses in the United States (Small Business Administration, Office of Advocacy, 2014). To narrow the focus and provide easier access to potential participants, I collected the data for this study from a population of small business owners in Central Ohio. To further simplify the data collection and add diversity, I acquired a list of business owners from several local chambers of commerce.

The eligibility criteria for selecting participants are that they meet the definition of small business as prescribed by the SBA (2012) and that they are a member of a local chamber of commerce. The relevance of the population rests in the diversity of business types. The population included law firms, medical practices, construction companies, restaurants, research organizations, daycare centers, fraternal organizations, landscapers, insurance brokers, hair salons, retail stores, and other service companies.

As a member of several local Chamber of Commerce offices, I had access to business owners who are also members of the Chamber Office. As a member of the Ohio Society of Certified Public Accountants and faculty member at a university in Columbus, Ohio, I was able to draw on personal associations with other CPAs to gain access to additional business owners in order to expand the pool of potential participants when needed. When needed, I established a working relationship with the participants through personal contact and one to one introduction from other CPAs. I based participant selection on availability and convenience, and selection criteria included business owners or managers of the business community in Central Ohio. The selection technique was a nonprobabilistic sampling method.

Research Method and Design

The goal of the researcher and the problem under examination drive the method and design of a research project. Whereas the method drives the design, the design tends to be a personal choice of the researcher (Bryman, 2012). Researchers attempting to determine causal relationships or correlations are more likely to use a quantitative approach. Researchers seeking to determine the meaning of a phenomenon or event are more likely to use a qualitative approach (Bryman, 2012). Some researchers prefer to examine the problem from many aspects and, therefore, tend to use a mixed-methods approach and include elements of both quantitative and qualitative design (Bryman, 2012).

The objective of this study was to examine whether a relationship exists between the dependent variable of small business owners' intent to adopt computerized accounting systems and the two independent variables of perceived ease of use and perceived usefulness of CAS. This section of the document includes an expanded discussion of the method chosen and the literature support for both the method and design.

Research Method

Researchers and scholars classify research methods as either quantitative if using numerical or statistical analysis (Bernard, 2012; Bryman, 2012; Parylo, 2012), or qualitative if using a narrative approach (Bernard, 2012; Bryman, 2012; Gilstrap, 2013). Mixed methods studies use a combination of quantitative and qualitative elements

(Bernard, 2012; Bryman, 2012; Frels & Onwuegbuzie, 2013). Included in this section is the rationale and literature-based support for a quantitative study.

A quantitative method was appropriate to address the research question for this study. The literature provided ample support for a quantitative study. For example, Holden and Rada (2011) used a quantitative approach with a survey instrument to study how teachers come to accept educational technologies. Suki, Ramayah, Yi, and Amin (2011) used a quantitative approach with a survey instrument to study wireless application protocol services. Yeh and Teng (2012) applied an expansion of the TAM model in a quantitative study about post adoption use of an information system.

Using a survey instrument is a common means of gathering decision-making data for quantitative studies (Barge & Gehlbach, 2012; Fink, 2013). A qualitative approach alone would not serve this purpose. According to Leong and Austin (2006), mixed methods approaches use elements of both quantitative and qualitative and have merit. Because there was no qualitative aspect associated with the research question, however, a quantitative study alone sufficiently addressed the research question.

Research Design

I used a correlation design with a survey instrument for this research study. The quantitative method of data collection uses tools that are closed-ended and consist of surveys, questionnaires, correlational analysis, document analysis, systematic observation, and official statistics (Bernard, 2012; Bryman, 2012; Leong & Austin ,2006). The output produced by the quantitative method is numerical and categorical and

uses analytical techniques such as counting, comparing, and statistical analysis (Arghode, 2012; Fink, 2013; Frels & Onwuegbuzie, 2013; Gilstrap, 2013).

A correlation design was suitable for this study because the purpose of the study was to determine the extent to which perceived ease of use and perceived usefulness relate to the adoption of CAS. The literature supported this method, design, and instrument. For example, Lin, Liu, and Kuo (2013) used the technology acceptance model and correlation design with a questionnaire instrument to study the moderating effects of perceived usefulness on the relationship between ease of use, attitude toward use, and actual system use in the direct selling industry in Taiwan. Chuang, Tsai, Chang, and Perng (2012) used TAM with a correlation design to study the relationship between perceived ease of use and perceived usefulness in companies that have implemented a knowledge management system. Garača (2011) used a similar correlational design and survey instrument while studying ERP system usage and acceptance.

The design and instrument used in this study was appropriate based on the extensive use within the literature, the need to collect data from a variety of small business owners over a condensed time, provide anonymity, and minimize intrusion. A survey using a Likert-type scale also provides a numerical basis with which to use statistical analytical procedures appropriate to the study (Fink, 2013). Based upon the nature of the study and the research question identified, I did not consider experiments. The nature of the hypotheses, the theory used, and the use of surveys in the literature make survey use appropriate to the problem under study.

Population and Sampling

The general population for this study was small businesses as defined by the SBA. The specific geographic area of the population was Central Ohio. I distributed a survey instrument to a member list of companies with fewer than 500 employees, defined as small businesses by the SBA, acquired from two Central Ohio Chamber of Commerce offices. The use of a quantitative method with a correlation design using a survey instrument and convenience sampling provided an appropriate approach for the study. According to Arghode (2012), quantitative research design applies scientific methods and seeks to control, predict, and explain the phenomenon.

Fink (2013) discussed how sampling techniques are an appropriate method of generalizing results to a larger population. Uprichard (2013) expanded the discussion to include probability designs such as random sampling as a selection method that allows each member of the population an equal chance of selection. Daniel (2012) discussed the differences between nonprobabilistic and probabilistic sampling where the main difference is one of randomness. Although random sampling was the preferred method, the size and dispersion of small businesses in Central Ohio precluded this as a viable method. Therefore, I used a convenience sample based on availability and membership in local chambers of commerce.

Prior research using variations of the technology acceptance model and sampling the targeted populations yielded response rates of 40.3% in a study of businesses adopting computerized accounting information systems in Saudi Arabia where the sample size was 300 (Elbarrad, 2012), and 65% in a study of online tax filing where the sample

size was 304 (Carter et al., 2011). Additional results are 89.2% in a study of computerized internal controls where the sample size was 102 (Arvind et al., 2010), and 95.8% in a study of trust and viral marketing where the sample size was 72 (Aghdaie et al., 2012).

I used two methods to determine the sample size needed for this study. First, I used the formula 50 + 8 (m) = sample size, where m represents the number of independent variables (Tabachnick & Fidell, 2007). The results of the formula yielded a sample of 66. Next, I conducted a power analysis using G*Power 3.1.7. An a priori power analysis, assuming a medium effect size (f = .15, a = .05) indicated a minimum sample size of 68 participants was required to achieve a power of .80. Because the results are similar, I sought 66 participants for the study.

The use of a medium effect size (f = .15) was appropriate for this proposed study. I based the medium effect size on the analysis of four articles where technology acceptance was the outcome measurement. Averaging the response rate of prior studies (Aghdaie et al., 2012; Arvind et al., 2010; Carter et al., 2011; Elbarrad, 2012) at 72.5% suggests a survey distribution quantity of 147. Therefore, I initially distributed 147 surveys. The population of small businesses in Central Ohio is large enough to attain the required minimum sample size of 66 usable surveys. Because the initial response rate was lower than anticipated, I distributed an additional 200 surveys which resulted in 71 usable responses. The final response rate was 20.46%.

The eligibility criteria for selecting participants were that they meet the definition of small business as prescribed by the SBA (2012) and that they were members of a local

chamber of commerce. The relevance of the population rests in the diversity of business types. The population included law firms, medical practices, construction companies, restaurants, research organizations, daycare centers, fraternal organizations, landscapers, insurance brokers, hair salons, retail stores, and other service companies

Ethical Research

Academic researchers must maintain the highest levels of credibility and trustworthiness when carrying out research activities. My ethical responsibly included preserving the confidentiality of the participants and following the principles outlined in the Belmont Report (U.S. Department of Health and Human Services, 2014). Additionally I will secure the collected data in a safe place for a minimum of 5 years, and comply with the Institutional Review Board (IRB) requirements as established by Walden University. The Walden University IRB approval number is 08-19-15-0278574. To comply with these requirements and meet the standards established by Walden University, I completed a training course offered by the National Institutes of Health and received certificate number 1780069. The course title is Protecting Human Research Participants. I listed the certificate in the table of contents and included a copy as Appendix C. I provided each participant with the confidentiality agreement (Appendix E).

The survey instructions included the process known as informed consent. The survey instructions do not include any personal or organizational names. The survey instructions included an ethics and confidentiality statement designed to inform participants about (a) the background of the study, (b) the procedure for completing the

survey, (c) a statement about the voluntariness of the survey, and (d) instructions on how to withdraw from the survey. Also included are statements about the risks and benefits of being in the study, a compensation statement, and a statement of confidentiality. An additional section provided contact information for the researcher and Walden University. I included the information in the table of contents as Appendix B for the survey questions. The Walden University Consent to Participate forms are kept in a secure location. I listed the Confidentiality Agreement in the table of contents as Appendix E.

Instrumentation

The instrument for this study is the TAM Survey Instrument adapted with permission from prior UTAUT research by Carter et al. (2011) using an ordinal 7-point Likert-type scale. Survey changes and adjustments included replacing references to online tax filing with CAS and replacing references to tax filing software with CAS. The TAM Survey Instrument contained a standard 7-point ordinal Likert-type scale where 1 = strongly disagree, 2 = moderately disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = moderately agree, 7 = strongly agree (Nath, Bhal, Kapoor, 2013; Venkatesh, 2000). Each survey question used the same Likert-type scale, and I did not include any reverse coded questions. A higher score indicated a higher degree of intention to use CAS. I compiled the questions from validated instruments found in the technology adoption literature, which appropriately represents each of the constructs in this study (Brown et al., 2014; Carter et al., 2011; Cheng et al., 2011; Davis, 1989; Venkatesh et al., 2003). The concepts measured were the independent variables

(perceived ease of use and perceived usefulness) and the dependent variable (intent to adopt CAS). I included the TAM Survey Instrument in the table of contents as Appendix B.

Reliability refers to the instrument used in the study and the consistency in which repeated tests produce the same results (Fink, 2013). The instrument was appropriate to the current study because the instrument focused on the independent variables (perceived ease of use and perceived usefulness) and the dependent variable (intent to adopt CAS). Prior research using variations of the technology acceptance model survey include a study of businesses adopting computerized accounting information systems in Saudi Arabia (Elbarrad, 2012), a study of online tax filing (Carter et al., 2011), a study of computerized internal controls (Arvind et al., 2010), and a study of trust and viral marketing (Aghdaie et al., 2012; Izquierdo-Yusta & Calderon-Monge, 2011). The concepts measured by the instrument include perceived ease of use and perceived usefulness as they relate to CAS. The instrument was a self-administered survey mailed to a sufficient number of businesses in the target population to achieve the required sample size based upon an average response rate of 72.5% (Aghdaie et al., 2012; Arvind et al., 2010; Carter et al., 2011; Elbarrad, 2012).

Cronbach's alpha is a frequently used internal consistency measure of the reliability of a psychometric test (Cheng et al., 2011). The reliability of the TAM Survey Instrument rests with the frequency in which technology adoption studies use similar instruments (Carter et al., 2011; Cheng et al., 2011; Fillion et al., 2012; Holden & Rada, 2011; Suki et al., 2011). Researchers consider an alpha measure of .70 or above as

satisfactory and prior studies have consistently shown alpha to be above the .70 level (Carter et al., 2011; Cheng et al., 2011; Holden & Rada, 2011; Suki et al., 2011). Therefore, I used the Cronbach's alpha coefficient to measure reliability of the instrument in this study.

Validity refers to whether the survey or another instrument measures the intended concept (Bryman, 2012). Types of validity include but are not limited to construct validity, concurrent validity, and convergent validity (Bryman, 2012). Construct validity refers to whether the researcher is testing the conceptual hypotheses (Leong & Austin, 2006). Concurrent validity entails relating a measure to a criterion on which cases differ (Bryman, 2012). Convergent validity is a type of construct validity where the scale must correlate significantly and positively with other instruments designed to measure the same construct (Leong & Austin, 2006). Bryman refers to the measurement by fiat to describe how researchers rely on the validity of prior studies when developing instruments for current studies. Therefore, I relied on the validity of prior studies.

The purpose of the study was to examine the relationship between small business owner's intent to adopt CAS, using intent to adopt CAS as the dependent variable and independent variables perceived ease use and perceived usefulness. As such, the concepts measured by the instrument elicit appropriate information to measure ease of use of CAS and usefulness of CAS. Such concepts include ease of use, which is a measure of effort expectancy and usefulness, which is a measure of performance expectancy, and intent to use the system (Venkatesh, 2003). I will make the raw data collected available by request for a period of five years after publication.

The design of the survey questions created alignment with the research question and the study variables. The survey questions align with the technology acceptance model by addressing the two primary model independent variables, perceived ease of use and perceived usefulness and the dependent variable intent to adopt CAS. The first TAM variable, perceived ease use aligns with TAM Survey Instrument section two questions 1 through 7. The second TAM variable, perceived usefulness aligns with the TAM Survey Instrument section two questions 8 through 12. The dependent variable, intent to adopt CAS, aligns with questions 13 and 14 of the TAM Survey Instrument. Questions 15 and 16 of the TAM Survey Instrument are included to measure perceived importance of the independent variables and correlation. I included the TAM Survey Instrument in the table of contents as Appendix B.

The questions for the study result from the literature review and other TAM research and support the validity of the instrument (Venkatesh, 2003). I examined the first 30 surveys returned as a strategy to address threats to validity and internal consistency. Reviewing an initial group of surveys helped to ensure the survey met the objectives of the study.

Data Collection Technique

Quantitative data collection methods commonly used in social research includes the self-administered structured survey and the structured interview (Bryman, 2012). The self-administered structured survey is advantagous because of the lower costs to administer, the speed and quantity of distribution, the absence of interviewer bias, the lack of interviewer variability, and convenience to the respondents (Bryman, 2012). The

disadvantages of the self-administered structured survey are lower response rates, the risk of missing data, the problem of question order effect that can arise because the respondent can read the entire questionnaire before answering any questions, and the researcher cannot know whether the intended person actually answered the questions (Bryman, 2012).

I used a self-administered survey because of the frequency of use, demonstrated reliability, and demonstrated validity in prior TAM studies (Carter et al., 2011; Cheng et al., 2011; Holden & Rada, 2011; Suki et al., 2011). I used the following steps in accordance with the self-administered survey approach. First, I acquired the member lists of two Central Ohio chambers of commerce and assembled the packages for mailing. Secondly, I mailed the packages using the U.S. Postal Service. Next, I examined the first 30 surveys returned to ensure the survey met the objectives of the study. I did not need to alter the questionnaire. I continued to send surveys until I reached the minimum required number of surveys. The survey instrument contained an introduction, an invitation to participate in the survey, a participant consent form, and a self-addressed stamped envelope. See Appendix B for the survey questions.

Data Analysis

Examining the relationship between the perceived ease of use and perceived usefulness and business owners' intent to adopt CAS was the overarching purpose for undertaking this quantitative correlation study. The following research question addressed the relationship between the independent variables (perceived ease of use and

perceived usefulness) and the dependent variable (intent to adopt CAS) and guided this study.

RQ1: Does the linear combination of perceived ease of use and perceived usefulness significantly relate to intent to adopt CAS?

The null and alternative hypotheses are;

H_0: No correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

H_1: A correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

Several software tools are available for analyzing data including Statistical Package for the Social Sciences (SPSS), SAS System, and SYSTAT System (Tabachnick & Fidell, 2007). SPSS is a robust statistical program used by other TAM researchers for correlation analysis (Aghdaie, Piraman, & Fathi, 2011; Brezavscek, Sparl, & Znidarsic, 2014; Teodora & Silviu, 2013; Yang, Liu, & Zhou, 2011; Yang, 2013). Therefore, I used SPSS v21.0 for this study. I analyzed and sequentially addressed the research question using the stated hypotheses, and I reported the findings in a logical manner consistent with the supporting theoretical framework used throughout the study.

Structural equation models (SEMs) are statistical procedures used to test causal and correlation hypotheses (Bagozzi & Yi, 2012; Chu-Fen, 2013). TAM researchers use a variety of SEMs to measure the relationship between variables such as partial least squares (Ifinedo, 2011; Izquierdo-Yusta & Calderon-Monge, 2011; Liao & Liu, 2012), Pearson's correlation (Amini, Ahmadinejad, & Azizi; 2011; Sam et al. 2012), and

multiple regression analysis (Carter et al., 2011; Suki et al., 2011; Teodora & Silviu, 2013; Yang et al. 2012). Other methods used in TAM studies include analysis of variance (Lin et al., 2013; Hess et al., 2014) and polynomial modeling (Brown et al., 2014). Other TAM studies use descriptive analysis and path analysis (Aghdaie et al., 2012; Al-Fahim, 2012; Echchabi, 2011).

Multiple regression analysis is useful when there are two or more independent variables, and the objective of the research is to look for predictive relationships with the dependent variable (Bryman, 2012; Nathans, Oswald, & Nimon, 2012). Pearson's correlation is useful when the purpose of the research is to determine the relationship between one independent variable and one dependent variable (Bryman, 2012). I used multiple regression analysis to test the hypotheses of this study. The primary hypothesis examined the combined linear relationship between two independent variables and one dependent variable. Descriptive statistics were included to add supporting detail and to provide information about representative scores, the amount of variation in the data, and normality detail (Leong & Austin, 2006).

Other quantitative statistical analysis techniques not appropriate for this study include, bivariate linear regression, discriminant analysis, and factor analysis. Bivariate linear regression uses only two variables and is, therefore, not an appropriate method. Researchers use discriminant analysis to classify individuals into groups based upon one or more measures (Field, 2013). The purpose of this study did not include classifying groups and was, therefore, not an appropriate analysis technique. Researchers use factor analysis to reduce large groups of overlapping measured variables to smaller sets, which

often represent unobservable latent variables (Field, 2013). The purpose of this study did not include latent variables and was, therefore, not appropriate.

After data collection but before data analysis, I visually examined the survey information for missing or incomplete information. This process of data cleaning ensured that the information used in the analysis was as accurate and complete as possible (Leong & Austin, 2006). Missing data happens when a survey respondent fails to answer a question (Bryman, 2012; Fink, 2013). Failure to answer a question may have a different meaning to different respondents such as the question did not apply to the respondent, the respondent may have forgotten to answer the question, or that the respondent did want to answer the question. Because there was no way of knowing why the information is missing, I discarded surveys with incomplete information and continued to send out additional surveys until I received the necessary amount of usable surveys.

Multiple regression analysis relies on certain assumptions about the variables used. Errors can occur when the relied upon assumptions are not met (Osborne & Waters, 2002). Violating these assumptions can cause the Type I error which is an incorrect rejection of a true null hypothesis and the Type II error which is failure to reject a false null hypothesis (Osborne & Waters, 2002). According to Osborne and Waters (2002), the most common assumptions that researchers face and can test for violations are linearity, reliability of measurement, homoscedasticity, and normality.

The assumption of linearity means there is a linear relationship between a dependent variable and the independent variable (Osborne & Waters, 2002). In order to

assume linearity exists, I tested for non-linearity. The preferable method of detecting non-linearity was to examine the plots of the standardized residuals as a function of standardized predicted values also referred to as residual plots (Osborne & Waters, 2002). The SPSS program provided a means of presenting the residuals in scatter plot for visual observation. A violation of this assumption would mean that multiple regression is not an appropriate statistical method of analysis.

The assumption of reliability of measurement refers to the consistency and reliability of the instrument used to measure the variables (Leong & Austin, 2006). Cronbach's Alpha is a method used by prior TAM researchers to test this assumption (Cheng et al., 2011; Holden & Rada, 2011; Lin et al., 2013). Therefore, I used Cronbach's alpha to test the reliability of the TAM Survey Instrument. The results of Cronbach's alpha testing met the minimum acceptable level of .70, and no adjustment to the instrument was necessary.

The assumption of homoscedasticity refers to the variance of errors across all levels of the independent variable. If the level of variance is the same then, the assumption of homoscedasticity is valid (Osborne & Waters, 2002). A visual examination of plot residuals was an appropriate test for homoscedasticity. Additionally, SPSS supports the Durbin-Watson statistic, which is another test of homoscedasticity. Therefore, I used both the visual scatter plot and Durbin-Watson statistic to test this assumption. A violation of this assumption would indicate heteroscedasticity. According to Osborne and Waters, slight heteroscedasticity has little effect on significance tests and

is acceptable. However, when heteroscedasticity is large, it can lead to distortion of findings and possible Type I errors.

A normal distribution is another assumption when using multiple regression analysis (Osborne & Waters, 2002). Non-normal distribution causes the possibility of distorted relationships and significance tests. Osborne and Waters suggest visual inspection of data plots, skew, and kurtosis as useful means of testing this assumption. The visual inspection method using histograms provided a means of identifying outliers, which I removed through the data cleaning process (Osborne & Waters, 2002). Therefore, I used visual inspection to test this assumption. A violation of normality could mean that the sample size may be too small. The assumption was not violated; therefore I did not need to adjust the sample size.

I interpreted inferential results using the descriptive statistics produced by regression analysis. These descriptive statistics are useful in making inferences or generalizations from the sample to the population. Because there is a risk that the sample is not representative of the population, I used SPSS to calculate the probability or *p* value and compared the calculated number to a pre-established standard. The pre-established probability standard or alpha, I used was .05, which is an acceptable standard in research (Leong & Austin, 2006). The confidence interval of the population represented by the .05 alpha or *p* value is .95. The use of a medium effect size (f =.15) was appropriate for this proposed study. I based the medium effect size on the analysis of four articles where technology acceptance was the outcome measurement (Aghdaie et al., 2012; Arvind et al., 2010; Carter et al., 2011; Elbarrad, 2012).

The theoretical framework is the technology acceptance model developed by Davis (1989). The literature review supports the widespread use of the model and the constructs perceived ease of use and perceived usefulness. The literature review also supports worldwide use in many technologies and industries; however, a gap exists in the use of the model in small businesses. Using the model with small business acceptance of CAS will help reduce this gap.

Study Validity

A study must have validity to ensure confidence in the results and be able to extrapolate the results to other small business populations (Bryman, 2012). Controlling internal validity through a process of checking the survey results after collecting 30 surveys provided a means of assuring that the survey met the requirements of the study. Implementing process controls and mitigation controls provided a means of assuring validity in the study.

Validity in quantitative research is the ability to draw meaningful and useful inferences from prior studies (Williamson, 2006). The reliability of the TAM Survey Instrument rests with the frequency in which technology adoption studies use similar instruments (Carter et al., 2011; Cheng et al., 2011; Fillion et al., 2012; Holden & Rada, 2011; Suki et al., 2011). Many researchers have used the technology acceptance models and extensions as the theoretical foundation for their studies (Aghdaie et al., 2012; Çakmak et al., 2011; Carter et al., 2011). Additionally, Fillion et al. (2012) used the UTAUT model, an extension of the TAM model, to study ERP systems used by Canadian companies and compared their finding to 19 other studies using the UTAUT model.

Fillion et al., (2012) found that UTAUT and extensions are reliable and valid in explaining the variances in the variables studied.

External validity refers to the ability to reach correct conclusions based upon the data used (Williamson, 2006). Sampling techniques allow researchers to extend the sample conclusions to the general population (Fink, 2013). I used the scientific method for the research; therefore, the results are valid, and extrapolation to other small business communities outside the Central Ohio geographical area is possible, although business leaders should use caution when making such generalizations. Williamson suggested researchers take precautions not to draw incorrect conclusions from the sample to other persons or groups not under study, whether using qualitative research methods or quantitative methods. Williamson also cautions about the possibility of a Type 1 error where the researcher incorrectly rejects a true null hypothesis. To avoid issues of external validity, I examined and checked the data to avoid biased conclusions.

Statistical conclusion validity refers to the procedures used to conduct a survey or experiment, treatments used, and experiences of the participants that may limit or threaten the researcher's ability to draw correct conclusions (Bryman, 2012). I performed a process check after collecting 30 surveys to maintain internal validity and assure the survey provides the appropriate information to answer the research questions. Using a proven survey instrument and random sampling provided mitigation to internal validity threats (Bryman, 2012).

Transition and Summary

Small businesses have a high rate of failure within the early years of the business lifecycle. Some technologies can provide small business owners with the resources to strengthen their businesses and reduce the likelihood of failure (Edison et al., 2012). The purpose of this study was to examine the propensity of Central Ohio small business owners to adopt CAS.

Section 1 included the background of the study and includes the problem statement, purpose statement, and nature of the study. The research question, hypothesis, and theoretical framework is developed and described. Also included, identified, and described are certain assumptions, limitations, and delimitations. The section ends with a review of the academic literature.

Section 2 begins by restating the purpose to remind the reader of the nature of the project. The role of the researcher informs the reader of my relationship with the participants, how I adopted the survey instrument, and my role in managing the research process. The section continues with a discussion of the research method and design and a description of the population and sampling technique. Additionally, my responsibilities for data storage and security are included to provide assurances about the ethical precautions necessary for approval of the study.

Central Ohio has a sufficient population of small businesses to meet the sample requirements. I selected the participants randomly from small business owners who are members of several Central Ohio Chambers of Commerce and who are willing to complete the survey instrument. A survey instrument using a standard Likert-type 7-

point scale where 1 = strongly disagree, 2 = moderately disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = moderately agree, 7 = strongly agree adapted from prior research is the primary tool (Venkatesh, 2000). Also included in section 2 is a description of the instrumentation, study validity of the instrument and support for the sample size calculation.

Section 3: Application to Professional Practice and Implications for Change

The purpose of this quantitative correlation study was to examine the relationship between perceived ease of use and perceived usefulness with intent to adopt CAS. The primary goal of this study was to determine whether the independent variables perceived ease of use and perceived usefulness were determinants of small business owner's decision to adopt CAS. Because the TAM model is well developed, I expected to see a positive correlation. The correlation exists and is stronger with those business owners who actually adopted CAS than with those business owners who have yet to adopt.

The null hypothesis is rejected because the results of the study confirm a positive relationship between the independent variables of perceived ease of use and perceived usefulness and the dependent variable of intent to adopt CAS. The business owners who have yet to adopt CAS place more importance on usefulness than on ease of use. However, the business owners who had already adopted CAS placed more importance on ease of use.

Presentation of the Findings

I used multiple regression analysis to test the hypotheses described in this study. The independent variables were perceived ease of use and perceived usefulness and the dependent variable was intent to adopt CAS. The purpose of the test was to determine whether a linear relationship exists between the independent variables and the dependent variable. Because the hypotheses included two independent variables and one dependent variable, multiple regression related well to the analysis of these variables.

Using a technique described by Tabachnick and Fidell (2012), I used the formula $50 + 8(m)$ = sample size, where m represents the number of independent variables. The results of the formula yielded a needed sample size of 66. I distributed 347 surveys and received 71 valid responses, which represents a response rate of 20.46%.

Tests of Assumptions

Multiple regression analysis relies on certain assumptions about the variables used. Errors can occur when the relied upon assumptions are not met (Osborne & Waters, 2002). Violating these assumptions can cause the Type I error, which is an incorrect rejection of a true null hypothesis, and the Type II error, which is failure to reject a false null hypothesis (Osborne & Waters, 2002). According to Osborne and Waters (2002), the most common assumptions that researchers face and can test for violations are linearity, reliability of measurement, homoscedasticity, and normality.

The assumption of linearity means there is a linear relationship between a dependent variable and the independent variable (Osborne & Waters, 2002). In order to assume linearity existed, I tested for nonlinearity. The preferable method of detecting nonlinearity is to examine the residual plots. An ideal plot would resemble a straight line although some minor curvature is acceptable. I examined the residual plots to validate this assumption.

The assumption of reliability of measurement refers to the consistency and reliability of the instrument used to measure the variables (Leong & Austin, 2006). Cronbach's alpha is a method used by prior TAM researchers to test this assumption (Cheng et al., 2011; Holden & Rada, 2011; Lin et al., 2013). Researchers consider an

alpha measure of .70 or above as satisfactory and prior studies have consistently shown alpha to be above the .70 level (Carter et al., 2011; Cheng et al., 2011; Holden & Rada, 2011; Suki et al., 2011). Therefore, I used Cronbach's alpha to test the reliability of the TAM Survey Instrument. An illustration of Cronbach's alpha is shown in Table 1 and validated this assumption where all alpha measures exceed .70.

Table 1

Cronbach's Alpha Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
PEU1Q1	85.00	213.229	.729	.934
PEU2Q2	84.61	219.214	.674	.935
PEU3Q3	84.86	214.494	.739	.934
PEU4Q4	84.44	214.935	.789	.933
PEU5Q5	84.25	212.021	.744	.934
PEU6Q6	84.77	217.891	.687	.935
PEU7Q7	84.80	217.903	.670	.935
PU1Q8	84.20	216.103	.817	.932
PU2Q9	83.93	223.895	.697	.935
PU3Q10	84.21	217.998	.774	.933
PU4Q11	84.83	212.714	.770	.933
PU5Q12	85.08	216.507	.624	.937
IA1Q13	84.66	213.027	.793	.932
IA2Q14	84.62	209.868	.741	.934
PI1Q15	84.23	232.006	.476	.939
PI2Q16	84.04	242.612	.102	.946

The assumption of homoscedasticity refers to the variance of errors across all levels of the independent variable. If the level of variance is the same, the assumption of homoscedasticity is valid (Osborne & Waters, 2002). The Durbin-Watson test and visual examination of plot residuals are appropriate tests for homoscedasticity (Field, 2013).

Therefore, I examined a scatter plot and used the Durbin-Watson test to test this assumption. I examined the residual plots to validate this assumption. Additionally, the Durbin-Watson value of 1.822 was above the upper limit of 1.541. Therefore the homoscedasticity assumption was met.

A normal distribution is another assumption when using multiple regression analysis (Osborne & Waters, 2002). Nonnormal distribution causes the possibility of distorted relationships and significance tests. Osborne and Waters suggest visual inspection of data plots, skew, and kurtosis as useful means of testing this assumption. The visual inspection method using histograms provided a means of identifying outliers, which I removed through the data cleaning process (Osborne & Waters, 2002).

Results

A standard multiple linear regression, $\alpha = .05$ (two tailed), was used to examine the efficacy of ease of use and usefulness in predicting intent to adopt CAS. The independent variables were perceived ease of use and perceived usefulness. The dependent variable was intent to adopt CAS. The null and alternative hypotheses were:

H_o: No correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

H_1: A correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

A preliminary analysis was conducted to assess whether the assumptions of linearity, reliability of measurement, homoscedasticity, and normality were met; no serious violations were noted (see Tests of Assumptions). The model as a whole was

able to significantly predict intent to adopt CAS, F (2, 68) = 82.376, p = .000, R^2 = .708. The R^2 (.708) value indicated that approximately 71% of variations in intent to adopt CAS is accounted for by the linear combination of the predictor variables (perceived ease of use and perceived usefulness). In the final model both perceived ease of use and perceived usefulness were statistically significant with perceived usefulness (beta = .544, p = .000 accounting for a slightly higher contribution to the model than perceived ease of use (beta = .357, p = .000). See Tables 2 through 6 for SPSS output information.

Table 2

Descriptive Statistics Regression

	Mean	Std. deviation	N
Perceived usefulness	11.06	2.761	71
Intent to adopt	38.45	8.035	71
perceived ease of use	28.59	5.585	71

Table 3

Regression Correlations

		Intent to adopt	Perceived ease of use	Perceived usefulness
Pearson correlation	Intent to adopt	1.000	.756	.806
	Perceived ease of use	.756	1.000	.734
	Perceived usefulness	.806	.734	1.000
Sig. (1-tailed)	Intent to adopt		.000	.000
	Perceived ease of use	.000		.000
	Perceived usefulness	.000	.000	
N	Intent to adopt	71	71	71
	Perceived ease of use	71	71	71
	Perceived usefulness	71	71	71

Table 4

Model Summary with the Dependent Variable Intent to Adopt

Model	R	R Square	Adjusted R square	Std. error of the estimate	R Square change	Change Statistics				Durbin Watson
						F Change	df1	df2	Sig. F Change	
1	0.841[a]	0.708	0.699	1.514	0.708	82.376	2	68	0.000	1.822

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 5

ANOVA with the Dependent Variable Intent to Adopt

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	377.829	2	188.914	82.376	.000[a]
	Residual	155.946	68	2.293		
	Total	533.775	70			

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 6

Residuals Statistics with the Dependent Variable Intent to Adopt

	Minimum	Maximum	Mean	Std. deviation	N
Predicted value	5.27	14.07	11.06	2.323	71
Residual	-4.980	2.856	0.000	1.493	71
Std. predicted value	-2.491	1.299	0.000	1.000	71
Std. residual	-3.289	1.886	0.000	0.986	71

A partial correlation was run to determine the relationship between perceived ease of use and intent to adopt CAS while controlling for perceived usefulness. There was a positive correlation between perceived ease of use (38.45 ± 8.04) and intent to adopt CAS (11.06 ± 2.77) while controlling for perceived usefulness (28.59 ± 5.59), which was statistically significant r (68) = .410, N = 71, p = .000. Zero-order correlations showed there was a statistically significant positive correlation between perceived ease of use and intent to adopt CAS r (69) = .756, N = 71, p < .000). See Table 7 for descriptive statistics

for the partial correlation analysis using perceived usefulness as the controlled variable and Table 8 for the correlations using perceived usefulness as the controlled variable.

Table 7

Descriptive Statistics for Partial Correlation Controlled for Perceived Usefulness

	Mean	Std. deviation	N
Perceived usefulness	28.59	5.585	71
Intent to adopt	11.06	2.761	71
Perceived ease of use	38.45	8.035	71

Table 8

Correlations with Perceived Usefulness as the Controlled Variable

Control Variables			Perceived ease of use	Intent to adopt	Perceived usefulness
None[a]	Perceived ease of use	Correlation	1.000	.756	.734
		significance (2-tailed)		.000	.000
		df	0	69	69
	Intent to adopt	Correlation	.756	1.000	.806
		significance (2-tailed)	.000		.000
		df	69	0	69
	Perceived usefulness	Correlation	.734	.806	1.000
		significance (2-tailed)	.000	.000	
		df	69	69	0
Perceived Usefulness	Perceived ease of use	Correlation	1.000	.410	
		significance (2-tailed)		.000	
		df	0	68	
	Intent to adopt	Correlation	.410	1.000	
		significance (2-tailed)	.000		
		df	68	0	

a. Cells contain zero-order (Pearson) correlations

A partial correlation was run to determine the relationship between perceived usefulness and intent to adopt CAS while controlling for perceived ease of use. There was a positive correlation between perceived usefulness (28.59 ± 5.59) and intent to adopt CAS (11.06 ± 2.77) while controlling for perceived ease of use (38.45 ± 8.034), which was statistically significant r (68) = .564, N = 71, p = .000. Zero-order correlations showed there was a statistically significant positive correlation between perceived usefulness and intent to adopt CAS (r (69) = .806, N = 71, p<.000). See Table 9 for descriptive statistics for the partial correlation analysis using perceived ease of use as the controlled variable and Table 10 for the correlations using perceived ease of use as the controlled variable.

Table 9

Descriptive Statistics for Partial Correlation Controlled for Perceived Ease of Use

	Mean	Std. deviation	N
Perceived usefulness	28.59	5.585	71
Intent to adopt	11.06	2.761	71
Perceived ease of use	38.45	8.035	71

Table 10

Correlations with Perceived Ease of Use as the Controlled Variable

Control variables			Perceived ease of use	Intent to adopt	Perceived usefulness
None[a]	Perceived usefulness	Correlation	1.000	.806	.734
		significance (2-tailed)		.000	.000
		df	0	69	69
	Intent to adopt	Correlation	.806	1.000	.756
		significance (2-tailed)	.000		.000
		df	69	0	69
	Perceived ease of use	Correlation	.734	.756	1.000
		significance (2-tailed)	.000	.000	
		df	69	69	0
Perceived ease of use	Perceived usefulness	Correlation	1.000	.564	
		significance (2-tailed)		.000	
		df	0	68	
	Intent to adopt	Correlation	.564	1.000	
		significance (2-tailed)	.000		
		df	68	0	

a. Cells contain zero-order (Pearson) correlations

A semipartial or part correlation was run to determine the proportion or unique variance accounted for by perceived ease of use and perceived usefulness relative to the total variance. Perceived ease of use accounted for 5.9% ($.243^2$) and perceived usefulness accounted for 13.6% ($.369^2$). Therefore, perceived usefulness accounted for 7.7% (13.6 - 5.9 = 7.7) more of the total unique variance. See Table 11 for the correlation coefficients used.

Table 11

Correlation Coefficients Used with the Dependent Variable Intent to Adopt

	Unstandarized coefficients		Standardized coefficients			Correlations			Colinearity statistics	
Model	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VF
1 (Constant)	-1.347	.983		-1.370	.175					
Perceived ease of use	.123	.033	.357	3.701	.000	.756	.410	.243	.461	2.167
Perceived usefulness	.269	.048	.544	5.633	.000	.806	.564	.369	.461	2.167

The distribution of the survey included small businesses that had already adopted CAS and small businesses that had not adopted CAS. Table 12 shows a frequency distribution where $n = 37$ for those businesses which already adopted CAS and $n = 34$ for those businesses which had not adopted CAS. Those that had not yet adopted CAS represent 47.9% of respondents. Because nearly half of the respondents had not adopted CAS, I performed an additional regression analysis on the nonadopting businesses to determine whether the nonadopters might be statistically different from the total sample.

Table 12

Frequency Distribution System

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1	37	52.1	52.1	52.1
	2	34	47.9	47.9	100
	Total	71	100	100	

A standard multiple linear regression, $\alpha = .05$ (two tailed), was used to examine the efficacy of ease of use and usefulness in predicting intent to adopt CAS in businesses which had not yet adopted CAS. The independent variables were perceived ease of use and perceived usefulness. The dependent variable was intent to adopt CAS. The null and alternative hypotheses are,

H_o: No correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

H_1: A correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

The same preliminary analysis was used to assess whether the assumptions of linearity, reliability of measurement, homoscedasticity, and normality were met; no serious violations were noted (see Tests of Assumptions). The model as a whole was able to significantly predict intent to adopt CAS, F (2, 31) = 26.237, p = .000, R^2 = .629. The R^2 (.629) value indicated that approximately 63% of variations in intent to adopt CAS is accounted for by the linear combination of the predictor variables (perceived ease of use and perceived usefulness). In the final model both perceived ease of use and perceived usefulness were statistically significant. See Tables 13 through 17 for SPSS output information for non-adopting businesses.

Table 13

Descriptive Statistics

	Mean	Std. deviation	N
Perceived usefulness	9.82	2.801	34
Intent to adopt	34.79	8.175	34
Perceived ease of use	26.32	5./897	34

Table 14

Correlations

		Intent to adopt	Perceived ease of use	Perceived usefulness
Pearson Correlation	Intent to adopt	1.000	.618	.759
	Perceived ease of use	.618	1.000	.566
	Perceived usefulness	.759	.566	1.000
Sig. (1-tailed)	Intent to adopt		.000	.000
	Perceived ease of use	.000		.000
	Perceived usefulness	.000	.000	
N	Intent to adopt	34	34	34
	Perceived ease of use	34	34	34
	Perceived usefulness	34	34	34

Table 15

Model Summary with the Dependent Variable Intent to Adopt

Model	R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
1	0.793[a]	0.629	0.605	1.761	2.412

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 16

ANOVA with the Dependent Variable Intent to Adopt

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	162.778	2	81.389	26.237	.000[a]
	Residual	96.163	31	3.102		
	Total	258.941	33			

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 17

Residual Statistics with Dependent Variable Intent to Adopt

	Minimum	Maximum	Mean	Std. deviation	N
Predicted value	4.88	13.18	9.82	2.221	34
Residual	-4.599	2.96	0.000	1.707	34
Std. predicted value	-2.224	1.512	0.000	1.000	34
Std. residual	-2.611	1.984	0.000	0.969	34

A partial correlation was run using the nonadopting businesses to determine the relationship between perceived ease of use and intent to adopt CAS while controlling for perceived usefulness. There was a positive correlation between perceived ease of use (34.79 ± 8.18) and intent to adopt CAS (9.82 ± 2.80) while controlling for perceived usefulness (26.32 ± 5.89), which was statistically significant r (31) = .350, n = 34, p = .045. Zero-order correlations showed there was a statistically significant positive correlation between perceived ease of use and intent to adopt CAS; r (32) = .618, n = 34, p<.000). See Table 18 for descriptive statistics for the partial correlation analysis using perceived usefulness as the controlled variable and Table 19 for the correlations using perceived usefulness as the controlled variable.

Table 18

Descriptive Statistics for Partial Correlation Controlled for Usefulness

	Mean	Std. deviation	N
Perceived usefulness	34.79	8.175	34
Intent to adopt	9.82	2.801	34
Perceived ease of se	26.32	5.897	34

Table 19

Correlations with Perceived Usefulness as the Controlled Variable

Control variables			Perceived ease of use	Intent to adopt	Perceived usefulness
None[a]	Perceived ease of Use	Correlation	1.000	.618	.566
		significance (2-tailed)		.000	.000
		df	0	32	32
	Intent to adopt	Correlation	.618	1.000	.759
		significance (2-tailed)	.000		.000
		df	32	0	32
	Perceived usefulness	Correlation	.566	.759	1.00
		significance (2-tailed)	.000	.000	
		df	32	32	0
Perceived usefulness	Perceived ease of use	Correlation	1.000	.350	
		significance (2-tailed)		.046	
		df	0	31	
	Intent to adopt	Correlation	.350	1.000	
		significance (2-tailed)	.046		
		df	31	0	

a. Cells contain zero-order (Pearson) correlations

A partial correlation was run on the nonadopting businesses to determine the relationship between perceived usefulness and intent to adopt CAS while controlling for perceived ease of use. There was a positive correlation between perceived usefulness (28.32 ± 5.89) and intent to adopt CAS (9.82 ± 2.80) while controlling for perceived ease of use (34.79 ± 8.18), which was statistically significant r (31) = .632, n = 34, p = .000. Zero-order correlations showed there was a statistically significant positive correlation between perceived usefulness and intent to adopt CAS; r (32) = .759, n = 34, p < .000).

See Table 20 for descriptive statistics for the partial correlation analysis using perceived ease of use as the controlled variable and Table 21 for the correlations using perceived ease of use as the controlled variable.

Table 20

Descriptive Statistics for Partial Correlation Controlled for Perceived Ease of Use

	Mean	Std. deviation	N
Perceived usefulness	26.32	5.897	34
Intent to adopt	9.82	2.801	34
Perceived ease of use	34.79	8.175	34

Table 21

Correlations with Perceived Ease of Use as the Controlled Variable

Control variables			Perceived ease of use	Intent to adopt	Perceived usefulness
None[a]	Perceived usefulness	Correlation	1.000	.759	.566
		significance (2-tailed)		.000	.000
		df	0	32	32
	Intent to adopt	Correlation	.759	1.000	.618
		significance (2-tailed)	.000		.000
		df	32	0	32
	Perceived ease of use	Correlation	.566	.618	1.000
		significance (2-tailed)	.000	.000	
		df	32	32	0
Perceived usefulness	Perceived usefulness	Correlation	1.000	.632	
		significance (2-tailed)		.000	
		df	0	31	
	Intent to adopt	Correlation	.632	1.000	
		significance (2-tailed)	.000		
		df	31	0	

a. Cells contain zero-order (Pearson) correlations

A semipartial or part correlation was run on the nonadopting businesses to determine the proportion of unique variance accounted for by perceived ease of use and perceived usefulness relative to the total variance. Perceived ease of use accounted for 5.2% ($.228^2$) and perceived usefulness accounted for 24.7% ($.497^2$). Therefore, perceived usefulness accounted for 19.5% (24.7-5.2 = 19.5) more of the total unique variance. See Table 11 for the correlation coefficients used.

Table 22

Correlation Coefficients Used

	Unstandardized coefficients		Standardized coefficients			Correlations		
Model	B	Std. error	Beta	t	Sig.	Zero-order	Partial	Part
1 (Constant)	-1.012	1.542		-.656	.517			
Perceived ease of use	.095	.045	.276	2.082	.046	.618	.350	.228
Perceived usefulness	.286	.063	.603	4.542	.000	.759	.632	.497

The part correlation results between the sample as a whole and the nonadopters showed a difference in the amount each of the independent variables contribute. In the analysis of nonadopters, usefulness accounted for 24.7% of the unique variance whereas the sample as a whole showed usefulness accounted for 13.6%. Because of this difference, another regression analysis was run using only those businesses that had already adopted CAS.

A standard multiple linear regression, $\alpha = .05$ (two tailed), was used to examine the efficacy of ease of use and usefulness in predicting intent to adopt CAS in businesses

which had already adopted CAS. The independent variables were perceived ease of use and perceived usefulness. The dependent variable was intent to adopt CAS. The null and alternative hypotheses were:

H_o: No correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

H_1: A correlation exists between the linear combination of perceived ease of use and perceived usefulness and the intent to adopt CAS.

The same preliminary analysis was used to assess whether the assumptions of linearity, reliability of measurement, homoscedasticity, and normality were met; no serious violations were noted (see Tests of Assumptions). The model as a whole was able to significantly predict intent to adopt CAS, F (2, 34) = 38.742, p = .000, R^2 = .695. The R^2 (.695) value indicated that approximately 70% of variations in intent to adopt CAS are accounted for by the linear combination of the predictor variables (perceived ease of use and perceived usefulness). In the final model perceived ease of use was statistically significant (p < .004) and perceived usefulness was not statistically significant statistically significant (p < .140). See Tables 23 through 27 for SPSS output information for non-adopting businesses.

Table 23

Descriptive Statistics

	Mean	Std. deviation	N
Perceived usefulness	12.19	2.209	37
Intent to adopt	41.81	6.328	37
Perceived ease of use	30.68	4.41	37

Table 24

Correlations

		Intent to adopt	Perceived ease of use	Perceived usefulness
Pearson Correlation	Intent to adopt	1.000	.821	.779
	Perceived ease of use	.821	1.000	.860
	Perceived usefulness	.779	.860	1.000
Sig. (1-tailed)	Intent to adopt		.000	.000
	Perceived ease of use	.000		.000
	Perceived usefulness	.000	.000	
N	Intent to adopt	37	37	37
	Perceived ease of use	37	37	37
	Perceived usefulness	37	37	37

Table 25

Model Summary with the Dependent Variable Intent to Adopt

Model	R	R square	Adjusted R square	Std. error of the estimate
1	.834[a]	.695	.677	1.255

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 26

ANOVA with the Dependent Variable Intent to Adopt

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	122.099	2	61.049	38.742	.000[a]
	Residual	53.577	34	1.576		
	Total	175.676	36			

a. Predictors: (Constant), perceived usefulness, perceived ease of use

Table 27

Residual Statistics with the Dependent Variable Intent to Adopt

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.5	14.25	12.19	1.842	37
Residual	-4.848	2.442	.000	1.22	37
Std. Predicted Value	-2.544	1.12	.000	1.000	37
Std. Residual	-3.862	1.945	.000	0.972	37

A partial correlation was run using the adopting businesses to determine the relationship between perceived ease of use and intent to adopt CAS while controlling for perceived usefulness. There was a positive correlation between perceived ease of use (41.81 ± 6.328) and intent to adopt CAS (12.19 ± 2.209) while controlling for perceived usefulness (30.68 ± 4.410), which was statistically significant r (34) = .473, n = 37, p = .004. Zero-order correlations showed there was a statistically significant positive correlation between perceived ease of use and intent to adopt CAS; r (35) = .821, n = 37, p < .000). See Table 28 for descriptive statistics for the partial correlation analysis using perceived usefulness as the controlled variable and Table 29 for the correlations using perceived usefulness as the controlled variable.

Table 28

Descriptive Statistics for Partial Correlation Controlled for Perceived Usefulness

	Mean	Std. deviation	N
Perceived ease of use	41.81	6.328	37
Intent to adopt	12.19	2.209	37
Perceived usefulness	30.68	4.41	37

Table 29

Correlations with Perceived Usefulness as the Controlled Variable

Control variables			Perceived ease of use	Intent to adopt	Perceived usefulness
None[a]	Perceived ease of use	Correlation	1.000	.821	.860
		significance (2-tailed)		.000	.000
		df	0	35	35
	Intent to adopt	Correlation	.821	1.000	.779
		significance (2-tailed)	.000		.000
		df	35	0	35
	Perceived usefulness	Correlation	.860	.779	1.000
		significance (2-tailed)	.000	.000	
		df	35	35	0
Perceived usefulness	Perceived ease of use	Correlation	1.000	.473	
		significance (2-tailed)		.004	
		df	0	34	
	Intent to adopt	Correlation	.473	1.000	
		significance (2-tailed)	.004		
		df	34	0	

a. Cells contain zero-order (Pearson) correlations

A partial correlation was run on the adopting businesses to determine the relationship between perceived usefulness and intent to adopt CAS while controlling for perceived ease of use. There was a positive correlation between perceived usefulness (30.68 ± 4.410) and intent to adopt CAS (12.19 ± 2.209) while controlling for perceived ease of use (41.81 ± 6.328), which was not statistically significant r (34) = .632, n = 37, p = .140. Zero-order correlations showed there was a statistically significant positive correlation between perceived usefulness and intent to adopt CAS; r (35) = .779, n = 37,

$p < .000$). See Table 30 for descriptive statistics for the partial correlation analysis using perceived ease of use as the controlled variable and Table 31 for the correlations using perceived ease of use as the controlled variable.

Table 30

Descriptive Statistics for Partial Correlation Controlled for Perceived Ease of Use

	Mean	Std. deviation	N
Perceived usefulness	30.68	4.41	37
Intent to adopt	12.19	2.209	37
Perceived ease of use	41.81	6.328	37

Table 31

Correlations with Perceived Ease of Use as the Controlled Variable

Control variables			Perceived usefulness	Intent to adopt	Perceived ease of use
None[a]	Perceived usefulness	Correlation	1.000	.779	.860
		Significance (2-stailed)		.000	.000
		df	0	35	35
	Intent to adopt	Correlation	.779	1.000	.821
		significance (2-tailed)	.000		.000
		df	35	0	35
	Perceived ease of use	Correlation	.860	.821	1.000
		significance (2-tailed)	.000	.000	
		df	35	35	0
Perceived usefulness	Perceived usefulness	Correlation	1.000	.251	
		significance (2-tailed)		.140	
		df	0	34	
	Intent to adopt	Correlation	.251	1.000	
		significance (2-tailed)	.140		
		df	34	0	

a. Cells contain zero-order (Pearson) correlations

A semipartial or part correlation was run on the non-adopting businesses to determine the proportion of unique variance accounted for by perceived ease of use and perceived usefulness relative to the total variance. Perceived ease of use accounted for 8.8% ($.296^2$) and perceived usefulness accounted for 2.0% ($.143^2$). Therefore, perceived ease of use accounted for 6.8% (8.8-2.0 = 6.8) more of the total unique variance. See Table 32 for the correlation coefficients used.

Table 32

Correlation Coefficients Used with the Dependent Variable Intent to Adopt

	Unstandardized coefficients		Standardized coefficients			Correlations			Collinearity statistics	
Model	B	Std. error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VF
1 (Constant)	-.588	1.492		-.394	.696					
Perceived ease of use	.203	.065	.580	3.130	.004	.821	.473	.296	.261	3.833
Perceived usefulness	.140	.093	.280	1.511	.140	.779	.251	.143	.261	3.833

The null hypothesis is rejected in each of the three linear regression analyses. The TAM model accurately predicts small business owners' intent to adopt CAS. In the sample (N = 71), the model was able to predict about 71% of the variations in intent to adopt CAS. Using the portion of the sample where small business owners had not yet adopted CAS (n = 34), the model was able to predict about 63% of the variation, and in the portion where small business owners had already adopted CAS (n = 37), the model was able to predict about 70% of the variation.

However, when splitting the sample between those small businesses whose owners had already adopted CAS (n = 37) and those small business owners who had not yet adopted CAS (n = 34), the importance of ease of use and usefulness change. The semipartial or part correlation for the sample (N = 71) showed 5.9% of the variance attributed to perceived ease of use and 13.6% attributed to perceived usefulness and in the nonadopters portion (n = 34), 5.2% was attributed to perceived ease of use and 24.7% attributed to usefulness. However, in the portion where business owners indicated they had already adopted CAS (n = 37), the portion of the variance attributed to perceived ease of use increased to 8.8%, and the portion attributed to usefulness decreased to 2%. This indicates that once a business owner adopts CAS, ease of use becomes more important than usefulness. Therefore, the decision to adopt CAS might be driven more by usefulness but ease of use is more important for continued use.

The findings of this study confirm the applicability of the TAM model and add information to the literature about the process of technology adoption. Fletcher et al. (2014) highlighted the limitation associated with mandatory adoption and suggested that ease of use might have a more significant impact on continued use. The results of this study, where ease of use became more important to those who already adopted CAS, suggest this might have validity. The overall conclusion is small business owners perceive usefulness to be more important when making the decision to adopt CAS, but once CAS is adopted, ease of use becomes more important.

Applications to Professional Practice

According to the SBA (2012), small businesses comprise 99.7% of all employer firms in the United States, they account for 63% of all new private sector jobs, and they employ 48.5% of the private sector workforce. Additionally, another category called micro businesses comprises about 89% of all employer firms within the standard definition of small business (Alsaaty, 2012). Despite their prevalence in the US economic system, 30% to 50% of small businesses fail within 5 years of conception (Graham, 2011). Providing tools and information to small and micro businesses could help improve chances of success.

In this study, I sent surveys to 347 small businesses and received 71 valid responses representing a 20.46% response rate. Within the sample of 71 small businesses, 63 or 88.73% meet the definition of micro business because they employ less than 20 employees. This correlates with prior research estimate of 89% (Alsaaty, 2012). The sample shows 70.4% of the businesses are over five years old, which leaves about 29.6% still at risk of failure before their five-year anniversary. The businesses under five years old could benefit from the knowledge and information gained by this study.

Over 48% of the businesses in the survey did not use a CAS. Therefore, information in this study could help those businesses who have yet to adopt a CAS by providing information useful in the decision process. Because the study also includes information about businesses that already adopted CAS, the non-adopters might benefit from the perceptions gained.

The results of the study are relevant to business practice because small business owners could benefit from enhanced and timely financial information. Through adoption of CAS, small business owners might gain a better understanding of their business' financial position in a timelier manner. This additional and timelier information might benefit the managers' decision process and help predict financial difficulties and opportunities before the difficulties become critical or the opportunities fade.

Implications for Social Change

The implication for positive social change is the potential to reduce business failures. The effect small businesses have on job creation, and the percentage of total business enterprises within the economy is profound (Shore et al., 2011). The study shows that 83% of small businesses over five years old currently use a CAS and only 55.9% under five years old use a CAS. Encouraging small business to adopt CAS earlier in the business life could improve chances of success.

The possibility of economic growth through fewer business failures has the potential for a positive effect on society and the overall economy. Business owners could gain an understanding of the usefulness of technology adoption. Society could benefit from successful companies and economic expansion.

Recommendations for Action

In this study, I used the TAM model to determine whether a relationship might exist between perceived ease of use and perceived usefulness when adopting a CAS. CAS marketers and developers use the concepts of ease of use and usefulness to advertise products and gain sales. Service providers such as CPAs and financial advisors can use

the information contained in this study to enhance product offerings and increase services.

The study showed 24.7% of business owners' primary concern before adoption was usefulness with only 5.2% ease of use. However, once the business owner adopted a CAS, learning to use the system became more important and ease of use increased to 8.8%. Chambers of commerce and other business associations might provide forums where CPAs and other business service providers can offer training and educational seminars.

Recommendations for Further Research

There were two limitations identified in Section 1 of this study. The first limitation was the practical limitation of accessing all small businesses in Central Ohio and was addressed using statistical sampling. The second limitation was the sample might not have been sufficiently different in culture, socio-economic level or other considerations to provide detailed information.

Future researchers can validate the strength of the study by using different study participants, different geographic areas, and different sample sizes. Continued research in small business adoption of technology such as CAS might provide small businesses with additional tools and information necessary for success. Future researchers could add additional variables and gain detailed information about small business operations.

In addition to adding new variables to the existing study, future researchers can use the results of this study as a basis when researching different types of technology such as cloud based computer services, smart phone banking services, and Internet based

business applications. In addition to a better understanding of how business owners come to adopt and accept technology, researchers might examine when small business owners adopt technology.

Reflections

The DBA program at Walden University is an iterative process that includes coursework and extensive research. I entered the program expecting to complete coursework similar to an MBA program but with more attention the research aspects and to conduct an extensive research study related to my personal business experience. The coursework was as expected; however, the dissertation process was cumbersome and circular, which required attention to detail, patience, flexibility, and extensive communication skills.

As a business owner and CPA, I understand first-hand the challenges and obstacles faced by other small businesses. As an educator, I understand the importance of training and education. Through the DBA process, I became more aware of the concept of positive social change. The focus on positive social change affects those within the program, but more importantly, it affects those who are touched by the graduates of the program.

Summary and Conclusions

The null hypothesis was rejected in each of the regressions. The three multiple regression analysis used in this study showed a positive relationship between the independent variables perceived ease of use and perceived usefulness and the dependent variable intent to adopt CAS. The study included small business who had already

adopted CAS (52%) and small business who had not adopted CAS (48%). Perceived usefulness was more important to those small businesses who had not yet adopted CAS (24.7%), however, once CAS is adopted, perceived usefulness decreases in importance to about 2%. Once small businesses adopt CAS, ease of use becomes more important and increases from 5.2% to 8.8%. Further studies of small business technology acceptance might provide small businesses with additional information and tools necessary for greater success.

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Appendix A: Permission to Adapt Survey Instrument

Re: Survey permission

Lemuria D Carter [redacted]

Sent: Wed 5/15/2013 2:17 PM

To: Alan Rogers [redacted]

Hi Alan,

Sure, feel free to adapt the survey to meet your needs.

Lemuria Carter

Sent from my iPhone

On May 15, 2013, at 1:20 PM, "Alan Rogers" [redacted] wrote:

Greetings Dr. Carter,

I am currently working at Franklin University in Columbus, Ohio. In my role as lead faculty, I manage several accounting and tax courses and have a special interest in technology adoption. I am also completing a DBA at Walden University and as part of my research into small business adoption of computerized accounting systems, I came across your work entitled "The role of security and trust in the adoption of online tax filing". I am using UTAUT as a basis for determining small business owner's intent to adopt computerized accounting systems. Would it be permissible to adapt your survey on e-filing to use in my study? I believe the foundation you created will blend well with my objectives.

Looking forward to your approval.

Best Regards

Alan D Rogers

Franklin University

NOTICE: This e-mail correspondence is subject to Public Records Law and may be disclosed to third parties.

MIS Quarterly
Carlson School of Management
University of Minnesota
Suite 4-339 CSOM
321 19th Avenue South
Minneapolis, MN 55455

June 16, 2015

Alan D. Rogers

Permission to use material from
MIS Quarterly in Dissertation Research

Permission is hereby granted for Alan D. Rogers to use a modification of the final measurement scales of perceived usefulness and perceived ease of use, and additional supporting reference material as needed, from

> "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," Fred D. Davis, *MIS Quarterly* (13:3), September 1989, pp. 319-340

in his doctoral dissertation, tentatively titled "Examining Small Business Adoption of Computerized Accounting Systems Using the Technology Acceptance Model."

In addition to the citation information for the work, the legend for the material should include

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Janice I. DeGross
Manager

Appendix B: TAM Survey Instrument

TAM Survey Instrument

Section One – Demographics

1. How many years has this business been operating?
   - Less than one year
   - More than one year but less than 3 years
   - More than 3 years but less than 5 years
   - Over five years

2. How many employees work for this business? Include yourself and all full and part time employees.
   - 1 to 5
   - 6 to 10
   - 10 to 25
   - Over 25

3. What category best describes the annual revenues?
   - Under $100,000
   - $100,001 to $500,000
   - $500,001 to $2,000,000
   - Over $2,000,000

4. How would you rate your computer skills or knowledge about computers?
   - 1. Low
   - 2. Medium
   - 3. Advanced

Section Two – The following questions are designed to measure how business owners and managers use and accept computerized accounting systems. For purposes of this survey, a computerized accounting system is one that business owners and accountants use to create financial statements such as the Income Statement, Balance Sheet, and Statement of Cash Flows. QuickBooks by Intuit is a form of computerized accounting system but merely using self-created spreadsheets is not a computerized accounting system. There are no correct answers to

the following questions. The questions have been structured in a way which allows you to determine the extent to which you agree or disagree with the statement. Before beginning the survey, please indicate whether you currently have a computerized accounting system.

- o Yes
- o No

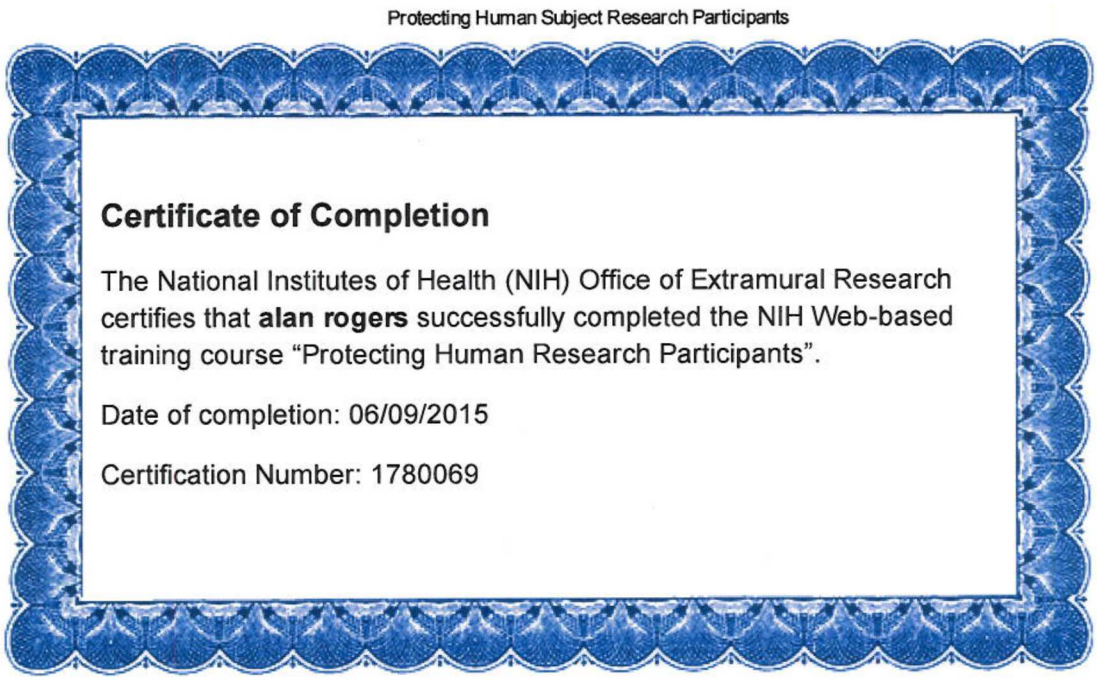
The range is "Strongly Disagree" to Strongly Agree"

	Strongly Disagree	Moderately Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Moderately Agree	Strongly Agree
1.) I would find a computerized accounting system easy to use.							
2.) It would be easy for me to input data when I use a computerized accounting system.							
3.) It would be easy for me to modify data when I use a computerized accounting system.							
4.) Using a computerized accounting system will make my business financial information easier to understand.							
5.) Using a computerized accounting system will make preparing financial statements easier.							
6.) It would be easy for me to							

become skillful in using a computerized accounting system.							
7.) Learning to use a computerized system would be easy for me.							
8.) Using a computerized accounting system will be useful.							
9.) Using a computerized accounting system would enable me to access financial information more quickly.							
10.) Using a computerized accounting system will enhance my effectiveness in accessing financial information.							
11.) Using a computerized accounting system will improve my performance.							
12.) Using a computerized accounting system will increase my productivity.							
13.) The advantages of using a computerized accounting system							

outweigh the disadvantages.							
14.) Preparing financial statements using a computerized system is something I would do.							
15.) It is more important that a computerized accounting system be useful.							
16.) It is more important that a computerized accounting system be easy to use.							

Appendix C: Researcher's NIH Certificate



Appendix D: Sample Spreadsheet

	P1	P2	P3	P4	P5	P6	P7	P8
PU1								
PU2								
PU3								
PU4								
PU5								
PU6								
PU TOTAL								
PEU7								
PEU8								
PEU9								
PEU10								
PEU11								
PEU12								
PEU13								
PEU TOTAL								
IU14								
IU15								
IU16								
IU17								
IU TOTAL								
IP18								
IP19								
IP TOTAL								

Appendix E: Confidentiality Agreement

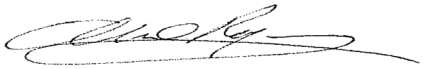
Name of Signer: Alan D Rogers

During the course of my activity in collecting data for this research: "Examining Small Business Adoption of Computerized Accounting Systems Using the Technology Acceptance Model", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the research that I will perform.
6. I understand that a violation of this agreement will have legal implications.

Signing this document, I acknowledge that I have read the agreement, and I agree to comply with all terms and conditions stated above.

Signature:  Date: 8/27/2015