

**Exploring Experiences and Perceptions of Executives Regarding the use of Continuous
Auditing**

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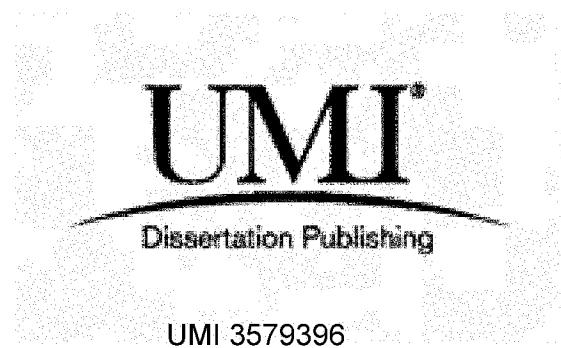
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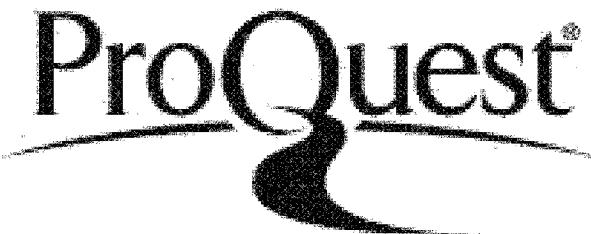
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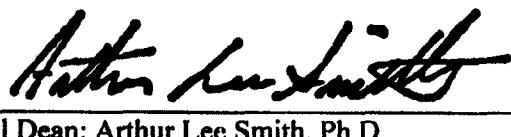
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Abstract

Organizations are required to make well-informed and timely decisions in regards to financial and regulatory requirements to maintain compliance and financial stability. Performing traditional audits in a pristine evidentiary manner for financial reports and regulatory compliance was time consuming and crucial for making business decisions; therefore, business executives must evaluate and establish an audit methodology. Inaccurate financial information could result in false business reports, fraud, loss in shareholder value, or corrodes trust in capital markets. The escalation of fraud and financial inaccuracies is of major concern to business leaders. The legal and regulatory mandates of the Sarbanes-Oxley Act had resulted in executives reevaluating methodologies for maintaining organizational financial reporting and regulatory compliance. Business processes, controls, and best practices for continuous auditing in financial institutions are not consistent, resulting in diminished quality of corporate financial reporting. This qualitative, multiple-case study was designed to explore the practice of continuous auditing in support of financial reporting and regulatory compliance. The purpose of the study was to explore the perceptions and experiences regarding the use of technical tools and processes for financial audit reports. Participants were identified from the eastern United States, had experience with various audit leadership roles and responsibilities that may include (a) chief financial officers (CFOs), (b) chief executive officers (CEOs), (c) audit managers, (d) auditors, or (e) functional consultants who are experts in financial processes, had experience implementing continuous auditing solutions, and knowledge of continuous auditing, information technology governance, and financial operations. The results of this qualitative study

found that there were different approaches in the implementation and use of new technology for continuous auditing. One common theme indicated executive management teams must understand the business impact and associated cost, training, and resources required to successfully implement a continuous auditing methodology. A continuous auditing approach is not suitable for all businesses and executives must evaluate their business processes and options to meet the regulatory mandates. Further research should include an analysis on the current options and tools available to make the paradigm shift to a continuous auditing methodology. As businesses grow globally, technology rapidly changing and business requirements becoming stricter with financial reporting, future research should include the latest options for auditing methodologies. Additional research would provide further information to business executives that could enhance their business strategy.

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Chapter 1: Introduction

Understanding the capabilities of new technologies and auditing methodologies that could assist an organization to be regulatory compliant and efficient in financial reporting are important when making business decisions. Continuous auditing is a methodology used across organizations for financial reporting that enables independent auditors to provide written assurance using a series of auditors' reports (American Institute of Certified Public Accountants [AICPA], 2007; Information Systems Audit and Control Association [ISACA], 2009; Kuhn, 2009; Richards, 2008; Vasarhelyi, 2006; Warren & Smith, 2006). Continuous auditing empowers internal auditors in performing their responsibilities within real-time, analyze business anomalies at transaction levels, identify business control deficiencies and emerging risks, and integrate analysis results into the audit process for the organization (ACL Services Ltd. [ACL], 2009). As an integrated framework for audit functions and methodology, continuous auditing supports detailed transaction testing to assess the effectiveness of controls and risk identification and assessment to prepare the annual audit plan (ACL, 2009).

The use of automated software, embedded audit modules, integrated testing, and concurrent audit tools are all examples of some continuous auditing techniques that can be used to automate business operations (Chan, 2010; Warren & Smith, 2006). Continuous auditing has a capability to gather audit and reporting evidence regarding uncertainties of data integrity. Organizations must obtain assurance that controls are in place and effective in managing risks with financial and reporting processes (ACL, 2009; AICPA, 2007; ISACA, 2009). Established internal controls provide management with a reasonable level of assurance that expectations was met, resulting unreliable financial

reporting, compliance with applicable laws and regulations, and operations that are run efficiently. Continuously testing data will detect errors and potential fraud; care must be taken before assuming that clean data imply effective controls. One of the lessons of the recent financial meltdowns shared by both financial and nonfinancial organizations is that organizations need to understand the risks they face and those risks can change (Chan, 2010). Rather than providing risk and control assurance through periodic audits, today's technology enables auditors to provide a high level of risk and control assurance continuously, assisting with the reporting and regulatory requirements. The reporting cycles through the continuous approach should ensure data integrity, assist in regulatory compliance, increase the ability to report problems more timely, and enhance investors' perceptions of the company.

Continuous auditing can provide benefits to the organization including cost recovery, efficiency, and fraud-prevention benefits making this method a prudent choice for executives to adopt as part of their auditing strategy (Krell, 2006; Kuhn, 2009). However, many executives still have not adopted a continuous approach due to misperceptions and unwillingness to adapt to a new technology (Chan, 2010). The research literature indicated a concern when implementing new technologies into existing business systems due to the possibility of masking underlying system problems (Alles, Kogan, & Vasarhelyi, 2008; Kuhn, 2009). Gaining an understanding on the capabilities of continuous auditing could help address the concerns and uncertainties that exist with organizational leaders (Alles, Kogan, & Vasarhelyi, 2008; Chan, 2010; Kuhn, 2009).

Chapter 1 contains a brief discussion on the background and nature of continuous auditing, the problem addressed by this study, and the purpose of the study. After the

purpose of the study, an explanation follows of the theoretical framework used as the research foundation and proposed research questions to utilize for gaining perceptions and experiences regarding the use of continuous auditing.

Background

At the turn of the 21st century, the implementation of a continuous auditing system for business organizations was being considered with emphasis on financial reporting and regulatory compliance (Cantu, Liu, & Zhou, 2007; Kuhn, 2009; Kuhn & Sutton, 2006; Richards, 2008). The corporate failures at Enron and WorldCom gave rise to the development and implementation of continuous auditing techniques to accommodate the more secure and strict regulatory environment for business organizations (Cantu, Liu, & Zhou, 2007; Kuhn, 2009; Kuhn & Sutton, 2006; Richards, 2008). Recent research efforts have presented an examination of the Enron scandal and demonstrated how continuous assurance and monitoring have helped detect fraud surrounding financial reporting and auditing processes (Kuhn, 2009; Kuhn & Sutton, 2006; Richards, 2008). Inaccurate or inconsistent reporting processes can lead to misrepresentation of organizational financial data that could give stakeholders a false impression and entice wrongdoing within the organization.

A continuous auditing approach streamlines, automates, and coordinates all fundamental financial management activities including general ledger, payroll, accounts payable, accounts receivable, time and expense reporting, and investment management. Recent research efforts have also discussed that in order for financial information to be truly useful and of high quality; three major dimensions have to be present: time, content, and form (Cantu et al., 2007; Richards, 2008). Accurate and consistent auditing

processes can assist in providing financial information of high quality and useful reports to end-users and stakeholders, while ensuring accurate financial statements. The recent corporate failures, fraud, and financial loss have given rise to the concept of continuous auditing versus manual audit processes used to assist financial reporting and regulatory compliance (Cantu et al., 2007; Richards, 2008).

Financial fraud is perpetrated through misrepresenting or falsifying documents, often called false accounting or financial irregularity (Association of Certified Fraud Examiner [ACFE], 2010). Detecting financial fraud is of the utmost importance to corporations due to the recent events in the corporate and regulatory environment (Richards, 2008). Continuous auditing is one approach that internal auditors can use to reduce failures, fraud, and financial loss. In applying continuous audit procedures, internal auditors provide additional assurance to management that its monitoring processes are operating properly.

An organization uses continuous auditing methodology to test or monitor large quantities of financial data quickly, producing results that are used to identify business risk areas. The continuous auditing system receives periodic insertions of client data that are processed against a predefined rule-set of audit procedures. The rule-set could consist of limits, thresholds, timeframes, or keywords, where a violation or exception of the rule-set is identified through testing. Any exceptions to the predefined rule-set prompts an automatic alert to the auditor and data analysis is then performed to verify that fraud has not occurred and financial statements are accurate. Manual audits provide a sampled result and is time consuming, in which the fraud could be overlooked or inappropriately reported, thus causing an impact to the organizations. To ensure the reliability and

integrity of financial reporting while restoring investors' confidence in the financial markets, continuous auditing appears to be an alternative to meet the financial reporting needs of business firms (Cantu et al., 2007; Richards, 2008).

Although previous studies indicate the different types of issues with continuous auditing tools and techniques, addressing the alarming problem regarding the reason executives are not adopting continuous auditing in their organization was lacking (Brennan, 2006b; Richards, 2008). Instead, executives were relying on a variety of disparate methods, resulting in inaccurate results due to decentralized and disparate auditing techniques (Cantu et al., 2007; PricewaterhouseCoopers, 2006; Richards, 2008). Of the 392 companies who responded to questions regarding continuous auditing, 81% were using disparate continuous auditing or monitoring processes at their organization (PWC, 2006). Only 19% of the respondents said they did not have continuous auditing processes in place and have no plans to develop such a solution (PWC, 2006).

During a recent study of 430 participants within the audit profession, 43% were concerned about passing a financial regulatory compliant audit due to their manual processes (Gross, 2009). However, 38% of the participants in this study anticipate improved accuracy and security of financial reporting data due to applying new technology and auditing approaches (Gross, 2009). As corporations attempt to increase their accountability and regulatory standards, management faces a tough challenge with corporate fraud. Executives are looking for new approaches and technology to help identify incidents with fraud, regulatory compliance, and financial loss. Incorporating the use of continuous auditing can help increase efficiency in financial reporting, yet the

trend for the prevalent use of manual processes is still taking place (Klynveld, Peat, Marwick, & Goerdeler [KPMG], 2008; Krell, 2006).

Due to the recent financial scandals such as Lehman Brothers organization and Madoff's scheme, corporate failures like Blockbusters Inc. and Northwest Airlines, and enhancements of the regulatory requirements, corporate executives are looking for ways to ease the business decisions that they are required to construct. In the proposed study, the practice of continuous auditing for financial reporting and regulatory requirements through the experiences and perceptions of business executives and financial professionals were explored. The goal of this study was to leverage the perceptions and experiences with auditing approaches to gain an understanding why some corporations are reluctant to implement automated or continuous auditing in support of corporate financial reporting. The corporations used for this study were identified by using the latest Fortune 500 list and criteria that was described in the research method section of this paper.

Problem Statement

The problem to be addressed in this study was that technology for auditing approaches, both automated and continuous processes, are not being used in corporations due to the reluctance of executives to adopt this approach (Cantu et al., 2007; PricewaterhouseCoopers, 2006; Richards, 2008). The reluctance could be due to misperceptions, resulting in inaccurate financial reporting. As regulations become more prevalent, the demand for rapid and efficient auditing processes increases (ACFE, 2010; ACL, 2009). Continuous auditing has an important role within businesses as a means to achieve increased operational efficiency, but also to increase productivity and

competitive advantage within the audit functions (Lombardi & Vasarhelyi, 2009; Silsbe, 2007; Singleton & Singleton, 2005; Teeter & Brennan, 2008). Financial reporting has been conducted through a manual and error prone process; therefore, consolidations and calculations are conducted by hand, resulting in an increased risk of mistakes. In addition, penalties and fines for non-compliance with financial reporting standards and guidelines are becoming harsh and severe for organizations.

Several published studies, surveys, and white papers regarding continuous auditing methods exist but have not explored the perceptions of executives regarding the purported improvements to efficiency, or the support of financial reporting and regulatory compliance of these methods (KPMG, 2008; Krell, 2006; Kuhn, 2009; PWC, 2006; Vasarhelyi, 2006). Using a case study approach to explore continuous auditing assisted in minimizing the literature gaps, identifying trends, and situations (Yin, 2009). Executives within organizations need to understand how this technology could transform their work and whether such transformation ultimately leads to productivity gain or produce a chaotic state among the auditors and stakeholders.

Purpose

The purpose of this qualitative, multiple-case study was to explore the perceptions and experiences of financial executives regarding the use of technical tools for continuous auditing and indecision to adopt new auditing approaches. This study provided a new approach to understanding the challenges and perceptions on continuous auditing. The unit of analysis that represents each case was the organization, which consisted of a purposive sample of leading Fortune 500 institutions and has legal and regulatory mandates (Creswell, 2009; Marshall & Rossman, 2006; Yin, 2009). A

sampling of up to 20 participants, consisting of an equal number of two individuals chosen from 10 organizations, who have experience with various audit leadership roles and responsibilities that could include chief financial officers (CFOs), chief executive officers (CEOs), audit managers, auditors, or functional consultants who are experts in financial processes and have experience implementing auditing solutions. This study was conducted utilizing purposeful sampling, with a focus on organizations within the eastern United States that are confronted with legal and regulatory mandates (Hall, 2011; Holloway & Wheeler, 2010; Kuhn, 2009). Even though qualitative investigations typically involve the use of small samples, choice of sample size still was an important consideration because it determines the extent to which the researcher can generalize (Yin, 2009). In general, sample sizes in qualitative research should not be too large that it is difficult to extract thick, rich data. At the same time, the sample size should not be too small that it is difficult to achieve saturation (Yin, 2009). Given the goals and logic of qualitative research, purposive sampling strategies are designed to enhance understandings of selected individuals or groups' experiences (Yin, 2009). This study seeks to accomplish this goal by selecting information rich cases that are individuals of organizations that provide the greatest insight into the research questions.

Theoretical Framework

The process for adopting new methodology or ideas has been studied for over 30 years. Rogers' (2003) diffusion of innovations theory is one of the most popular adoption models utilized by technology organizations (Sherry & Gibson, 2002). Diffusion of innovations theory is a framework for exploring the experiences and perceptions regarding continuous auditing techniques (Sherry & Gibson, 2002). Rogers'

(2003) diffusion of innovations theory consists of four key elements; innovation, communication channels, time, and social system. The diffusion of innovations theory involves the sharing of information and knowledge from early adopters with the late adopters to ease the uncertainty or fear of new ideas. Having executives share information on their experiences encountered with continuous auditing, both good and bad, provide organizations with information to make the right business decision on the adoption of a continuous methodology.

Continuous auditing has been known in the auditing industry for some time although some organizations consider this methodology an innovation that is not solid. Continuous auditing and advances in information technology have transformed and caused confusion for many firms in professional services industries, but perhaps none as much as those in the accounting industry. Once a slow paced and conservative industry, accounting organizations underwent significant changes at the turn of the millennium, assumed largely by the rapid changes in its information technology environment and new regulatory requirements for financial reporting due to the recent financial scandals (ACL, 2009; Kuhn, 2009; Richards, 2008). With rapid advances in information technology, numerous articles have appeared in practitioner accounting journals that discuss how to invest in information technology to keep up with the current financial reporting and regulatory requirements (AICPA, 2007; ACFE, 2010; Krell, 2006; PWC, 2006; Vasarhelyi, 2006).

A few field qualitative studies have explored the information technology adaptation processes and automation in accounting to identify the factors of the implementation that determine the success of business and operation augmentation (ACL,

2009; Alles et al., 2008; Anderson & Chambers, 2007; Bergeron & Raymond, 1997). Bergeron and Raymond (1997) reported that organizational support, implementation process, and control procedures affected the initial realization of benefits from information technology adoption, but three years later, only organizational support and control procedures remained significant (Gross, 2009). While these studies have examined factors that may affect the business values, the study results did not estimate the improvement in organization performance or compliance (ACL, 2009; Alles et al., 2008; Bergeron & Raymond, 1997). The significant improvement in productivity provides support for the value of audit automation and knowledge-sharing applications in accounting firms.

Gaps exist in research relating to continuous auditing and information technology governance that could lead organizations into a chaotic state (Brannen, 2006a; Lombardi & Vasarhelyi, 2009; Silsbe, 2007; Singleton & Singleton, 2005; Teeter & Brennan, 2008). The different kinds of continuous auditing methods and labels associated with this auditing methodology are confusing for company personnel when considering the adoption of continuous auditing methodology. Researchers offer a strategy to help executives manage the uncertainty of competitive markets through customer responsiveness, fast-paced innovation, empowering personnel, and most importantly, learning to work within an environment of change (Alles, Brennan, Kogan, & Vasarhelyi, 2006; Brannen, 2006a; Vasarhelyi, 2006).

The results from this research shift the focus of continuous auditing from compliance with controls and regulations to improved efficiency of operations within the organization for financial reports. Qualitative evidence suggests that audit software

reduces the time for working paper preparation and substantial audit results (Gross, 2009; Kuhn, 2009). Hence, examining the impact of information technology and continuous auditing for accounting practices on financial reporting and regulatory compliance was of considerable interest to both academic inquiry and practice.

Research Questions

The proposed qualitative, multiple-case study explored the perceptions and experiences of financial executives regarding the use of technical tools and audit processes for continuous auditing. Thus, the research questions for the study were as follows:

Q1: What are the experience of executives with the implementation and use of continuous auditing procedures for maintaining their corporate requirements with financial audits, reporting, and regulatory compliance?

Q2: What are the perceptions of executives regarding the introduction of new technology for continuous auditing?

The research questions serve to introduce the remaining topics contained in the interview guide. The study was important to understand the support continuous auditing provides within demographical areas for financial reporting and regulatory compliance.

Nature of the Study

This qualitative, multiple-case study design consist of exploring the perceptions and experiences of financial executives regarding the use of technical tools for continuous auditing and audit approaches through interviews. Lee (2006) observed that by conducting case studies and applying various data-generating techniques, complex and ambiguous issues could be penetrated. The power of case study is its attention to and

illumination of the local situation (Bloomberg & Volpe, 2008; Chambers, 2006; Creswell, 2009; Shank, 2006). In this research, individual case studies were conducted to explore the perceptions and experiences of executives who may be confronted with complex financial reporting and regulatory compliance issues. With the understanding that one of the most important sources of case study information is the interview, this research approach consisted of interviews to gain knowledge regarding the perceptions of continuous auditing techniques for financial reporting (Bloomberg & Volpe, 2008; Duff, 2007; Marshall & Rossman, 2006; Trochim, 2007; Yin, 2009). Qualitative interviews seek to aggregate perceptions or knowledge over multiple respondents (Stake, 1995). The purpose of the interviews was to probe the ideas of the interviewees about auditing processes, financial reporting, and regulatory standards (Bloomberg & Volpe, 2008; Duff, 2007; Moustakas, 1994; Yin, 2009). Auditing processes and methodologies were explored by interviewing auditing professionals that have hands-on experience auditing within their organizations. The data generated in this study provide a deeper understanding of the auditing and governance situation in organizations in an effort to share the findings of this study and develop a better understanding or strategy for continuous auditing to use in their organizations.

For this study, a semi-structured interview guide was used during the data collection process. After obtaining IRB approval and prior to using the interview guide, the guide was reviewed and tested by the researcher's audit manager and three colleagues as a pilot study to ensure that the questions address the purpose and goal of this research. In addition, data gathered from the pilot study was used to adjust the interview guide as needed to ensure the research purpose and goal was met. The interview data from the

pilot study served as validation of the research instrument, and excluded from the final set of study results. The script contains questions to gather the necessary information needed to answer the main research questions. The interview questions included: (a) demographic inquiries such as job title, employee count, business, or governmental functions, (b) psychographic inquiries such as purchase motives and usages, (c) particular regulatory or legal compliance requirements, and (d) barriers (ACIPA, 2007; Chan, 2010; KMPG, 2008). The open-ended questions are designed to stimulate open dialogue with the interviewee concerning the methodology of continuous auditing. The open-ended questions are sub-questions designed to provide elucidation of the main research questions (see Appendix A).

The data collected in the field and auditing experience of the researcher assisted in closing the gap of the human elements that are missing within the prior research. The research data was built upon and provided greater visibility to prior work in the areas of financial auditing and meeting regulatory requirements. Prior research has focused on the technical side of continuous auditing where this research focused on the perceptions and experiences of financial executives regarding the use of technical tools for continuous auditing. Closing these gaps provide benefits to the auditing industry and financial decision makers of corporations and businesses. The main realm of benefits with continuous auditing was enhanced business operations and improved correlation between corporate needs and its expenses.

Significance of the Study

The decision made by executive management on the choice of continuous auditing tools is important to the business in today's global environment. The

introduction of new legal and regulatory mandates has increased the need for dependable controls, as these regulations can invoke harsh sanctions upon those failing to comply (ACFE, 2010; AICPA, 2007; Richards, 2008). The review of literature and research indicates that operational processes used for continuous auditing methodologies are not consistent (Gross, 2009). Understanding the business impact from continuous auditing on financial reporting and regulatory compliance are important to the success and future growth within the industry.

Executives communicate information about organizational performance to the outside world through financial reports, which provides summarized information about an organization's financials for external decision makers. Newly enacted regulations support efforts of the U.S. government Securities and Exchange Commission on protecting investors from investment malpractice (ACFE, 2010; AICPA, 2007; Richards, 2008; U.S. Securities and Exchange Commission [SEC], 2010). The Sarbanes-Oxley Act has added the dimension of internal financial reporting assurance expected of internal auditors and audit committees (ACFE, 2010; AICPA, 2007; Burnby & Hass, 2009; Richards, 2008). Chief Executive Officers, Chief Financial Officers, and auditors must report on, and attest to, the effectiveness of internal controls for financial reporting (ACFE, 2010; AICPA, 2007; Osborne, 2006). Due to the regulations within this legislation, if a corporate officer were to file an inaccurate report, they were subject to a fine of up to \$1 million and the possibility of imprisonment for up to 10 years (ACFE, 2010; AICPA, 2007; Lahti, 2005). Hence the importance to understand the capabilities of new technologies or auditing methodologies that could assist an organization to be regulatory compliant and efficiently report financial data.

As organizations evolve, decision makers are challenged and opportunities arise to enhance business and meet stakeholder expectations. Every organization is constantly evolving as it innovates to meet auditing and financial needs, changing processes, people, skills, and technologies (ACFE, 2010; Gross, 2009). Thus, it is important for senior management to step back and consider its long-term strategy; define a clear vision of where it wants the firm to be in two, three, or even five years; and take definitive steps to translate that vision into a program of activities (Brannan, 2008). The vision should comprise goals for growth in business processes and competitive position. Management should assess the profitability of products and the cost of operational readiness when implementing enhanced auditing processes (Gross, 2009). Executives should also consider how well the firm is prepared to meet increased regulatory and governance requirements when implementing new auditing and reporting processes.

Definitions

The terms described in this section are crucial to the proposed qualitative study. The following list of definitions of key terms facilitated an accurate understanding of the concepts.

Continuous assurance. Continuous assurance is the combination of activities performed by internal audit to evaluate internal controls and risk management and to assess management's controls on monitoring activities (AICPA, 2007; Hoffer, 2007). The continuous aspect of continuous assurance refers to the uninterrupted control and risk assessments and evaluates the adequacy of management's continuous monitoring activities. Through technology-enabled analytics, an audit can assess the internal control

framework and provide independent assurance of its adequacy to the audit committee and senior management.

Continuous auditing. Continuous auditing is a methodology that enables independent auditors to provide written assurance regarding a subject matter using a series of auditors' reports issued simultaneously with, or a short time after, the occurrence of events (AICPA, 2007; Hoffer, 2007). The continuous aspect of continuous auditing refers to the near real-time capability for financial information being checked, shared, and verified for errors or fraud (Hoffer, 2007). A renewed focus was on continuous auditing as well as investigation into methods to embed audit best practices within business processes to transfer ownership of internal controls testing and monitoring to management.

Continuous monitoring. Continuous monitoring is a method that allows organizational leaders to observe the performance of one or many processes, systems, or types of data (AICPA, 2007; Hoffer, 2007). Continuous monitoring is a monitoring process and technology used to detect compliance and risk issues associated with financial and operational activities within an organization (AICPA, 2007; Gross, 2009; Hoffer, 2007). The continuous aspect of continuous monitoring refers to the consistent and timely identification of problems or weaknesses and quick corrective action that helps reduce the cost of any required periodic financial, regulatory, and operational reviews to a reasonable level (AICPA, 2007).

Information Systems Audit and Control Association (ISACA). The Information Systems Audit and Control Association (ISACA) is a global professional organization dedicated to audit, control, and security of information systems (ISACA,

2009). The ISACA organization has become a pace-setting global organization for information governance, control, security, and audit professionals. Practitioners worldwide choose to adhere to the auditing and control standards of ISACA (ISACA, 2009).

Information technology governance. Information technology governance is a framework for the leadership, organizational structures and business processes, and standards and compliance to these standards, which ensures that the information technology of an organization supports and enables the achievement of strategies and objectives (AICPA, 2007; Calder, 2007; Hoffer, 2007). The primary goal for information technology governance is to assure the information technology generates business value and mitigates the associated risks. The information technology governance goal is met by implementing an organizational structure with well-defined roles and responsibilities for business processes.

Institute of Internal Auditors (IIA). The IIA is the global voice of the internal audit profession, with roles including (a) recognized authority, (b) acknowledged leader, (c) chief advocate, and (d) chief educator (Richards, 2008). Members work in internal auditing, risk management, governance, internal control, information technology audit, education, and security (Richards, 2008). Established in 1941, the IIA is an international professional association with global headquarters in Altamonte Springs, Florida.

Summary

Although continuous auditing methodology has been part of the information technology industry for several years, there are executive leaders that have not adopted this methodology in their organization to assist in financial reporting (AICPA, 2007;

Calder, 2007; Hoffer, 2007; KPMG, 2008). The adoption of continuous auditing is a prudent executive decision due to the cost recovery, efficiency, and fraud-prevention benefits that the capability provides. Although the decision to use continuous auditing is the responsibility of executive management, inputs from internal auditors and audit managers is valuable in finalizing management's decision (Auditor Director Roundtable [ADR], 2008; AICPA, 2007; Krell, 2006; Richards, 2008).

Concerns with disparate reporting techniques, software solutions, and issues with the granularity of data retrieved resulted in inconsistent audit reports due to time lags and aggregation issues (Krell, 2006; Richards, 2008). Processes used for financial auditing are not consistent and results in a low quality financial reporting statement (Krell, 2006). With the evolution of continuous auditing methods, recent advances have made the technologies both widely available and affordable, yet firm leaders have not made significant steps with continuous auditing methodologies (Krell, 2006; Richards, 2008).

The purpose of this qualitative, multiple-case study was to explore the experiences and perceptions on audit processes used with financial audits and the impacts on financial reporting and regulatory compliance. Using a theoretical framework and prior research development provided the rationale for performing additional investigation into financial reporting, regulatory compliance, and audit processes.

Chapter 2: Literature Review

Gaps in the literature exist relating to adoption of new technologies as noted by Brannen (2006a), Vasarhelyi (2006), and Alles et al. (2006). Scholars have published relevant qualitative research studies regarding the introduction of technology for continuous auditing and continuous monitoring processes and methodologies (Alles et al., 2006; Krell, 2006; PWC, 2006). However, no qualitative studies have formulated a consistent set of recommendations or guidelines for continuous auditing or explored perceptions and experiences of financial executives regarding the incorporation of technical tools for continuous auditing. The published results from the continuous auditing and monitoring studies explain benefits and business process improvements, but lacks in providing guidelines and recommendations on financial reporting and regulatory compliance both advantages and disadvantages (Alles et al., 2006; Krell, 2006; Kuhn, 2009; Osborne, 2006; PWC, 2006; Vasarhelyi & Halper, 1991).

Evolving regulatory environments, increased globalization, market pressure to improve operations, and rapidly changing business conditions are creating the need for more timely and ongoing assurance that controls are working effectively and risk is being mitigated properly (ACFE, 2010). Learning what continuous auditing does and how it works could help auditors make better use of this process, while maintaining internal audit's independence and objectivity in evaluating the effectiveness of controls, risk management, and governance processes (Warren & Smith, 2006). Continuous auditing could provide auditors with a holistic view of operations and the ability to explore company-wide detailed transactions as a means to assess control frameworks electronically.

The challenge with continuous auditing has always been the inability for employees to adapt to a new change within large technological infrastructures (Krell, 2006). In recent years, technology has advanced sufficiently to make these approaches a more practical solution for the testing of internal controls in accounting and financial reporting. As interest has increased, professional publications have done much to generate awareness of the benefits of continuous auditing and address practical implementation issues. The literature review was organized into the following sections: (a) continuous auditing, (b) globalization, (c) governance, (d) information technology, (e) implementation, and (f) risk and fraud detection, which was the information baseline for the proposed research study.

Continuous Auditing

In the 20 years since Vasarhelyi and Halper (1991) researched continuous auditing, the concept has moved from business theory into business practice (Alles et al., 2006). Through the different studies performed on continuous auditing, lessons and insights were obtained regarding continuous auditing (Krell, 2006). The studies are insightful regarding the unique issues inherent with continuous auditing, which are fundamentally different from issues encountered in standard auditing (Alles et al., 2006). The research results from previous quantitative research studies performed on business processes incorporated surveys that produced similar findings (Chan, 2010). Surveys conducted by PWC or those jointly undertaken by ACL Services (formerly known as Audit Command Language) and Institute of Internal Auditors (IIA) show increased interests in continuous auditing to ensure appropriate financial statements are determined (PWC, 2006). Whereas the two surveys had broadly similar findings, the latter survey

also presented the important statistic that 91% of audit executives believe that management and business process owners should have responsibility for monitoring internal controls over their business processes (Alles et al., 2008; PWC, 2006). This survey statistic was a leading indicator of the prospects for continuous auditing in the future (Alles et al., 2008; PWC, 2006).

The corporate failures at Enron, WorldCom, and other entities have given rise to the development and implementation of a continuous auditing system for business organizations (Alles et al., 2008). Recent research efforts have indicated that in order for information to be relevant, three major dimensions have to be present: (a) time, (b) content, and (c) form (Cantu et al., 2007). The implementation of a continuous auditing system could assist organizations in making financial information useful to end users (Dunn, 2006).

The recent corporate failures and corporate transparency have led to the concept of continuous auditing (Alles et al., 2008; Cantu et al., 2007). However, the practice of continuous auditing and the demand for the service have been low (Cantu et al., 2007). The finding was a result of the perceived costs outweighing the perceived benefits. Researchers have also discussed that the continuous auditing concept is still in an infancy stage and require a higher maturity and technological level from business organizations (Alles et al., 2008). This perception is, in part, because of the internal control structure of an organization, corporate governance, and the willingness of the organization to be transparent.

Corporate executives believe that a major obstacle to continuous auditing is the investment required to design, develop, and implement the technology (Cantu et al.,

2007; Warren & Smith, 2006). Management is reluctant to spend funds on technology unless the benefit could be effectively demonstrated. Continuous auditing has more to do with techniques for auditing continuously, whether or not assurance is provided continuously or annually (Cantu et al., 2007).

The audit profession is inherently conservative given that its entire value added comes from the auditor's credible claims of objectivity and reliability (Krell, 2006; PWC, 2006). Consequently, auditing processes, even more so than other business processes, have a considerable amount of inertia (Warren & Smith, 2006). Continuous auditing, as with any major change initiative in such circumstances, will have numerous barriers to change and to overcome.

Business executives state that continuous auditing consists of two main components; continuous risk assessment and continuous control assessment (Coderre, 2007a). Continuous risk assessments refer to audit activities that identify and evaluate company-wide risk levels by examining trends and comparisons within a single system or process. The business processes are compared to their past performance and other business needs to identify business risk areas. Auditors could use continuous risk assessments to identify and evaluate risk levels on an ongoing basis. This approach allows auditors to assess management's risk mitigation activities and support the development of objectives for individual audits and the annual audit plan (Coderre, 2007b).

The second component of continuous auditing is continuous control assessments, which refers to audit activities that identify whether selected controls are working properly (Coderre, 2007b). Control testing is performed on a retrospective and cyclical

basis where the testing procedures are based on a sampling approach, and include reviewing the processes, procedures, and approvals. Auditors can use continuous control assessments for identifying control weaknesses and violations that should be reported to senior management and audit committee (Coderre, 2007a).

Many organizations have been evaluating the introduction of continuous auditing to support regulatory control assessment requirements. While having an adequate automated system for testing controls contributes to the assessment of internal controls and the overall mandate for a higher standard of corporate governance, additional benefits in the form of improved business performance could be equally significant (Coderre, 2007a). When starting a continuous auditing process, auditors need to understand the objectives and requirements that are involved in continuous auditing. Continuous auditing could be approached on an incremental basis, which starts small and builds on each successful step. When designing an approach to continuous auditing, auditors should make sure they have considered all the businesses' objectives to ensure management goals are met adequately (Coderre, 2007b).

The key to making effective use of continuous auditing is to develop a good understanding of the main business processes and the associated information systems and infrastructure. When an organization adopts continuous auditing, auditors are required to have knowledge of information systems and data analysis skills (Brannen, 2006b). Executives must support the continuous auditing effort to ensure a successful implementation.

Globalization

Within information technology auditing, all aspects of controls such as effectiveness and efficiency of operations, reliability of financial reporting, and compliance with rules and regulations is essential, with information technology security at the forefront (Cantu et al., 2007). Although organizations expand their business to different locations, including international locations, the concerns of business data being secure and controlled ranks high with any management team (Brannen, 2006b). Information technology governance is essential to ensure that organizational leaders follow regulations and laws that protect business information. The Institute of Internal Auditors (IIA), responding to the study from PWC, attributed the increased interest in continuous auditing and monitoring to an evolving regulatory environment, increased globalization of businesses, market pressure to improve operations, and rapidly changing business conditions (Dunn, 2006).

Previous quantitative research performed on auditing and business processes showed that continuous auditing has expanded to international companies and indicated concerns with auditing security controls and governance (Dunn, 2006). Although researchers have collected data regarding continuous auditing, the information was gathered with the use of Web-based surveys (Alles et al., 2006). Quantitative analysis is an efficient methodology that was used to collect information regarding information technology security and governance. Reviewing the research results from Alles et al., analysis of the gathered information indicates that continuous auditing is moving from theory to business practice.

Although business leaders are challenged with the task of measuring and monitoring audit activities, paper-based technologies have to rely on pre-filtered and aggregated measures typically recorded after a significant time lag (Alles et al., 2006). A prior research approach for continuous auditing used a pilot implementation as a proof of concept in the information technology audit department of Siemens Corporation, one of the world's largest transnational companies. The research provided an important test entity using audit programs and practicing internal auditors to examine the challenges, constraints, and opportunities faced during a continuous audit implementation (Alles et al., 2006). Leaders of global organizations have confidence that continuous auditing is beneficial for their information technology business both locally and internationally as it improves the efficiency of the financial auditing process (Krell, 2006; PWC, 2006; Vasarhelyi, 2006).

The purpose of a recent study performed on auditing processes was to examine the positive and negative effects of implementing continuous auditing in organizations in which performance-based compensation incentives are focused on short-term or long-term outcomes (Hunton, Mauldin, & Wheeler, 2006). Behavioral research in continuous auditing is timely and relevant, as organizations are implementing continuous auditing via the internal audit function to provide support for senior executives and corporate directors asked to accept reasonable risks and make business decisions (PWC, 2006). The results from Hunton et al. (2006) research extended the auditing and accounting information systems literature by revealing both positive and negative ramifications that must be considered when implementing the processes and technologies involved with continuous auditing.

Technology is a driving force for positioning businesses in the global market (ADR, 2008; AICPA, 2007; Hunton et al., 2006; Krell, 2006; McCann, 2009; PWC, 2006; Vasarhelyi, 2006). Multinational organizations present another obstacle to the acceptance of continuous auditing in the corporate environment due to uniqueness of government requirements (McCann, 2009). Each country may differ in their business processes and cultural requirements that levies against the countries background and history. In some cultures, continuous auditing may appear as infringing on the organizations ability to manage that business unit (ADR, 2008; AICPA, 2007; Krell, 2006). The management process in adopting continuous auditing in a multinational company may be significant due to cultural differences within and between different countries (McCann, 2009).

As businesses become more complex and international, the complexity and scope of compliance efforts also increases significantly. Companies are faced with conflicting regulations when international boundaries are crossed (McCann, 2009). Businesses that pursue globalization could leverage information technology to ease auditing compliance and regulation requirements.

Governance

Researching information technology governance within a global organization involves different areas, including regulations, policies, and procedures (Chan, 2010). Each country has different laws and regulations for export and import controls and governance of these controls (McGhee, 2008). Research results indicate that different approaches exist to reinforce contingencies within (a) corporate governance, (b) economics of scale, and (c) absorptive capacity (Chan, 2010). McGhee (2008) showed

how information technology governance is an important part of a successful organization. The survey did not show any research regarding international information technology governances. New enterprise information technology services were found on the research site that provided support to a set of business entities (Chan, 2010).

Most organizations have controls and guidelines in place to ensure that businesses and stakeholders will assess the effectiveness of information technology governance (AICPA, 2007; Alles et al., 2008; McGhee, 2008). Domestic or international organizations have the controls to achieve information technology governance as levied. The regulations may be different, weaker, or stricter, according to the government laws in place (AICPA, 2007; KPMG, 2008).

The Sarbanes-Oxley Act is not just a major piece of securities legislation; it is also a prime example of the law of unintended consequences (Alles et al., 2008; Silsbe, 2007). When the Sarbanes-Oxley Act was passed, few had thought that it led to a substantive increase in the profits of audit firms, cancellation of many software efforts due to the lack of resources, and arguably to the emergence of scandals at the New York Stock Exchange (NYSE). Concerns existed with Freddie Mac, Fannie Mae, and mutual funds due to the increased emphasis on transparency and a major rebalancing of the roles and players in the consulting field (AICPA, 2007; Alles et al., 2008; KPMG, 2008; Silsbe, 2007). The Sarbanes-Oxley Act was seen as imposing additional regulation on the accounting profession as punishment for its ethical lapses, but now is derided as a full employment Act for those same accountants, as firms complain about the burden that section 404 of the Sarbanes-Oxley Act imposed upon their organizations (AICPA, 2007; Alles et al., 2008; KPMG, 2008).

Like any complicated law, the Sarbanes-Oxley Act may experience unforeseen results that have to play out in practice (AICPA, 2007; Alles et al., 2008; KPMG, 2008). The legislation had been in the mind of U.S. Senator Paul S. Sarbanes for some time, prompted by the failure at Enron. The legislation languished in the face of strong opposition from the U.S. Republican Party, led, ironically, by U.S. Representative Michael G. Oxley, until the WorldCom debacle made it politically imperative for the U.S. government to appear to be seen as taking action (Alles et al., 2008; Brannen, 2006a; Vasarhelyi, 2006). The name of the Act, Sarbanes-Oxley, bringing together the law's chief sponsor with the most vocal and adamant opponent of government regulation, is perhaps a warning that its tortured birth may well have resulted in awkward compromises and incompletely thought-out formulations in its content (Alles et al., 2008; Brannen, 2006a; Vasarhelyi, 2006).

The Sarbanes-Oxley Act has fundamentally influenced financial reporting, auditing, internal control, standard setting, and corporate governance (Alles et al., 2006; Krell, 2006; Kuhn, 2009; McGhee, 2008; Osborne, 2006; PWC, 2006). The unstated goal for the Sarbanes-Oxley Act is to ensure corporation fraud like Enron, WorldCom, and Tyco would not have the opportunity to occur. However, today, most observers agree that section 404 of the Sarbanes-Oxley Act, on the substantiation of financial reporting controls, is its most momentous provision, at least at present. However, section 409 of the Sarbanes-Oxley Act addresses more frequent financial reporting and may prove to have an even greater impact on business in the end.

The origin of Section 404 provision was the concern on the lack of sufficient controls at scandal-ridden firms, such as WorldCom and Tyco, to ensure that assets were

safeguarded and the firm's financial statements were accurate (Alles et al., 2008). Thus, the Sarbanes-Oxley Act required managers to implement controls over the financial reporting process and state a confidence level of whether they were effective. Confusingly, another provision of the Sarbanes-Oxley Act, section 302, also discusses internal controls, and in fact, does so in much greater length and detail than section 404.

However, it was Sarbanes-Oxley Act section 404 that had captured the imagination of the accounting profession, leading corporate America in a state of fear, and generated approximately 1.5 million hits on Google annually (Alles et al., 2006; Kuhn, 2009; McGhee, 2008). Section 404 is described as the first new mandated audit product since the passage of the original securities acts in the 1930s (Alles et al., 2008; Brannen, 2006a; Vasarhelyi, 2006). Audit firms had to transform themselves into management consultants because the mandated audits were such an insignificant task and an ever-shrinking source of work, with only 10% of the Certified Public Accountants (CPA) engaged in auditing (Alles et al., 2008). Today, as section 404 has been interpreted as a mandate to document controls, the demand for auditing is on a rise, even as controversy continues as to whether auditors can attest to controls that they have themselves helped put in place (AICPA, 2007; Alles et al., 2008; KPMG, 2008).

The U.S. Securities and Exchange Commission (SEC) has released its final rules on the implementation of Sarbanes-Oxley Act section 404 and the Public Company Accounting Oversight Board (PCAOB) released preliminary section 404 auditing standards, there is considerable uncertainty in the profession as to what requirements are required to perform a section 404 attestation (Alles et al., 2008). Meanwhile, many firms appear overwhelmed by what the strict interpretation of the Sarbanes-Oxley Act seems to

require of them, in terms of imposing new controls and documenting existing ones. One of the key concerns of the business community with Sarbanes-Oxley Act section 404 is the cost of implementation, especially given the widely circulated story that, at the time the Sarbanes-Oxley Act was passed, the estimation for compliance take the average firm only a few extra hours of work (Alles et al., 2008; Brannen, 2006a; Vasarhelyi, 2006).

A report within the CFO magazine shows the results of a survey in which many managers argued that the cost of compliance is excessive (Gutholc, 2008). A recent report put forward an estimated cost for Sarbanes-Oxley Act compliance of U.S. \$7 billion in the first year, with continuing costs as the attestation has to be renewed each year (Gutholc, 2008). Would the cost of compliance for Sarbanes-Oxley Act be high for corporations? What return on investment, would the corporations experience in terms of more credible financial reporting and, perhaps, better business processes? While it is too early to quantify the cost and benefits of section 404, several points can be made to put the problem into better perspective. First, internal control evaluation and responsibilities are not a new mandate on businesses. The U.S. Foreign Corrupt Practices Act of 1977 imposed strict internal control requirements to ensure that firms did not pay bribes (Gutholc, 2008). At the time, this U.S. Foreign Corrupt Practices Act had its own large cadre of detractors. One serious attempt to reduce its scope was defeated in the U.S. Congress, and overall the Act has not been the basis for legal action, nor is there much complaint today about the cost of compliance (Chan, 2010). In addition, it was worth noting that bank and thrift-holding firms are already subject to controls similar to Sarbanes-Oxley Act section 404 under the 1991 U.S. Federal Deposit Insurance Corporation Improvement Act (Alles et al., 2008; Brannen, 2008; Gutholc, 2008).

Furthermore, all audits include substantial elements of internal controls, in which if controls are weak there was a substantive increase in detail testing and consequent reporting in the management letter. The audit committee of the board of directors typically reviews this letter and management has to respond to its recommendations. Valid concerns about the costs of Sarbanes-Oxley Act section 404 still exist, and it is probably true that not enough thought was given to those costs when the legislation was passed, partly because the momentous nature of that provision was not even realized in advance. Secondly, there was some evidence that even prior to the recent malfeasance crisis, many firms, in response to market pressure, were becoming increasingly concerned about corporate controls and corporate guidance (Alles et al., 2008; Gutholc, 2008; Heffes, 2006).

Finally, and perhaps most important of all, the argument that implementing Sarbanes-Oxley Act section 404 impose more costs than benefits assumes that few firms benefit from the imposition of tighter controls (Alles et al., 2008; Gutholc, 2008; Heffes, 2006). However, benefits of improved corporate controls are expected to be found not only in decreased malfeasance, but also perhaps even more so in a substantial increase in corporate data quality, the decrease of instances of data rework, and erroneous corporate transactions (Gutholc, 2008; Brannan, 2008).

Another important criticism of the Sarbanes-Oxley Act section 404 was arguments in that the Act is an instance of the cycle by which controls are mandated in response to some crisis and when those controls are eventually proven ineffective, auditing is required of the implementation of those controls (Alles et al., 2008; Brannan, 2008; Gutholc, 2008). The problem with this imprudent reaction was that controls are

written to be auditable rather than to address the underlying problem they were originally intended to address (Alles et al., 2008; Brannan, 2008). Having an understanding of the controls purpose is certainly a concern with Sarbanes-Oxley Act section 404 since most of the attention today is on how auditors are making money by imposing controls. The Act itself puts the emphasis on the role of management in assessing the effectiveness of reporting controls, not on the role of the auditor in attesting to that certification (Chan, 2010). Because of different perspectives, cost and benefits of the legislation certainly differ from what was intended, when management passes the responsibility down to the auditors (Alles et al., 2008; Chan, 2010).

The passage of the Sarbanes-Oxley Act, with its emphasis on greater transparency and better corporate governance, has indirectly led to a second wave of scandals of a different sort than malfeasance (Alles et al., 2008; Brannan, 2008; Gutholc, 2008; Heffes, 2006). Controversy about outlandish executive compensation at the NYSE and elsewhere and emerging concern about the misbehavior of individuals in the financial sector are issues that are being pursued by previously complaisant regulators and state attorneys general (Alles et al., 2008). As an unforeseen consequence, substantial settlements are being reached in litigations, a second wave of regulation is being established, and thus many market participants are already talking about Sarbanes-Oxley II.

The auditing industry has a state of urgency brought on by Sarbanes-Oxley along with the emergence of governance, risk, and compliance (Alles et al., 2008; Brannan, 2008; Gutholc, 2008; Heffes, 2006; Warren & Smith, 2006). Auditors have maintained companies' financial accountability and integrity through manual processes and point-in-

time audits. Recently, auditors have been using technology to move towards continuous processes and monitoring in a real time situation (Brannan, 2008). Continuous auditing of information technology and business processes reduces total annual audit costs while significantly increasing the operational and managerial efficiency (Alles et al., 2008; Brannan, 2008; Gutholc, 2008; Heffes, 2006; Warren & Smith, 2006).

Increasing corporate accountability and regulatory pressures push internal auditors to seek new ways to enhance effectiveness and efficiency in their work and provide assistance to management in meeting corporate stewardship responsibilities (Alles et al., 2008; Brannan, 2008; Gutholc, 2008; Warren & Smith, 2006). Auditors are facing the toughest challenges that include the highest rate of corporate fraud. According to a survey of executives from 459 public companies and state government agencies, 75% of the organizations experienced fraud in 2006, up from 62% five years prior (Warren & Smith, 2006). These organizations have considered implementing new approaches, such as continuous auditing, to help cease fraud and misconduct (Chan, 2010). Continuous auditing test transactions based on predefined criteria to identify anomalies while enhancing corporate governance and assurance.

Siemens has successfully installed automated audit and monitoring solutions in various business divisions and shared service centers to address controls for segregation of duties. These automated solutions help focus on changes made to the general ledger, and monitor controls for processes such as purchase-to-pay and order-to-cash (Alles et al., 2008; Brannan, 2008). Siemens proof-of-concept installations have proved successful in demonstrating the capability and value of continuous auditing technology (Alles et al., 2008; Brannan, 2008).

The Sarbanes-Oxley Act has been law for several years and the Securities and Exchange Commission (SEC) has issued rules and regulations for corporations to comply with the Sarbanes-Oxley Act (AICPA, 2007; ISACA, 2009; U.S. Securities exchange [SEC], 2010). In addition, the New York Stock Exchange and NASDAQ issued governance requirements for listed companies (Brannan, 2008; Warren & Smith, 2006). The IIA, the AICPA, and Financial Executives International continue to provide guidance to their memberships on governance, compliance, and fraud detection (AICPA, 2007; ISACA, 2009). These organizations require audit professions to develop processes to restore public confidence in both financial reporting and audits (Brannan, 2008; Warren & Smith, 2006).

Organizations that are to adhere to the Sarbanes-Oxley Act reporting requirements must refer to Section 404 and understand the importance of the requirements (AICPA, 2007; ISACA, 2009; SEC, 2010). Rules governed by the SEC for implementing Section 404 of the Act that establish the requirements for management's report on internal auditing controls over financial reporting and the certification of disclosures in filings under the Exchange Act (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Warren & Smith, 2006). In general, management is required to issue an annual report that states its responsibility for establishing and maintaining adequate internal controls over the financial reporting process and the effectiveness of internal control during the reported year (Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008). Many CFOs and information technology executives whom are concerned about gaining compliance regard section 404 as the most critical part of the Act (Dowling & Leech, 2007).

During a seminar conducted by PeopleSoft, CFOs and information technology executives of public companies participated in a study of the impact of the Sarbanes-Oxley Act on their organizations. The findings showed that 46% of the companies had sought initial funding for continuous auditing projects to comply with the reporting requirements of the Act, with 31% beginning a project without funding (Warren & Smith, 2006). About 40% of the executives believed their organization have to upgrade current financial processes or implement new technology (Warren & Smith, 2006). Greater demand for continuous auditing and opportunities for internal auditors are present in today's regulatory environment although the Sarbanes-Oxley Act exist (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Warren & Smith, 2006). Many business executives believe that some level of continuous process was required to assist organizations in determining that business processes and procedures comply with the Act (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Warren & Smith, 2006).

According to Sarbanes-Oxley and SEC regulations, management has the responsibility for assessing risk and for the design and implementation of controls within an organization (Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006). Internal audit has the responsibility of evaluating the controls implemented by management and providing assurance to the audit committee as to the state of management's controls (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Heffes, 2006). Companies are required not to only put controls in place, but companies are to evaluate the controls on an ongoing basis so shareholders have reliable financial statements that reflect the true state of the company (Alles et al., 2008; Brannan, 2008).

While it was met with some resistance initially, most companies agree Sarbanes-Oxley led to heighten awareness of control inefficiencies, and ultimately helps to protect the integrity of the company (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Heffes, 2006).

Information Technology

Technology can be an essential element in continuous auditing, serving as a key strategic enabler to enhance all aspects of the audit process, from strategic planning to the delivery of quality assurance (Gross, 2009; Hall, 2011; Krell, 2006). The 2006 PWC survey respondents reported 41% whose continuous auditing practices lack automated processes and could gain greater productivity from utilizing technology (Brannan, 2008; PWC, 2006; KPMG, 2008). Technology enabled auditing, when deployed as part of a broader continuous auditing program, can make the audit process faster, cheaper, more efficient, and more effective (Hall, 2010; Hoffer, 2007; Krell, 2006). With a technology, enabled approach to continuous auditing, organizations can theoretically eliminate the need to rely on a linear model, where audit reports are only issued after an audit process, and where audits are only conducted after an annual risk assessment. Advances within information technology provide for greater efficiency and increasing demands on internal auditing are converging to drive the growth of continuous auditing (Gross, 2009; Hall, 2011; Hoffer, 2007).

Technology continues to change and become more complex as businesses seek new technologies to enhance their business processes. As organizational information systems become more complex, the traditional auditing processes seem to be diminishing (Alles et al., 2008; Janvrin et al., 2008; PWC, 2006; Teeter & Brennan, 2008).

Organizations are focusing on internal controls and security as critical concerns, while looking for automated procedures to test the accuracy and reliability of financial information (Alles et al., 2008; PWC, 2006; Teeter & Brennan, 2008).

Information technology advancements can affect how companies are organized, conduct business, and communicate with stakeholders and employees (Gross, 2009; Hall, 2011). Business complexity and technology have been attributes of corporations that require auditors to develop new methodologies and processes for auditing. Recent technical and regulatory developments are persuading organizations and auditors to adopt technology tools for continuous auditing processes (Janvrin et al., 2008; Teeter & Brennan, 2008).

Information technology systems capture financial information and generate financial and operating reports to assist management in its leadership role, ranging from strategic planning decisions to daily operational decisions (Gross, 2009). During the 1990s, enterprise resource planning systems were implemented, which required a rigid program not only to incorporate information technology processes into the organization, but ensuring that the users were adequately trained and understood how to utilize these systems (Teeter & Brennan, 2008). Accordingly, in determining whether continuous audit methodologies are appropriate, management and auditors must consider the organizations current information technology environment and capabilities (Alles et al., 2008; Gross, 2009; Janvrin, 2008; Teeter & Brennan, 2008).

Most business processes today are automated to various levels and businesses continue to invest in maintaining and expanding this automation through the acquisition of computer and telecommunication technologies and various enterprise systems, such as

enterprise resource planning, data warehousing, supply chain management, and customer relationship management (Alles et al., 2008; Janvrin et al., 2008; PWC, 2006; Teeter & Brennan, 2008). The key for avoiding the potential downsides of automation, though, is to have a clear understanding of what audit automation is trying to achieve and follow a methodical procedure to achieve those goals (Brannan, 2008; Chan, 2010; Dowling & Leech, 2007; PWC, 2006). Vasarhelyi (1984) originally researched the potential impact of audit automation on the changes in the audit process from 1985 to 2009. Recent empirical studies have shown that information technology-enabled audit automation indeed leads to significant productivity gains (Alles et al., 2008; Janvrin et al., 2008; PWC, 2006; Teeter & Brennan, 2008). The importance of audit automation and the utilization of information technology in modern audits have grown significantly in recent years due to both technological developments and changing regulatory environment (Alles et al., 2008; Janvrin et al., 2008).

In the 1980s, firms came to recognize that the full benefits of technology come about only when processes are first reengineered to take advantage of the new capabilities that the technology makes possible, rather than using the technology to simply automate existing manual processes (Alles et al., 2008; Janvrin et al., 2008; Teeter & Brennan, 2008). A similar argument applies to the implementation of Sarbanes-Oxley Act. With the existence of the Act, organizations can evaluate whether their control systems are up-to-date and whether the organizations can improve financial reporting (Alles et al., 2008; Janvrin et al., 2008; Teeter & Brennan, 2008). The Committee of Sponsoring Organizations (COSO) framework that underlies section 404 controls has

been available to firms for over a decade, but few firms had shown any interest in it (Alles et al., 2008).

The COSO framework is a unified approach for evaluation of the internal control system that management designs to provide reasonable assurance of achieving the fundamental business objectives (ADR, 2008; AICPA, 2007). The original COSO framework contains five control components that assure sound business objectives including (a) control environment, (b) risk assessment, (c) control activities, (d) information and communication, and (e) monitoring (ADR, 2008; AICPA, 2007; Anderson & Chambers, 2007; Calder, 2007; ISACA, 2009). These components work to establish the foundation for sound internal control within the company through directed leadership, shared values, and a culture that emphasizes accountability for control. The various risks facing the company are identified and assessed routinely at all levels and within all functions in the organization (AICPA, 2007; Anderson & Chambers, 2007; Calder, 2007; ISACA, 2009). Control activities and other mechanisms are proactively designed to address and mitigate the significant risks. Information critical to identifying risks and meeting business objectives is communicated through established channels up, down, and across the company (Anderson & Chambers, 2007; Calder, 2007). The entire system of internal control is monitored on a continuous basis and business problems are addressed in a timely manner.

Some may argue that this shows firms did not want COSO, but a far more likely explanation was that during the boom years of the 1990s few firms paid attention to the quality of their control infrastructure (AICPA, 2007; Calder, 2007). Optimistically, after the initial fear over Sarbanes-Oxley Act section 404 requirements subside, a more long-

term view towards controls for systemically improving data quality and control process integrity, would overcome the fears (AICPA, 2007; Calder, 2007; ISACA, 2009). Overcoming this fear leads to new emphasis on integrative software, continuous monitoring systems, and continuous audit.

Subsequently, other frameworks, such as Control Objectives for Information and related Technology (COBIT), were developed and are now being extensively used by businesses (AICPA, 2007; Anderson & Chambers, 2007; Calder, 2007; ISACA, 2009). The framework for COBIT was developed to align information technology resources and processes with business objectives, quality standards, monetary controls, and security needs (AICPA, 2007; Anderson & Chambers, 2007; Calder, 2007; ISACA, 2009). The COBIT framework is composed of four domains that include (a) planning and organization, (b) acquisition and implementation, (c) delivery and support, and (d) monitoring (AICPA, 2007; Anderson & Chambers, 2007; Calder, 2007; ISACA, 2009).

The idea behind the COBIT framework is that information is needed to support business objectives and requirements (Anderson & Chambers, 2007; Calder, 2007). Companies should be able to assess the nature and extent of information technology controls required to integrate their internal control objectives. A framework is important to have to where a company can demonstrate how their information technology controls support COSO and whether information technology controls are appropriately documented in all COSO components (Anderson & Chambers, 2007; Calder, 2007). In COBIT, control objectives are defined in a manner consistent with COSO framework. The COBIT framework is a process-oriented framework following the concept of business reengineering and comprised of 4 domains, 34 information technology processes

or high-level control objectives, and 318 detailed control objectives (Anderson & Chambers, 2007; Calder, 2007). A control objective has been identified and the rationale to link the document to business objectives has been provided to all identified processes and domains. The COBIT framework is a comprehensive outline for managing risk and control of information and related technology.

One of the most lasting impacts of Sarbanes-Oxley Act section 404 implementation arise when the financial reporting controls are integrated with the rapidly emerging technology of continuous auditing, reporting, and monitoring (ADR, 2008; Calder, 2007; ISACA, 2009; Janvrin et al., 2008; Teeter & Brennan, 2008). Many companies are still performing low-tech risk-mapping processes to gauge the impact of Sarbanes-Oxley, but the technology sector has high goals that give way to a need for new tools for continuous auditing (ADR, 2008; Calder, 2007; ISACA, 2009; Janvrin et al., 2008; Teeter & Brennan, 2008). Control mapping, particularly of manual processes that have existed for a long time, is a low-return procedure for today organizations. Corporate systems are evolving to real-time monitoring and control systems whereby managers monitor processes in real time and take corrective actions at progressively shortening time intervals (Calder, 2007; ISACA, 2009; Teeter & Brennan, 2008). Many of these adjustments were performed by automatic processes or by managers using high-tech dashboards with alarming and alerting functions. The tools for automatic control mapping, evaluating online, real-time control functioning and selecting alarms for auditor review facilitate Sarbanes-Oxley Act section 404 compliance (Calder, 2007; ISACA, 2009).

Processes functionally drive real-time business, and those processes are controlled by continuous controls (Calder, 2007; Brannan, 2008). Business executives and auditors can leverage these controls and monitors into the genesis, or backbone, of a continuous assurance platform. The unintended consequence of the Sarbanes-Oxley Act in this area has been the slowing of the previously mentioned trend toward real-time management phenomena to perform small benefit manual control mapping and documentation on controls that are rapidly disappearing (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006).

As continuous assurance becomes prevalent, the most important long-term provision of the Sarbanes-Oxley Act may turn out to be section 409 on real-time reporting (AICPA, 2007; Janvrin et al., 2008). The AICPA (2007) members summarized section 409, as issuers required to disclose to the public, on an urgent basis, information on material changes in their financial condition or operations. These disclosures are to be presented in terms that are easy to understand supported by trend and qualitative information of graphic presentations as appropriate. This rule has been currently interpreted as a mandate for the SEC to force faster reporting on several of its forms (AICPA, 2007; Alles et al., 2008; Anderson & Chambers, 2007; ISACA, 2009). The Enron episode is an example how insider stock sales could legally be disclosed nearly a year after the trades, and special noteworthy events were at the discretion of management for disclosure (Alles et al., 2008; Silsbe, 2007). The rising interest in information technology governance is partly due to compliance initiatives, for instance Sarbanes-Oxley in the USA, as well as the acknowledgment that information technology projects can easily get out of control and profoundly affect the performance of an organization.

(Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Silsbe, 2007).

A characteristic theme of information technology governance discussion is that the information technology capability can no longer be a black box (Gutholc, 2008; Kuhn, 2009). The traditional involvement of board-level executives in information technology issues was to defer all key decisions to the company's information technology professionals (Alles et al., 2008; Silsbe, 2007). Information technology governance implies a system in which all stakeholders, including the board, internal customers, and in particular departments such as finance, have the necessary input into the decision making process (Gutholc, 2008; Kuhn, 2009; Silsbe, 2007). The governance process prevents information technology from independently making and later being held solely responsible for poor decisions. A governance process also prevents critical users from later complaining that the system does not behave or perform as expected (Silsbe, 2007).

Computer technology, such as enterprise resource planning systems and the emergence of Extensible Markup Language (XML), increasingly provides firms with the possibility of cost-efficient, online, real-time systems (Gutholc, 2008; Kuhn, 2009). Real-time systems could include financial statements published on the web that are complete up to the last recorded corporate transactions, and contracts and commitments in process, even prior to their realization in traditional accounting (Heffes, 2006; Silsbe, 2007). These fulfill the Sarbanes-Oxley Act section 409 requirements better than preliminary steps taken by the SEC thus far, which are more along the lines of taking processes as given rather than rethinking and reengineering them (Alles et al., 2008;

Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Kuhn, 2009; Silsbe, 2007).

Technology enhancements would see the use of this provision as the force to bring about real-time reporting and disclosure (Gutholc, 2008; Kuhn, 2009). The assumption that corporations with real-time monitoring and control systems have less latency or delay in their processes and consequently gain competitive advantage over the other competitors in their industry (Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008). As a result, internal reporting processes, regardless how Sarbanes-Oxley Act section 409 is interpreted, will progressively be in real time. Therefore, the incremental cost of using real-time controls for external reporting was small (Gutholc, 2008; Kuhn, 2009). The unintended question that arises is whether litigation fears relative to optional disclosure forbid the previously mentioned technology-facilitated capabilities (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008). Firms today are far more complex and technologically dependent than they were even in the recent past. The complexity and dependency on technology suggests that organizational controls need to be reengineered to provide cost effective processes or return on investments. Making use of new technologies such as continuous assurance or continuous monitoring allow organizations to incorporate new processes that are cost-effective and with greater capability (Brannan, 2008; Gutholc, 2008).

The passage of the Sarbanes-Oxley Act of 2002, in particular, the requirements of its Section 404 greatly expanding the internal control work performed by the auditors, has resulted in a strong increase in demand for qualified audit personnel, leading to personnel shortages and audit cost increases (Alles et al., 2008; Silsbe, 2007). The progressive

sophistication of information technology underlying modern business processes has made the traditional approach of auditing ineffective (Alles et al., 2008; Silsbe, 2007). For example, corporate enterprise resource planning systems, designed for high volume online transaction processing, incorporate thousands of automated controls that can be configured in numerous ways. Manual verification of the status of these controls is becoming costly (Alles et al., 2008; Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Heffes, 2006; Silsbe, 2007).

Additional drivers of audit automation adoption include the ever-growing complexity of business transactions and increasing risk exposure of modern enterprises (Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Silsbe, 2007). Several studies have shown that the deployment of information technology and decision support systems to automate certain parts of the audit process usually results in a better-controlled, higher quality audit (Dowling & Leech, 2007). Relieving human auditors from doing automatable audit work makes it possible for them to focus and spend more time on highly judgmental high-risk areas. Automation can also allow the auditors to increase the scope of the audit and utilize some additional audit procedures for higher coverage of various risk areas (Brannan, 2008; Dowling & Leech, 2007; Gutholc, 2008; Silsbe, 2007). Automation of audit procedures is both the necessary and sufficient condition for continuous auditing, and continuous auditing is a natural way of implementing an automated audit program (Alles et al., 2008; Heffes, 2006; Silsbe, 2007). While continuous monitoring of access controls and authorizations is well developed in computer security applications, monitoring enterprise system configuration and business process settings is an emerging area of development (Alles et al., 2008).

Software and Tools

Continuous auditing tools, techniques, and technology have been widely discussed by academics, the business community, and audit professionals over the years in regards to the impact continuous auditing has on the audit industry (Cantu et al., 2007; Kuhn, 2009; Kuhn & Sutton, 2006; Richards, 2008; Warren & Smith, 2006). The introduction of new methodologies has both advantages and disadvantages to organizational goals due to their current processes, technology platforms, and resources (Kuhn, 2009; Richards, 2008). A new methodology may encourage organizations to invest in a large amount of time and resources to ensure that they receive a positive return on investment on the implementation. The Canadian Institute of Chartered Accountants (CICA) research report *Continuous Auditing* was a hypothetical case study in continuous auditing and suggested auditors to develop a new mind set and acquire the requisite technical skills and knowledge (Warren & Smith, 2006). Three main conclusions from the CICA report are (a) continuous audits are deemed viable; (b) research by academics, experimentation by practitioners, and guidance from setters are necessary; and (c) knowledge, expertise, and work of auditors are essential for continuous auditing activities (Kuhn, 2009; Warren & Smith, 2006). The CICA research report concluded that continuous auditing was viable if the organizations met certain conditions (Kuhn, 2009; Warren & Smith, 2006). The IIA Research Foundation (IIARF) research report *Continuous Auditing: Potential for Internal Auditors* was published in 2003. The IIARF report presented the results of a survey of internal auditors on their use of continuous auditing; indicating that internal auditors use a continuous auditing process in future audits (Warren & Smith, 2006).

According to the 2009 information technology Audit Benchmarking study performed by IIA Research Foundation, 59.8% of respondents did not use continuous audit software compared to 25% who use continuous auditing and 15.2% who stated this type of software is not applicable to their work (IIA, 2009). The top primary software or tool identified by survey participants for continuous auditing is ACL (IIA, 2009). Other primary tools identified include Excel, IDEA Data Analysis Software, Oracle Apex Database, PeopleSoft, Proprietary Data Extraction, and Showcase Query (IIA, 2009). When participants were asked what auditing software is used in their organizations, the majority responded with ACL software (IIA, 2009). The results indicate that ACL software is the preferred tool that benefits organization differently and some responses were negative in regards to using the tool. The results demonstrate that continuous auditing is being implemented and used for different activities among different organizations (IIA, 2009). Additional questions were asked of the study participants in regards to ACL software that indicated the ACL software helps internal auditors to obtain frequency of errors, detect fraudulent activities, and continuously monitor audit controls (IIA, 2009).

Reasons given for the use of ACL by study participants include its ability to look at control weaknesses, the ease with which users can evaluate data, and its ability to provide exception reports (IIA, 2009). Two tools identified as the secondary software applications used by respondents for continuous auditing were ARC and Access, in order of importance (IIA, 2009). Additional comments were provided by the participants in regards to continuous auditing software has improved internal audit capabilities or posed a challenge for organizations (IIA, 2009). The responses included continuous auditing

tools that audit 100% of the population rather than a sample and how auditing tools provide additional information on barriers or challenges presented by the use of continuous auditing software (IIA, 2009).

Alles et al. (2006) described a feasibility study undertaken by the information technology internal audit department at Siemens Corporation, working with the auditors, to create a continuous auditing system by automating the manual audit of its System Analysis and Program (SAP) systems. Since that initial study, the field of continuous auditing has rapidly developed, with vendors offering sophisticated information technology products that facilitate continuous auditing implementation, as well as many other firms having begun to develop continuous auditing processes (Alles et al., 2008). Auditors likely attempted to first automate processes that are in place that auditors are comfortable with, and that are already accepted for auditing and reporting purposes rather than trying to start from scratch (Alles et al., 2008; Brannan, 2008). Audit standards have been written for a business in which technology may be an enabler, rather than the driver of audit processes as it is in continuous auditing, which implies that the current need is for an understanding of automation as the primary mechanism used to bring about continuous auditing (Alles et al., 2008).

Organizations that have implemented continuous auditing technology work towards expanding the use of automation tools to leverage common enterprise resource planning platforms and shared service centers to improve audit and compliance (Brannan, 2008). Organizations envision different ways to utilize continuous auditing tools to support other key business processes such as operational effectiveness through monitoring, assuring process conformance, real-time closed-loop monitoring of key

business performance indicators, and to reduce travel and improve the quality of work for auditors (ADR, 2008; Alles et al., 2008; Brannan, 2008).

A continuous audit management (CAM) program is designed to standardize the way controls are monitored and audits are performed (Cantu et al., 2007; Hunton et al., 2006; Janvrin et al., 2008). The CAM program software creates automation for audits while improving compliance and process effectiveness (Cantu et al., 2007; Hunton et al., 2006; Janvrin et al., 2008). CAM programs provide benefits for organizations, but there are barriers as well. The barriers, both cultural and technical, include training and development needs for future auditors, investment justification, and compliant needs (Alles et al., 2008). While continuous auditing solutions become more sophisticated, organizations move rapidly towards automation (Brannan, 2008).

Implementation

Talecris Biotherapeutics Inc. is a global Biotherapeutics and biotechnology company that discovers, develops, and produces critical care treatments for people with life-threatening disorders in a variety of therapeutic areas (Lombardi & Vasarhelyi, 2009). Talecris Biotherapeutics has successfully implemented continuous auditing and monitoring of financial transactions to mitigate potential control, error, and fraud issues (Lombardi & Vasarhelyi, 2009). This implementation was the responsibilities of the business unit owners, but was instigated and driven by the internal audit function. Talecris has seen enormous benefits to their organization because of this continuous auditing installation (Lombardi & Vasarhelyi, 2009).

The entire implementation process took one year, and although it took longer than expected, continuous auditing technology has benefited the company in countless ways.

Some of the key outcomes included (a) improved risk management and accountability, (b) monitoring and enforcing policy changes, (c) strengthened fraud detection, (d) tightened relationships with vendors to improve procedures, (e) strengthened processes and more stable controls, and (f) improved cross-functional controls (Lombardi & Vasarhelyi, 2009). The company's overall goal was to monitor controls and have the business process owners oversee the progress, and then implement each of the other five business process areas, focusing on one at a time (Lombardi & Vasarhelyi, 2009). The company has the utmost confidence in internal audit and assured that controls are operating efficiently and effectively.

In the Talecris project, managers and business process owners were involved in the creation of control tests, so they could clearly identify what needed to be reviewed (Lombardi & Vasarhelyi, 2009). The ACL consultants created all of the required documents and the company consulted with an outside information technology provider on integrating continuous auditing and monitoring software with the existing SAP installation. A direct link exists between SAP and ACL and an ad hoc basis was utilized to test parameters for filtering (Lombardi & Vasarhelyi, 2009).

After the ACL continuous auditing technology was customized and implemented for Talecris, management implemented auditing controls for each major section of the Purchase to Payable cycle: accounts payable, purchasing, and the financial controls group (Lombardi & Vasarhelyi, 2009). Talecris had business units with separate and different issues that needed to be addressed and the tests were customized to each business' unique needs. Using ACL technology, the financial controls group within Talecris then took

over and led each team in setting up additional controls to address any identified issues (Lombardi & Vasarhelyi, 2009).

Memorial Healthcare System is a leading healthcare provider for over 50 years, with six hospitals and multiple outpatient facilities including the flagship Memorial Regional Hospital and the Joe DiMaggio Children's Hospital (Gutholc, 2008). In a project directed by the finance department, Memorial Healthcare System implemented continuous auditing and monitoring in their Purchase-to-Payment cycle (Gutholc, 2008). In just three months after installing continuous auditing, the team was on track meeting the project return on investments and identified key areas for control enhancements, procedural improvements, and cost savings (Gutholc, 2008).

Memorial Healthcare System consists of a comprehensive array of health services and is one of the largest employers in Broward County, with more than 10,000 employees (Gutholc, 2008). The continuous auditing method implemented in Memorial Healthcare Systems Purchase-to-Payment cycle was designed according to the Committee of Sponsoring Organizations framework (Gutholc, 2008). The COSO framework is recognized as the internal controls standard for supporting Sarbanes-Oxley Section 404 compliance (Gutholc, 2008).

The Memorial Healthcare System is committed to achieving the highest standards of financial governance and management support (Gutholc, 2008). As such, the CFO and Director of Financial Controls began a search for auditing and monitoring solutions that help evaluate and strengthen critical business processes. The continuous auditing project enabled the team to identify key areas for procedural and operational improvements by

pinpointing more than a half-million dollars in potentially recoverable payments that had occurred over the past three years (Gutholc, 2008).

Continuous auditing and monitoring provides increased visibility into higher risk areas of the business, early warnings to management, and enables real-time evaluation of all transactions (Gutholc, 2008). The CFO and Director of Finance have plans to expand the use of continuous auditing solutions to other process areas, including general ledger and payroll (Gutholc, 2008). With the implementation of continuous auditing, Memorial Healthcare System has enhanced their procedures that boost efficiency and eliminate third-party audit commissions while reducing costs (Gutholc, 2008).

In 2006, PricewaterhouseCoopers (PWC) conducted an internal audit profession study that indicated that 50% of internal auditors surveyed said their department has continuous auditing in place. The internal auditor's response was up 35% from the prior year and 31% said they have plans to implement continuous auditing (Chambers, 2006). The PWC survey had only 3% of organizations that have adopted continuous auditing have fully automated the process and more than half combine automated and manual processes (Chambers, 2006).

The adoption of continuous auditing is a major undertaking that requires internal audit to first gain audit committee and senior management support for implementation and then determine where to start the implementation (Anderson & Chambers, 2007; Chambers, 2006). Auditors need to develop and maintain the technical competencies necessary to access, manipulate, and analyze the data contained in unrelated information systems (Anderson & Chambers, 2007; Chambers, 2006). When PWC respondents were asked to describe their principal challenges in establishing a continuous auditing

program, 37% of 380 respondents identified defining activities to be audited, 20% said deploying technology, and 18% said obtaining internal support (Chambers, 2006). Two primary challenges for an organization were identified with 13% cited for determining whether a business unit or internal audit should conduct the monitoring and 12% cited cost (Anderson & Chambers, 2007; Chambers, 2006).

In 2007, PWC conducted another internal audit profession study with results indicating that 43% reported using some form of continuous auditing or monitoring in their audit operations (Anderson & Chambers, 2007). The participation in 2006 was a smaller group than the 2007 study, although 11% described their processes as operational in 2007 compared to 13% in 2006 (Anderson & Chambers, 2007; Chambers, 2006). The PWC 2007 study results indicated an improvement over processes that are not fully developed, comparing 32% in 2007, and 37% in 2006. The statistics suggest a significant increase in the application of technology to auditing processes for corporations as a whole.

Comparing the two PWC studies, there has been an increase in organizations that have implemented or plan to implement an automated process. The advantage of having a continuous auditing process in place has shown to be beneficial and how efficient businesses are becoming. Some of the remaining comparisons between the two PWC studies are indicated in Table 1.

Table 1:
Comparison of PWC 2006 and 2007 Internal Audit Study

Question		2006	2007
1. Continuous auditing processes are			
Is or is likely to be fully automated		3%	8%
Part automated and part manual		56%	81%
Entirely manual		41%	11%
2. Current or planned process			
Frequency			
Daily		9%	9%
Weekly		N/A	7%
Monthly		34%	38%
Quarterly		57%	46%

Note. Permission has been given to use data from PWC (2006/2007) studies.

Risk and Fraud Detection

A typical benefit from continuous auditing for the Talecris organization is that instances of error and fraud are significantly reduced, operational efficiency is enhanced,

and bottom-line results are improved through a combination of cost savings and a

reduction in overpayments and revenue leakage (Lombardi & Vasarhelyi, 2009).

Talecris acquired professional help with the installation from an organization known for audit technology products, ACL Services (ACL, 2009; Anderson & Chambers, 2007;

Chambers, 2006; Lombardi & Vasarhelyi, 2009). The organization, ACL Services, has

20 years of expertise and is a leading provider of audit technology products (ACL, 2009;

Anderson & Chambers, 2007; Chambers, 2006; Lombardi & Vasarhelyi, 2009).

Contributions from ACL Services include continuous auditing and monitoring technology for several business areas. Continuous auditing reduces the burden of regulatory compliance by automating internal controls testing (Lombardi & Vasarhelyi, 2009).

The ACL Purchase to Payment (P2P) tests enables companies to identify overpayments, missed discounts, fraud, and inefficiencies (ACL, 2009). The purchasing card tests allow for identification of unauthorized purchase card usage by efficiently monitoring and analyzing high volumes of purchase transactions (ACL, 2009; Lombardi & Vasarhelyi, 2009). These tests also enhance the effective management of purchase card programs by ensuring all available discounts and rebate opportunities are leveraged. Purchase to Pay was chosen as the initial implementation area due to it presenting the highest fraud risk (ACL, 2009; Lombardi & Vasarhelyi, 2009). The ACL consultants worked closely with Talecris to design metrics for the elements of the P2P tests and to customize the solution for each subsidiary's unique controls, business, operations, and thresholds (Lombardi & Vasarhelyi, 2009). The ACL auditing technology has the capability to work with any source of business data, enterprise resource planning systems, and mainframe or custom-built applications (ACL, 2009; Lombardi & Vasarhelyi, 2009). Talecris followed the Committee of Sponsoring Organizations (COSO) internal controls framework to identify key control objectives and ACL continuous auditing analytics to perform complex transactional analyses and identify control failures (Lombardi & Vasarhelyi, 2009).

One of the greatest advantages of continuous auditing is its independence from the underlying operational and financial systems (ACL, 2009; Lombardi & Vasarhelyi,

2009). Continuous auditing is designed to find transactional anomalies and to identify breaches in controls so you executives can protect the integrity of their business. A continuous auditing and monitoring technology provides granular and individual transactional detail information, which enables identification of fraud, error, and abuse (ACL, 2009; Lombardi & Vasarhelyi, 2009).

Another organization, TELUS, has encountered several challenges identifying duplicate payments, errors, and overpayments over the years (Silsbe, 2007). Other areas that presented a business challenge were maintaining compliance with various regulatory requirements. TELUS is a corporate leader in Accounts Payable innovation, with strong internal controls and a commitment to efficiency and bottom-line results (Silsbe, 2007). TELUS also required a more robust process to identify potential financial leakage and to ensure that both employees and merchants were adhering to the business policies and regulations of its corporate purchasing card program (Silsbe, 2007). The TELUS finance team had a reporting system in place, but felt continuous auditing technology make further operational improvements possible. In an effort to drive best practices in operational excellence throughout the TELUS organization, the use of ACL services and software helps the finance team to minimize profit erosion and gain further efficiencies (Silsbe, 2007). The TELUS organization has plans to expand continuous monitoring to support revenue assurance within the order-to-cash cycle in the near future, based on the early success of its accounts payable and purchasing card-monitoring installations (Silsbe, 2007).

The TELUS finance department now monitors all corporate purchasing card and accounts payable transactions on a daily basis (Silsbe, 2007). The process is simple, yet

comprehensive. Within weeks of implementation, TELUS identified duplicate payments, other errors, and opportunities to increase bottom-line results and strengthen the company's internal control framework (Silsbe, 2007).

When asked to describe the primary focus of continuous auditing processes, more than half of respondents involved in the PWC 2006 study, selected either risk monitoring or audit testing of control effectiveness, and another fifth chose fraud detection. Specifically, 27% of PWC respondents focused on monitoring risk attributes to identify changes in risk profiles, 26% concentrated on audit tests to verify control effectiveness, and 20% focused on testing for unusual or fraudulent activities (Chambers, 2006). In addition, 17% of PWC respondents focused on monitoring individual controls to identify control deficiencies, and another 10% focused their continuous auditing activities on monitoring key performance indicators to identify deteriorating business activities (Chambers, 2006).

Summary

Organizational leaders need to find novel approaches to continuous auditing to ensure the success of future implementations (McGhee, 2008). Current methods fail to address how the quality of information, whether a continuous auditing system is in place or not, rest in the corporate culture and internal control structure of the business organization (Alles et al., 2006; McGhee, 2008). The proposed research study began to fill the gap in the current research by performing a qualitative analysis regarding perceptions and experiences of financial executives on a continuous auditing methodology. With the more robust regulatory requirements, business executives are looking for methods to ensure the financial reporting is accurate and depicts a true

financial picture of the organization. The results of the proposed research expanded on the current body of information by providing recommendations and guidelines for financial reporting and regulatory compliance.

Chapter 3: Research Method

For a business to maintain its competitive edge, management must make decisions based on timely and accurate financial information (Cantu et al., 2007; PWC, 2006; Richards, 2008; Singleton & Singleton, 2005). Continuous auditing has an important role within business as a means to achieve increased operational efficiency, but also to increase productivity and competitive advantage within the audit functions (Singleton & Singleton, 2005). Due to the daily changes within the business surroundings and regulatory requirements, a traditional audit paradigm is outdated and is not suitable to provide real time assurance for making business decisions (Cantu et al., 2007; PWC, 2006; Richards, 2008; Singleton & Singleton, 2005).

The purpose of this qualitative, multiple-case study was to explore the perceptions and experiences of financial executives regarding auditing approaches, both automated and continuous, which include audit processes, business impact, and requirements. Thus, the research questions for the study were as follows:

Q1: What are the experience of executives with the implementation and use of continuous auditing procedures for maintaining their corporate requirements with financial audits, reporting, and regulatory compliance?

Q2: What are the perceptions of executives regarding the introduction of new technology for continuous auditing?

Research data was collected using open-ended questions (see Appendix A) during personal interviews. Based on the data collection design, qualitative software from Qualitative Solutions and Research (QSR), NUD•IST Vivo 8 (NVivo8) was used for coding, analysis, and theme identification from the interview data in this qualitative

study. This chapter includes research methods and design, participants, instruments, data collection, processing, and analysis, methodological assumptions, limitations, and delimitations, and ethical assurances.

Research Methods and Design

A qualitative, multiple-case study was appropriate for the proposed research study, as the approach enabled a more robust exploration of continuous auditing methods (Holloway & Wheeler, 2009; Yin, 2009). Unlike most case studies, which involve single-level analysis, this study explored the auditing process at multiple embedded levels. Contrasting and comparing across the different organizations, each with different business type, technology, management styles, and organizational goals, the findings of the study had wide relevance (Yin, 2009). The approach was optimal for the study because of the inherent ability to gather multiple sources of evidence from qualified participants and to offer convergent perspectives regarding the same phenomenon (Duff, 2009; Yin, 2009). The participants for this research were identified using a current Fortune 500 listing of eastern United States companies that consist of an internal auditing department. The memberships with ISACA and IIA organizations that are tailored to members of the auditing industry assisted in identifying companies on the Fortune 500 listing that have an internal auditing department. Identifying companies that are members of these organizations and appears on the Fortune 500 listing ensured that the appropriate participants were selected. These participants were interviewed to gain knowledge and experience of continuous auditing processes and approaches within their organizations for financial reporting and regulatory compliance.

Using case studies for research contributes to the knowledge of an individual, group, organization, or activity (Yin, 2009). The case study, like other research strategies, was a way of exploring an empirical topic by using a predefined set of procedures (Creswell, 2009; Holloway & Wheeler, 2009; Yin, 2009). A case study approach allows researchers to utilize their skills in regards to asking the appropriate questions, to listen and observe without being bias, and are adaptable or flexible during data collection to ensure more effective data-collection strategies are employed (Alexander & Winne, 2006; Mills, Wiebe, & Durepos, 2009; Wimmer & Dominick, 2005; Yin, 2009). The use of multiple case studies allows a broader range of data and was likely to be more convincing and accurate if based on several different sources of data (Mills, Wiebe, & Durepos, 2009; Yin, 2009).

Understanding the details on implementing audit techniques lends itself to a case study approach to generate specific information. In conducting multiple-case studies, the opportunity presents itself for comparisons within and between diverse organizations. Data collected through interviews assisted in understanding business impacts and regulatory compliance across multiple environments. Additionally, a multiple-case design increases the probability of implementing a case study over a single-case design because single-case designs are vulnerable if the entire study relies on a single case (Alexander & Winne, 2006; Mills et al., 2009; Wimmer & Dominick, 2005; Yin, 2009). More importantly, using two or more cases can be substantial because it can demonstrate replication and common conclusions from more than one case and expand the external generalizability of the findings (Alexander & Winne, 2006; Yin, 2009). To ensure the

research covers barriers and issues of implementation, an identified set of questions were used to instrument the interviews with each participant (see Appendix A).

A case study must include a specific focus and a description of an event, person, or process understood as a specific instance of the studied phenomenon affecting the research, which for the proposed study were continuous auditing methods (Creswell, 2009; Duff, 2007; Holloway & Wheeler, 2009; Yin, 2009). The proposed case study involved exploring the perceptions and experiences of auditing processes and continuous auditing methods (Duff, 2007). One of the most important sources of case study data was the interview; therefore, interviews were conducted throughout this proposed research to gain knowledge and information on business decisions and financial reporting that have been triumphant or ineffective with implementing a continuous auditing methodology (Yin, 2009).

Qualitative multiple-case research methods usually rely on fieldwork that often requires researchers to spend time at the particular sites being studied (Yin, 2009). A case study fieldworker should have a firm grasp on the issues being studied to reduce the information to be sought to manageable proportions (Creswell, 2009; Holloway & Wheeler, 2009; Yin, 2009). Knowledge in regards to continuous auditing and financial reporting are important to ensure a firm grasp of the auditing concepts and discussions. Despite the knowledge, a researcher needs to be vigilant in order to remain unbiased by preconceived personal viewpoints (Yin, 2009).

Participants

The projected sample for the proposed study consisted of two participants from each of ten major organizations for up to 20 participants total until saturation was

reached. The unit of analysis was the organization, and collection of individual data from each participant that was aggregated for each unit of analysis (Yin, 2009). Since the Fortune 500 list changes continuously, after the approval for this case study was granted, a review was completed of the top 100 organizations and participating organizations in revenue to identify for the study. The organizations identified for the study must have more than 100 employees and an internal audit department. Once the organizations have been identified on the Fortune 500 listing, a comparison to the IIA and ISACA members list ensured that these organizations are involved in the auditing industry. This review ensured the right participants are adequately selected for the study.

The next step was to contact each selected organization to identify two potential study participants to represent the organization. Establishing communication channels with the selected organizations were accomplished through professional audit forums and audit organization memberships maintained by the researcher. The targeted audience for the research consisted of business executives who have knowledge of auditing or information technology governance processes relating to their business. A representative sample of up to 20 total participants until saturation was reached was used for the qualitative, multiple-case study that provided an adequate sample set (Creswell, 2009; Duff, 2009; Holloway & Wheeler, 2009; Yin, 2009). The sample consisted of two individuals interviewed from each organization who have experience with various audit leadership roles and responsibilities that may include (a) CFOs, (b) CEOs, (c) audit managers, (d) auditors, or (e) functional consultants who are experts in financial processes and have experience implementing continuous auditing solutions (Creswell, 2009; Duff, 2009; Yin, 2009). Munhall (2007) suggested that no more than 10

participants be used to reach thematic saturation for a qualitative study. Creswell (2009) recommended that long interviews with up to 10 people were sufficient for a qualitative study; although Patton (2004) purported no fixed sample size was necessary for an effective qualitative research inquiry because the data are from multiple sources of information. Therefore, it was anticipated that a sample size of up to 20 participants, consisting of two participants from each organization, was appropriate, as the direct experience of the participants had adequately represent each organization (Yin, 2009). However, the final sample size depended on the point saturation was reached and nothing new was discovered.

The interviewed participants had direct experience working as financial executives at the director level or above, which includes CFOs, CEOs, audit directors, etc. who are experts in financial processes and have experience implementing a variety of continuous auditing solutions. The participants were familiar with the use of technology for continuous auditing processes. The participants selected for this study were from established organizations that operate business within eastern United States and have an internal audit operation. The participants had a thorough knowledge of continuous auditing, information technology governance, and financial operations. As part of the interview, each participant explained their level of knowledge by the years in financial positions, professional experience, and amount of training or education.

Materials/Instruments

Within the methodological framework of the proposed multiple-case study, open-ended questions and interviews were used to explore financial reporting and regulatory compliance (Yin, 2009). The qualitative research interviews seek to describe the

meanings of central themes in the organization of the participants. A qualitative research interview using open-ended questions seeks to cover both a factual and a significance level of understanding, particularly useful for getting the story behind a participant's experiences. The interviewer can pursue in-depth information around the research questions and may require follow up interviews to further investigate their responses.

The research involved open-ended questions to explore continuous auditing processes, financial reporting, and compliance for each organization regarding the implementation and effectiveness of continuous auditing methods (see Appendix A). In this study, research interviews were taken place face-to-face, by telephone, or using the internet. Interviews conducted in person were the primary approach for collecting data, but telephone and e-mail interviews were used for follow-up questions or if it was not possible to conduct an in-person interview. The advantages of e-mail interviewing, as opposed to other interviewing methods, was that qualitative research interviewers have greater access to participants (Opdenakker, 2006; Yin, 2009).

A case study should use multiple sources of evidence to achieve data triangulation (Wimmer& Dominick, 2005; Yin, 2009). By doing so, the findings or conclusions of the study are likely to be more accurate because multiple sources of information are used (Yin, 2009). Therefore, to answer the research questions for this study, two data collection instruments were used. First, an interview instrument was developed and used (see Appendix A) for an initial data gathering from each participant. Open-ended questions are unstructured and it was necessary to interview the participants a second time to build upon or explore the responses to the initial questions (Yin, 2009). The

participants' response to the initial questions in the interviews was used as building blocks grouped into patterns.

In this study, follow-up interview questions were used as needed to corroborate the information gathered during the initial interviews (Yin, 2009). The follow-up interviews with the participants was the second data collection instrument and was conducted in a conversational manner; however, a specific set of questions to gain a deeper understanding about continuous auditing within their organizations has not been created at this time (Yin, 2009). The questions were established for the follow-up interviews after receiving and reviewing the initial responses from the participants.

Each participant was given an explanation of the study and obtained informed consent before starting the research. The informed consent form indicated they had read and understand the details of the study (see Appendix B). A statement about the maintenance of privacy, confidentiality, and the right to decline participation was included on the consent form and discussed with each participant prior to starting the interviews. Two copies of the consent form were presented for signature with one copy provided to the participant and the remaining signed copy placed in safe storage. The method of utilizing the informed consent form instrument promoted trust that builds the foundation of the interview process.

Data Collection, Processing, and Analysis

Like other traditions within the qualitative research paradigm, researchers use case studies primarily when they wish to obtain an in-depth understanding of a relatively small number of individuals, problems, or situations (Yin, 2009). The expectation of the proposed qualitative, multiple-case research study regarding auditing processes, financial

reporting, and regulatory compliance was to provide data that consisted of recommendations and guidelines for continuous auditing processes. The proposed qualitative research methodology was appropriate to explore current perceptions regarding operational models used for the implementation of continuous auditing based on the research provided by Yin (2009). The focus of qualitative research was understanding the user's interpretation or perceived knowledge of auditing and information technology governance (Opdenakker, 2006; Yin, 2009).

Data collection did not begin until approval was obtained from Northcentral University's Institutional Review Board. Potential participants were contacted by telephone or e-mail and invited to participate in the study. The individuals contacted from each organization were a professional responsible for auditing or financial processes and functions. A unique number assigned to the organization during the selection process was used to identify those that wish to participate in the study. The unique identifier was used throughout the study to maintain privacy when collecting and analyzing study data. Each participant was informed that the data was securely stored on a password-protected computer and encrypted. All data will be kept for a minimum of four years at which time all files will be deleted and all paper files will be shredded.

Interviews were conducted to gain information on continuous auditing, financial reporting, and regulatory compliance. All interviews were conducted in a private and secure manner. Follow-up interviews may be conducted to clarify or to gain additional information on the initial responses gathered. Prior to the interviews, participants were briefed on the content and nature of the study, and then provided a signed consent form to indicate their willingness to participate. Participant's confidentiality was a critical aspect

in performing the research study. Each participant response used number coding as a means of identification.

The data collected from the interviews were in the form of written notes, documents shared by the participants, and written analysis notes from the researcher. Once the interview data had been collected, identifying and differentiating some meaning through similar or dissimilar patterns and commonalities were accomplished (Yin, 2009). This allowed the identification of common processes used for financial reporting and misconceptions for using a continuous auditing approach. Comparing and sorting the interview data assisted in preparing the information for using NVivo software for further analysis (Yin, 2009). The data collected were reviewed for patterns or themes because pattern matching was one of the most desirable techniques for case study analysis (Holloway & Wheeler, 2009; Yin, 2009). After the patterns were isolated, further analysis was conducted by creating subsets from each pattern. These results were reviewed in an effort to uncover patterns that were not immediately apparent during the collection process (Yin, 2009). Finally, the process of looking for patterns and themes were utilized to ensure that the inconsistencies in the findings are not dismissed which could indicate barriers or concerns (Bloomberg & Volpe, 2008; Yin, 2009). Once all the patterns and themes are established, they were presented and explained by reviewing the literature.

The hand written notes generated during the interview were biometrically locked in a safe and can only be accessed utilizing a code created by the researcher. The interview notes were subsequently transcribed for data analysis utilizing NVivo8 software to measure, refine, and analyze the data through coding, query, theoretical

sampling, theory testing, and practical application testing tools (Bloomberg & Volpe, 2008; Yin, 2009). NVivo software developed by qualitative researchers with extensive researcher feedback, and designed to support researchers in varied ways of research work along with its associated data (Bazeley, 2007). The notes generated during the interviews were digitally filed and stored on an encrypted hard drive that was password protected which again, was only accessible by the researcher (Bloomberg & Volpe, 2008; Yin, 2009).

When collecting data through an interview process, the researcher must be attentive in order to guarantee that his personal experiences did not interfere with or lead participants in the wrong course (Yin, 2009). The raw case data were entered into the qualitative analysis software package NVivo and coded for analysis. Qualitative software was limited in the types of support it offers for analysis and should never replace, nor be a substitute for, the need for researchers to think (Chan, 2010).

The research included analytic memo writing before, during, and after coding. Substantive analytic memos contribute to the quality of the analysis by rigorous reflection on the data (Saldana, 2009; Yin, 2009). Analytic memos did not simply report data; rather, they tie together different pieces of data into a recognizable cluster, often to show that data are instances of a general concept (Miles & Huberman, 1994; Yin, 2009). Analytic memo writing can serve as an additional code and category-generating method. The coding process for this study began with initial coding, also known as open coding. Initial coding, as a starting point, provided analytic leads for further exploration. The qualitative data were broken down into discreet parts, comparisons for similarities and differences were made. Patterns of variables involving both similarities and differences

among the categories and patterns of processes involving connections in time within the context can be expected in qualitative research (Miles & Huberman, 1994; Yin, 2009). At times research data might not indicate any patterns or themes where each code could look distinctive (Yin, 2009). Cases where there are no patterns or themes, it was helpful to review the research questions to understand what was important and the response that was provided ensuring no underlying concerns or issues that pertain to the proposed research (Miles & Huberman, 1994; Yin, 2009).

This study utilized pattern coding during the second level of coding process. According to Yin (2009), first level coding is a device for summarizing segments of data; whereas pattern coding was a way of grouping those summaries into smaller number of sets, themes, or constructs. Pattern codes pull together vast amounts of material into more meaningful and parsimonious units of analysis (Saldana, 2009; Yin, 2009). Once the similar codes from the first level coding process have been determined and assessed for commonality, then pattern codes were assigned. Then the pattern codes were used as a stimulus to develop statements that describe major themes, patterns, or interrelationships from the data (Saldana, 2009; Yin, 2009).

This qualitative study addressed concerns of two approaches for accuracy and credibility using triangulation (Chan, 2010; Munhall, 2007). The first method was that of triangulation, a method accomplished in many ways. According to Yin's (2009), triangulation uses two or more methods of data collection; is a technique used to increase the validity and reliability of the data collection and interpretation. This procedure can mean comparing data from different informants, known as informant triangulation (Yin, 2009). Creswell (2009) referred to this form of triangulation as Synchronic Primary Data

Source triangulation, performed by interviewing various respondents on the same topic.

The second approach was to check the accuracy of the findings with clarification of the bias that the researcher brought to the study. Yin (2009) stated that a researcher should have a firm grasp on the issues being studied. However, while a firm grasp of the issues being studied can be an advantage to the field worker, the disadvantages of preconceived viewpoints could bias objective analysis. In this study, the research reduced the risk of introducing bias through the development of a convincing and accurate case narrative.

Methodological Assumptions, Limitations, and Delimitations

Research studies have assumptions, limitations, and delimitations from the start of planning through the completion of the research. This study includes the following methodological assumptions about the participants (a) a Fortune 500 company with more than 100 employees, (b) organization must obtain Forbes top 100 ranking categorized with an auditing department, (c) a CFO, CEO, audit manager, auditor, or functional consultant with knowledge of financial processes, and (d) understand that all data were kept confidential.

The primary methodological assumption for this study was that participants associated with an organization categorized with an auditing department would have the experience and knowledge on a variety of auditing methodologies. Their experiences with auditing techniques, tools, and software, plus the challenges with technology would ensure a complete study is performed. This assumption applied to all participants that were interviewed.

Another assumption was the participant's responses were truthful and correct. Knowledgeable responses are necessary for an accurate understanding of the underlying

concerns with adopting a continuous auditing approach. Identifying participants that are in the auditing community or practicing the different auditing methodologies would allow for empirical research data to be gathered. The knowledgeable responses are assumed beneficial for executive management to make strategic business decisions. These assumptions will assist in identifying organizations that would have an interest in the auditing community and would be essential to the research.

One limitation that this research might encounter was the number of responses from the participants and organizations. Although there were two participants from each of the 10 organizations, a possibility of receiving an unbalanced number from each organization exist. Having an unbalanced response could influence the results from one organization's point of view. Another limitation involved the level of expertise of each participant. The approach worked to ensure a balance between the levels of expertise so the results encompass all levels. A way to mitigate the limitations was to group each participant by position held within their organization or to have one collective response from each organization. Prior to gaining NCU's Internal Review Board (IRB) approval or conducting interviews with study participants, feedback was provided from peers within the audit profession to ensure the clarity and content of each interview question.

To increase the reliability of the data gathered for this study, a chain of evidence was maintained (see Appendix C). The chain of evidence principle was to allow an external person the derivation of any data from the research questions to the conclusion documents (Yin, 2009). Along with the reliability of the research data, the validity of this research was important when providing the results. Observing and matching patterns

gathered from the participants was one way to address internal validity of this research, another analytic tactic were explanation building and rival explanations.

Delimitations for the continuous auditing research included other methods of auditing and complying with governance requirements. Responses from organizations that use operational models for auditing and financial reporting that was not in scope of this research may be collected or discussed, but not included in the final research report. Auditing has been a major task to help refine business processes, identifying fraud, and financial adjustments within an organization. This research narrowed the scope to different operational models used for continuous auditing solutions, which include processes, controls, and best practices.

With the variety of auditing methodologies and regulatory mandates organizations are required to adhere to, collecting data for every methodology and mandate was unrealistic. The primary focus was on continuous auditing methodology, both automated and manually performed. The main delimitation for the study was the inclusion of organizations that have experience with a continuous auditing methodology. The organizations were selected due to their prominence in Eastern United States.

Ethical Assurances

Prior to beginning any data collection, NCU's Internal Review Board must grant approval of the dissertation proposal. Participants provided an informed consent form indicating their understanding of the study. In addition, a statement about the maintenance of privacy, confidentiality, and the right to decline participation was discussed with each participant.

When gathering research data, no data were collected that was considered unethical, offensive, or inaccurate. All interview data and survey responses were handled with confidentiality and consistent with the Privacy Act of 1974. The research data was stored on a computer within a password-protected file and only the researcher had access to the raw data. The research results were available upon request to any of the participants and were provided in the format of an executive summary. The research results did not provide any correlation between the responses and participant or organization that participates in the study.

There will always be concerns with preconceived notion and prejudice that was applied to the research, but that can be leveled against any research and was imperative to reduce bias at every extent. Any positive or negative personal comments were avoided that could influence the data gathered. The researcher is a member of professional auditing organizations and a corporate internal audit team member that adheres to professional rules of ethics and business.

Summary

Operational models that are used for continuous auditing implementations, which include processes, controls, and best practices, are not consistent, resulting in the diminished quality of corporate financial reporting (Krell, 2006). Continuous auditing has an important role within business as a means to achieve increased operational efficiency, but also to increase productivity and competitive advantage within the audit functions (Singleton & Singleton, 2005). The proposed qualitative, multiple-case study explored the experiences and perceptions regarding the introduction of technical tools for continuous auditing processes.

The projected sample for the proposed study consisted of two participants from each of ten major organizations who have experience with selection of technology for continuous auditing processes. Participants were experts in financial processes, technology and have experience implementing continuous auditing solutions. The research involved open-ended interviews to explore continuous auditing processes, financial reporting, and regulatory compliance for each organization regarding the implementation and effectiveness of continuous auditing methods (Yin, 2009). Each participant was informed of the details in the study, the maintenance of privacy, confidentiality, and the right to decline participation prior to starting the interviews. The research did not collect any data considered unethical, offensive, or inaccurate. All interview data and survey responses were handled with confidentiality.

Chapter 4: Findings

The purpose of this qualitative, multiple-case study was to explore the perceptions and experiences of financial executives regarding audit processes used with financial audits and the impacts on financial reporting and regulatory compliance. The population of interest in this study consisted of business executives who have knowledge of auditing or information technology governance processes relating to their business. Therefore the intent of the study was to obtain an understanding of the approaches, technology, and the indecision to adopt new continuous auditing methodologies.

The practical management imperative that was addressed within this study was the need for improved understanding and knowledge regarding technology used for continuous auditing. In addition, the management decision related to enhancing business processes to achieve increased operational efficiency, but also to increase productivity and competitive advantage within the audit functions. With this business decision in mind, along with the literature review, two main questions were addressed in this study:

Q1: What are the experience of executives with the implementation and use of continuous auditing procedures for maintaining their corporate requirements with financial audits, reporting, and regulatory compliance?

Q2: What are the perceptions of executives regarding the introduction of new technology for continuous auditing?

The main questions were aimed at exploring what experiences or circumstances were encountered during implementation of a continuous auditing methodology and overall the executive's perception or expectation on the new technology used. These were broad overview questions that were refined to open discussions for exploration of continuous

auditing methodology. Additional sub-questions were formulated to address internal and external factors to a continuous auditing approach and business expectations to adopting a new technology. The interview questions were formulated to collect data and search for emergent themes within different industries.

This chapter contains the results of the research, an evaluation of these results, and a summary of the chapter. Within the results, a sample demographics overview of the participants was presented followed by a detailed discussion of the data collected and the results. Then, an evaluation on the results was presented with respect to the research questions, as well as the literature and related research examined prior to the research commencing.

Results

During the data collections, the companies and all of the participants were assigned a generic identifier (e.g., J4V19 for the first initial of participant in April, last initial of participant on day 19; D5L22 for the first initial of participant in May, last initial of participant on day 22; etc.) to ensure privacy and confidentiality. The transcribed interviews were analyzed through NVivo software to group, categorize, and analyze the data. This software tool helped to identify themes present in which were in line with the research questions.

Sample demographics and code selection. Each of the companies chosen for the research study had more than 100 employees and an internal audit department. A total of 20 participants were originally identified for the study consisting of two members each from company. The participants are business executives who have knowledge of auditing or information technology governance processes relating to their business. Due

to scheduling conflicts and time constraints, 18 out of 20 identified participants actually were interviewed. The participants chosen were from different function levels to offer a well-rounded response for each organization. The sample participant demographics are presented in Table 2.

Table 2:
Sample Participant Demographics

Function	# Participants	Percentage
Audit/Project Lead	3	17%
Audit Manager	7	39%
Executive Manager, Dir, CFO	8	44%
Overall	18	100%

The participating companies varied in size and industries. Table 3 contains the sample demographics for the companies grouped by size and Table 4 contains the companies grouped by industry.

Table 3:
Sample Company Size Demographics

Company Size	# Participants	Percentage
100-499	2	11.1%
500-1000	4	22.2%
1001-5000	6	33.3%
Over 5000	6	33.3%
Overall	18	100%

Table 4:
Sample Company Industry Demographics

Company Industry	# Participants	Percentage
Healthcare	4	22.2%
Government	4	22.2%
Financial/Banking	4	22.2%
Industry	6	33.3%
Overall	18	100%

The demographic questions help establish the auditing methodology that was currently in place and utilized by the participating companies. The companies chosen had various auditing methodologies in place. Table 5 contains the sample demographics for the participants by methodology type.

Table 5:
Sample Audit Methodology Demographics

Audit Methodology	# Participants	Percentage
Risk-based	8	44.4
Continuous	6	33.3
Cyclical	2	11.1
Other	2	11.1
Overall	18	100%

The set of demographic questions identified the different legal, regulatory, or mandates that the companies are required to be in compliance. Due to legal requirements some companies may follow more than one mandate. Therefore, the question allowed more than one response. Table 6 indicates the mandates that are being followed.

Table 6:
Sample Mandates

Mandates	# Participants	Percentage
HIPAA	6	25%
SOX	8	33%
FFIEC	2	9%
Other (GAO, FDIC, SOA)	8	33%
Overall	24	100%

The research interviews indicated the success that each company has made with continuous auditing implementation. This demographic offered a cross section of data that assisted in avoiding bias based on the success of the participating company. Table 7 shows the sample demographics based on the company success with a continuous auditing implementation. The implementation success represented in table 7 is only that of the research interviews that reported a continuous auditing methodology.

Table 7:
Sample Continuous Auditing Success Demographics

Continuous Auditing Success	# Participants
Extremely Successful	0
Moderately Successful	5
Marginally Successful	1
Overall	6

Note. Only 6 out of 18 participants had a continuous auditing approach.

The data gathered was analyzed for recurring themes. Examples of themes detected included: (a) lack of resources/resource management, (b) availability of data, (c) knowledge of technology, (d) budget/cost, and (e) environment, among others. These themes were then utilized to create codes in the NVivo software. The codes, and subsequent search strings, were then run throughout all participant interview notes. In other words, each participant notes were reviewed and marked appropriately if there was an indication within the responses presented any addition meaning or context. Findings for each research question have a separate sub-section identified by subheadings beginning with the two main questions and followed by the sub-questions within the research design.

Q1: What are the experience of executives with the implementation and use of continuous auditing procedures for maintaining their corporate requirements with financial audits, reporting, and regulatory compliance? The first main research question was designed to understand the experiences that have been encountered through continuous auditing with financial audits, reporting, and regulatory compliance. The six sub-questions were developed to support the overarching research question and

subsequent sub-questions. The sub-questions helped to drill down on the internal and external factors that have motivated or caused reluctance to employ continuous auditing capabilities within the organizations.

Budget and cost were the greatest characteristics present. The terms budget and cost were used a total of 34 times amongst 15 out of 18 participants. Managers perceive high set-up and implementation costs for continuous auditing; in addition the participants also identify cost as a barrier for the adoption of this technology. The internal audit departments attempt to automate certain tests that are repetitive and high-volume tasks to increase satisfaction and reduce latency. Establishing the automated tests require extensive training to lessen the learning curve which is expensive and time consuming. Managers also perceive that continuous auditing methodology requires high levels of investment in technology and training, which hinders some companies' adoption of continuous auditing.

Although continuous auditing is perceived initially as an expensive and risky endeavor, it requires a considerable investment and access to data that must be supported by upper management. The participants identified management support as one of the top four themes during the interviews conducted. Twelve participants out of 18 mentioned the need to obtain management support to be successful with the implementation of a continuous auditing methodology. The involvement of management in the adoption of continuous auditing is fundamental and was identified as #4 among the interview themes with 20 occurrences. If management does not perceive continuous auditing as useful, stakeholders are not willing to risk investing in the technology or supporting any efforts made to the change in current processes.

Another theme that was dominant in the participant interviews was the employee competence or knowledge of the technology. Every participant mentioned skills and technological knowledge of continuous auditing methodology and tools; ranking #2 among the themes with 26 occurrences. Continuous auditing necessitates a higher competency threshold because internal auditors and managers are responsible for monitoring internal controls and they must access a varied of systems and databases spanning across different divisions within the same company. A full adoption of continuous auditing does not seem to be possible without knowledgeable personnel who are competent with technological tools.

There are substantive differences in the level of training at the companies interviewed. Some provide one or two courses, while others tailor training according to the auditor's needs. Several of the organizations have rotational programs that roll non-auditors through an audit function for 18 months in order to enable them to acquire a wider scope of business experience. One participant commented on an approach to leverage IT knowledge within the audit department: "creating a domain expert in each area and implementing an IT rotation program within the internal audit department (Participant V4K05)". The purpose of the rotational approach was to reduce the need for outsourcing and increase the level of knowledge transfer.

External factors that can influence or cause reluctance to adopting a continuous auditing approach was the demands that are levied on the organizations for compliance. The heightened demands for improved corporate governance, compliance, and fiscal transparency are not one-time events. Organizations are increasingly calling on internal auditing to help improve performance by identifying areas of revenue leakage,

operational inefficiencies, and fraud. One interviewed participant indicated that continuous auditing requires a paradigm shift from traditional auditing: “Continuous auditing requires not only audit knowledge but technical knowledge and detailed knowledge of controls within the different systems (Participant D5L22)”.

Another interviewed participant shared the fact that caused reluctance in adopting a new methodology approach was the changes that were required to the current business processes. This organization wanted to make the compliance process a simpler and more value-added process, but feared the high cost and lack of training enhanced the new continuous methodology. The upfront expenses, time to establish the new process, resource management, and training were identified during the interviews as reluctant factors to implementing continuous auditing.

Q2: What are the perceptions of executives regarding the introduction of new technology for continuous auditing? The second main research question was designed to understand the perceptions of executive management in regards to the introduction of new technology. The four sub-questions were developed to support the overarching research question and subsequent sub-questions. The sub-questions helped to drill down on the approach used, barriers (if any), and organization outcome to employ continuous auditing capabilities within the organizations.

During this portion of the interviews, the same major three themes (costs, knowledge, and training) were mentioned as barriers encountered when implementing continuous auditing. The organizations that are embracing the new technology and continuous auditing methodology still faced some challenges. Some of the challenges identified include internal auditors lacking the guidance and skills necessary to

implement continuous auditing along with access to company data. Auditors must have access to the organization's databases and systems, and they must know how to use the vast amount of information that the technology can access. Auditors must determine where continuous auditing fits within the business processes and how they can link the process to integrated risk management initiatives and continuous auditing methodology.

Some of the areas that were identified that have influenced organizations in a successful and positive manner include being consistent, operational effectiveness, and adding value. There was a high level of importance of a consistent application of the continuous audit requirements throughout the year. The auditors must exhibit the diligence and commitment to apply the techniques on every audit and perform the required mandated reviews. To ensure a successful operational effectiveness it was critical to understand the data prior to performing tests or reporting results. Gaining this understanding prior to performing the work ensure the accuracy and completeness of the assessment or analysis. Performing these successful assessments or analysis on a continuous basis ensure the continuous auditing methodology was adding value to the organization.

The two main research questions were the broad questions to attain a foundation of the study containing the alignment with the research purpose and problem statement. The ten sub-questions were designed to expand on this foundation and explore the internal and external factors that have contributed to the decision to implement continuous auditing methodology. The framework approach helps qualitative research start with the broad topic and refine the study to specific details and findings (Patton,

2002). The themes that became evident through the ten interview sub-questions will be discussed in the following section.

The ten sub-questions were aligned to explore decision or influence factors, both internal and external, in which the organizations had experienced and the success of their introduction of new technology for continuous auditing. The analysis of these sub-questions began with looking at the overall themes or phrases. The interviews identified 13 themes having three or greater occurrences each, with a total of 223 phrases tagged. Presented in Appendix D is the breakdown of the participants/organization and the number of phrases tagged through their interview session.

Evaluation of the Findings

The biggest barriers with a continuous auditing methodology appears to be the mindset of the organization, the lack of understanding the technology available, and the lack of skills and training with the staff and audit members (Kuhn, 2009; Richards, 2008). The challenges identified center around increasing training, improving the audit tools, and executive support. Some of the continuous audit tools would require improving the business controls and the organization must demonstrate the value of continuous auditing to the executives.

While the anticipated benefits of continuous auditing may be high, the research indicated several hurdles that must be overcome before continuous auditing becomes a reality. A major concern is technical hurdles of moving from manual processes and disparate systems to automated and integrated information systems, but two other hurdles are executive support and training of auditors and staff. While organizations are eager to reduce manual audit hours, most are accustom to the annual audit process and

requirements. The continuous audit debate has made a recent shift. In the past, continuous audit has focused primarily on technological issues. What is currently being debated amongst executives is not can their organization implement, but will they implement and when (Kuhn, 2009; Richards, 2008). Is there a demand for this solution or methodology, if there is, who is willing to pay for it? Future research would assist in answering these questions. Transforming an organization to the continuous audit methodology will not be easy; however, the executives must be ready as auditing domains begin to realize the advantages to moving towards a continuous audit approach.

A dominant theme discovered during the interviews was the employee competence or knowledge of the technology used through auditing. This theme occurred 26 times during the study and indicated that a lack of understanding or knowledge of current tools and technology weigh heavy on the success of continuous auditing. Focused training in the continuous audit approach will be necessary, along with increased training in information systems. The toolset of the new auditor should include various aspects of information and web technology in order to be able to design and maintain the process for continuous audit.

Training is one area that is minimized when reviewing the budget, yet it is one of the most critical items for resources within a domain that is constantly changing. There are substantive differences in the level of training at the companies interviewed. Some organizations provide in-house training or self-taught courses, while others tailor training according to the auditor's needs through conferences or external training. New technology and tools to perform the daily tasks of auditing or financial reporting could hinder the auditor's performance due to being unfamiliar with the new capabilities. One

participant commented on a rotational program that has been implemented at their organization to reduce the need for outsourcing and increase the level of knowledge transfer. When an organization has sudden turnover of employees, precaution is needed to ensure that the proper amount of knowledge transfer is provided to the new auditors performing the financial or auditing tasks. Training should begin at the collegiate level with auditing and information systems courses addressing the continuous auditing domain and methodologies (Alles et al., 2008).

Apart from the driving forces coming from the market and government requirements, organizations themselves may adopt continuous auditing as a tool to help manage their reputations. The increase reporting of a company's information should benefit the company. A company increasing its reporting cycle should reduce uncertainty and enhance investors' perception of the company. The audit approach with more frequent testing or monitoring will ensure the integrity of the business data. Compliance and corporate governance have been a heightened demand on organizations and have an influence on their performance over the years. Organizations are looking at continuous auditing methodologies to help improve performance by identifying areas of inefficiencies and corporate fraud. One participant indicated that market and government requirements necessitated their organization to make a paradigm shift from tradition auditing to a continuous auditing approach. This new approach required not only auditing knowledge but technical knowledge of controls within different systems.

When the interviews focused specifically on the implementation of continuous auditing methodologies, three major themes (costs, knowledge, and training) were mentioned as barriers encountered. The terms, budget and cost, were used a total of 34

times amongst 15 out of 18 participants. Managers perceive high set-up and implementation costs for continuous auditing; in addition the participants also identified the lack of consideration for training costs. Participants stated that executive management perceive that continuous auditing methodologies require high levels of investment in time and resources, which delays the adoption of new technologies.

With any major investment, executive management needs to support the decision to implement new technology and processes. The participants identified management support as one of the top four themes during the interviews conducted. The involvement of management in the adoption of continuous auditing is fundamental and was identified as #4 among the interview themes with 20 occurrences. If management does not perceive continuous auditing as useful, stakeholders are not willing to risk investing in the technology or supporting any efforts made to the change in current processes.

What will cause the adoption of this technology to be evolutionary rather than revolutionary are various impediments to continuous audit implementation regarding people, process, and technology (Alles et al., 2008; Chan, 2010). These impediments were identified and discussed with the participants through this research. Further research would provide the audit community with guidance on new mandate and requirement changes, how to implement continuous auditing techniques and technologies, as well as determining the consequences and benefits.

Research has identified that empirical research is needed. The audit domain is consistently changing and it is imperative that the research community has a voice in the options to address the change. Practitioners and standard setters alike have relied on the

research community for guidance on how to implement continuous auditing techniques and technologies, as well as determining the consequences and benefits (Brannan, 2008).

Chapter 5: Implications, Recommendations, and Conclusions

The purpose of this qualitative, multiple-case study was to explore the perceptions and experiences of financial executives regarding the use of technical tools for continuous auditing and indecision to adopt new auditing approaches. Technology for auditing approaches, both automated and continuous processes, are not being used in corporations due to the reluctance of executives to adopt this approach. Therefore the intent of the study was to obtain an understanding on the challenges and perceptions of continuous auditing.

The literature review identified gaps in the literature exist relating to adoption of new technologies as noted by Brannen (2006a), Vasarhelyi (2006), and Alles et al. (2006). Scholars have published relevant qualitative research studies regarding the introduction of technology for continuous auditing and continuous monitoring processes and methodologies (Alles et al., 2006; Krell, 2006; McGhee, 2008; PWC, 2006). However, no qualitative studies have formulated a consistent set of recommendations or guidelines for continuous auditing or explored perceptions and experiences of financial executives regarding the incorporation of technical tools for continuous auditing. The review of literature and research indicates that operational processes used for continuous auditing methodologies are not consistent (Gross, 2009). Therefore, a qualitative approach was employed to explore perceptions of continuous auditing through personal interviews. Interviews were conducted with a total of 18 participants to explore their perceptions, experiences, and satisfaction regarding continuous auditing methodology and new technology within their organization.

During the research process a number of limitations were noted such as the limitation this research might encounter with the number of responses from the participants and organizations. Although there were two participants from each of the 10 organizations identified, a possibility of receiving an unbalanced number from each organization exist. Another limitation involved the level of expertise of each participant. The research approach worked to ensure a balance between the levels of expertise so the results encompass all levels.

The results of this research study not only collaborated with existing literature on certain aspects of continuous auditing methodology but also added to the gap that seemed to exist due to the lack of studies found on continuous auditing. Although continuous auditing has been available for several years, there are still doubts and concerns about how to implement successfully and what is fully entailed with adopting the new methodology. A continuous auditing methodology is not a process that can be implemented the same for every organization. Executives must take into account their current technical environment, resources, and skill level of the employees before deciding to implement a continuous auditing methodology.

This chapter begins with a detailed discussion on implications of the study. This discussion will evaluate the findings and logical conclusions through the lens of each research question. This section will also outline any limitations as well as how the interpretation of the results adhere to the purpose, significance, and past research studies found during the study. Recommendations for practical application of the findings were offered. Finally, future research recommendations were made to potentially strengthen or

test the findings presented here. This was followed by an overall conclusion and summary of all key points outlined throughout this research.

Implications

The specific problem was technology for auditing approaches, both automated and continuous processes, are not being used in corporations due to the reluctance of executives to adopt a new or different approach. The implications of this study and the interpreted results of the findings may prove noteworthy for organizations and their endeavors to achieve increased operational efficiency, but also to increase productivity and competitive advantage within the audit functions. As regulations become more prevalent, the demand for rapid and efficient auditing processes will increase (ACFE, 2010; ACL, 2009).

The overarching research question was developed to determine how organizations implemented continuous auditing and maintained their corporate requirements while keeping the business impact at a minimum. Maintaining the budget or cost, to include new technology and training were the greatest characteristics followed by having the knowledge of new technology. A 67% of participants indicated that a major concern was the lack of executive management and stakeholders support in moving to a new continuous auditing methodology.

The two primary research questions explored the experience and perceptions regarding the use and implementations of continuous auditing. Based on the data gathered from the transcribed interviews, 89% of the participants indicate that their organizations uses some form of continuous auditing or have performed a business analysis on the benefits of continuous auditing. Taking all evidence into account, two

participant companies were coded as having not implemented a continuous auditing approach, however has performed a business analysis.

Research Question 1. Research question 1 addressed the implementation and use of continuous auditing for maintaining corporate requirements with financial audits, reporting, and regulatory compliance. Sub-questions #1 through #6 provided the subtext for analysis. Three major themes were derived from the interview process concerning these sub-questions. Resource management, budget, and knowledge of their environment were driving thoughts of the participants.

Resource management. Data from the participant interviews clearly indicated that resource management was a driving factor for being reluctant to implement a continuous auditing approach within their organization. As organizations continue to evolve to meet auditing and financial needs and changing processes, special attention is needed to maintain the people, skills, and technologies required (ACFE, 2010; Gross, 2009). Lack of competency and appropriate skill sets, shortage of auditors, and retention are concerns when adding or changing an existing business process. The introductions of a complex tool require extensive training and reduce the resources available to continue working towards the business schedule.

Budget. Another reluctant factor to implement a continuous auditing approach was the high cost associated with the change. As the #1 theme, with 34 occurrences, budget was considered both positive and negative for adopting a continuous auditing methodology. Executives perceive a high set-up and implementation costs. The executive management team must understand the business impact and associated cost, training, and resources required to successfully implement a continuous auditing

methodology (Brannan, 2008; Chan, 2010). Although some participants considered the implementation of the continuous auditing technology as a positive solution for the business, it comes with a large cost. Continuous auditing was an expensive approach due to the amount of time devoted by the resources, training, and upgrading current infrastructure (Krell, 2006; Kuhn, 2009).

Knowledge of environment. The majority of the participants, 78%, stated that having an understanding of the current environment assist in the decision to adopt a continuous approach or not. Once a slow paced and conservative industry, accounting organizations underwent significant changes at the turn of the millennium, assumed largely by the rapid changes in its information technology environment and new regulatory requirements for financial reporting due to the recent financial scandals (ACL, 2009; Kuhn, 2009; Richards, 2008). The environment needs to have four standard principles of integrity, security, availability, and maintainability to ensure a successful implementation. Integrity provides confidence that the system is complete, accurate, and timely when performing continuous auditing. To protect the business data, security needs to be in place to identify unauthorized access to databases and systems. The research literature indicated a concern when implementing new technologies into existing business systems due to the possibility of masking underlying system problems (Alles, Kogan, & Vasarhelyi, 2008; Kuhn, 2009). Availability and maintainability provide assurance that the data was ready and accessible when required to perform testing. Executive management need to rely on the audit manager or lead to provide an overview of the environment to ensure that the decision to introduce something new into the existing environment does not cause any issues. Information technology governance implies a

system in which all stakeholders, including the board, internal customers, and in particular departments such as finance, have the necessary input into the decision making process (Gutholc, 2008; Kuhn, 2009; Silsbe, 2007).

Research Question 2. Research question 2 addressed the perceptions of introducing new technology into the existing environment for continuous auditing purposes. Sub-questions #1 through #4 provided the subtext for analysis. Four major themes were derived from the interview process concerning these sub-questions. Budget/cost, training, Management support, and knowledge of technology were driving thoughts among 76% of the participants.

Budget/cost. Although budget and cost where identified in the first research question, the same themes surfaced in the areas of implementation barriers. Continuous auditing can provide benefits to the organization including cost recovery, efficiency, and fraud-prevention benefits making this method a prudent choice for executives to adopt as part of their auditing strategy (Krell, 2006; Kuhn, 2009). An 83% of the participants communicated concerns with the expense that was required when implementing or making a change to the existing business process for auditing. Poor budgeting or not making enough budgets available have been hurdles that hindered some implementation progress.

Training. When an organization adopts continuous auditing, auditors are required to have knowledge of information systems and data analysis skills (Brannen, 2006b). Focused training in the continuous auditing domain is necessary, along with increased training in the operations of available tools. The tool set of the new auditor should include various aspects of system and analytical technology in order to be able to

design and maintain the process for continuous auditing. One aspect for continuous auditing was the creation of routine scripts or testing that was performed on a continuous basis. A 67% of the participants identified training as a requirement for a successful use of continuous auditing methodology. As suggested during the CICA research, auditors should develop a new mindset and acquire the requisite technical skills and knowledge for continuous auditing (Warren & Smith, 2006).

Management support. The published results from the continuous auditing and monitoring studies explain benefits and business process improvements, but lacks in providing guidelines and recommendations on financial reporting and regulatory compliance both advantages and disadvantages (Alles et al., 2006; Krell, 2006; Kuhn, 2009; McGhee, 2008; Osborne, 2006; PWC, 2006; Vasarhelyi & Halper, 1991). Many organizations have been evaluating the introduction of continuous auditing to support regulatory control assessment requirements over the past several years. A 67% of the participants indicated that one barrier observed was the lack of upper management support on the introduction of a change to the business process. Therefore, it was important for the executive management team to support and understand the short- and long-term objectives of continuous auditing. One of the lessons of the recent financial meltdowns shared by both financial and nonfinancial organizations is that organizations need to understand the risks they face and those risks can change (Chan, 2010). Upper management supporting the effort to introduce a change into the business processes shows the commitment to the new technology and methodology. The line of business managers then makes the efforts to understand and adopt the decision to accept a continuous auditing approach. However, many executives still have not adopted a

continuous approach due to misperceptions and unwillingness to adapt to a new technology (Chan, 2010). It is important for senior management to step back and consider its long-term strategy; define a clear vision of where it wants the firm to be in two, three, or even five years; and take definitive steps to translate that vision into a program of activities (Brannan, 2008).

Knowledge of technology. The utilization of information technology in modern audits have grown significantly in recent years due to both technological developments and changing regulatory environment (Alles et al., 2008; Janvrin et al., 2008). While the benefits of continuous auditing may be high, 89% of the participants identified a concern or barrier for not understanding the current technology or continuous auditing approach. Two of the biggest hurdles identified are with the stakeholders buy-in and training of the resources. The resources need to have an understanding of how the new tools or software relate to the current systems in place. Previous research suggested that audit software reduces the time for working paper preparation and substantial audit results (Gross, 2009; Kuhn, 2009). Another area of concern was how the new continuous technology accesses the business data through databases or systems. It was critical to determine the foundation components for a continuous auditing methodology to ensure that the approach provides the validation of the business environment.

The findings correlated with the significance of the study in that executive management make choices on continuous auditing tools for their business. The introduction of new legal and regulatory mandates has increased the need for dependable controls, as these regulations can invoke harsh sanctions upon those failing to comply (ACFE, 2010; AICPA, 2007; Richards, 2008). Understanding the business impact from

continuous auditing on financial reporting and regulatory compliance are important to the success and future growth within the industry. It is important for senior management to step back and consider its long-term strategy; define a clear vision of where it wants the firm to be in two, three, or even five years; and take definitive steps to translate that vision into a program of activities (Brannan, 2008).

Recommendations

All research should attain a goal of either offering practical application of the findings or provide recommendations for future research. The research study presented here includes findings and interpretation that can be attributed to foundation for future research. This portion of the study included the recommendations for applications of this study. First presented are general practical applications. Second, future research recommendations were made.

Practical applications. The study findings have practical applications for executives because it was those individuals who generally make the business decisions.

As a technology driven methodology, continuous auditing provides for timely identification of anomalies or control gaps for financial reporting purposes (Alles et al., 2006; Krell, 2006; Kuhn, 2009; McGhee, 2008; Osborne, 2006; PWC, 2006).

Continuous auditing is a proactive approach rather than a reactive approach. Continuous auditing assists management with allocating resources to focus on high risk or significant areas of exposure to organizations.

As organizations are expanding into global businesses, it is important for executives to have a global vision with the move towards a new auditing methodology. Executives must understand the advantages and disadvantages of any new technology

that is introduced into their business process (Kuhn, 2009; Richards, 2008).

Understanding the characteristics of continuous auditing and the associated cost, training, and support required to be successful with implementing a new auditing approach

Recommendation for future research. Although continuous auditing tools, techniques, and technology have been widely discussed over the years in regards to the impact continuous auditing has on the audit industry, additional research would be beneficial (Cantu et al., 2007; Kuhn, 2009; Kuhn & Sutton, 2006; Richards, 2008; Warren & Smith, 2006). Strengths of qualitative case studies are the importance of the findings and recommendations (Creswell, 2009). Most of the larger organizations are becoming global businesses. By conducting this research with participants from global organizations allow the opportunity to discover whether there are similar cases in other countries. By conducting a similar study outside of the United States, researchers may be able to generalize the findings to a wider audience.

Research into continuous auditing methodology has been performed and theoretically as well as empirical research is needed to further educate executives on continuous auditing. The introduction of new methodologies has both advantages and disadvantages to organizational goals pertaining to their current processes, technology platforms, and resources (Kuhn, 2009; Richards, 2008). Future research is needed on a larger scale to analyze options and tools available to make the paradigm shift to a continuous auditing methodology. Educating the executives on the options that are available to assist in enhancing their auditing approach provided them with research to make a sensible business decision. The budget, technology, and resources are the

impediments for some organizations on moving to a continuous auditing approach (Kuhn, 2009; Richards, 2008).

Future research should address opportunities available with new technology that addresses updated mandates for financial reporting. Technology changes rapidly and future research would reveal supplementary opportunities for business executives to consider for their auditing solutions. Additionally, future research should focus on auditing enhancements that have evolved to address business strategies on compliance mandates and financial reporting. The auditing industry continues to provide guidance and standards to organizations at a common or high level; therefore future research should focus on these changes within the auditing communities and provide details that could assist in business strategies.

Conclusions

The results and findings of this study conclude that continuous auditing is not feasible for all organizations; however with the proper stakeholder support, budget, and training, continuous auditing could have benefits to the business processes. In today's regulatory environment, executives are finding their audit resources are consumed with the monitoring and testing of internal controls to meet the regulatory and compliance demands (Brannan, 2008; Chan, 2010; Dowling & Leech, 2007; PWC, 2006). With this in mind, operational and financial audit activities remain unchanged. However, internal audit organizations are turning to the latest technologies to assist with efficiencies and productivity that drive business performance and compliance.

Organizations are continually exposed to significant errors, frauds, or inefficiencies that can lead to financial loss and increased levels of risk (Krell, 2006;

Kuhn, 2009). An evolving regulatory environment, increased globalization of businesses, market pressure to improve operations, and rapidly changing business conditions are creating the need for more timely and ongoing assurance that controls are working effectively and risk was being mitigated (Alles et al., 2006; Krell, 2006; Kuhn, 2009; McGhee, 2008; Osborne, 2006; PWC, 2006). It was evident that a new auditing approach, one that provides a sustainable, productive, and cost-effective means to address the changes to regulatory and compliance mandates, was essential.

The biggest impediments appear to be the mindset of the executives, the lack of budget or resources, and the lack of skills or training of the resources and audit team members (Kuhn, 2009; Richards, 2008). One perception identified centered on the enhancement of audit tools and proper training with the new technology. A business analysis could help the organizations with identifying the value of continuous auditing to the business processes.

One of the more compelling findings was every participant identified there were not enough trained resources or budget to implement new technology for a continuous auditing approach. Business analysis has indicated that there was benefit added with the auditing paradigm shift, but it was not necessarily budgeted with a priority. Furthermore, the study concluded that if the organization could afford a change towards a continuous approach, they have confidence that the new methodology ensure a more timely and efficient reporting for their business.

Practical applications indicate that this study was important for executives in the move towards a new auditing methodology. Executives must understand the advantages and disadvantages of any new technology that is introduced into their business process.

For the executives to understand the characteristic of continuous auditing, it is important for them to understand the cost, training, and support required to be successful with implementing a new auditing approach (Brannan, 2008; Chan, 2010).

Future research is needed on a larger scale to analysis what options and tools are available to make the paradigm shift to a continuous auditing methodology. Other studies including qualitative and quantitative studies should be conducted to validate results by exploring new technologies and new mandates for financial reporting. The findings, recommendations, and conclusions provide a broader insight to existing knowledge of continuous auditing and provide critical insight to assist executives in understanding the shift to new auditing methodologies.

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Appendices

*Appendix A:**Interview Questions*

The interview will start with some demographic questions:

- (1) What is your current position and title within the organization?
- (2) How long have you been employed by the organization?
- (3) Have you held another position with the organization? If yes, what was the position?
- (4) In what category would you place your organization?
 - (a) Healthcare
 - (b) Government
 - (c) Financial/Banking
 - (d) Education
 - (e) Industry
- (5) What is the primary function or service provided by your organization?
- (6) Approximately how many individuals does your company employ?
 - (a) 1 – 99
 - (b) 100 - 499
 - (c) 500 – 1000
 - (d) 1000 – 5000
 - (e) Over 5000

(7) What auditing methodology or approach does your organization follow to ensure regulatory compliance?

- (a) A risk-based auditing
- (b) A continuous auditing
- (c) A cyclic approach
- (d) Other, please explain

(8) Does your organization have formal written financial reporting and auditing policies?

(9) To your knowledge is your organization subject to legal, regulatory, or industry mandates? If yes, what are they?

- (a) HIPAA
- (b) SOX
- (c) FISMA
- (d) FFIEC
- (e) Other (Identify and describe the mandates)

(10) On a scale of 1 to 10, how would you rate your knowledge of the principles and practices of a continuous auditing environment?

- (a) How did you determine your rating on the above scale?

Research Questions and Sub-questions

The overarching question, “How has an organization implemented continuous auditing and maintained their corporate requirements while keeping the business impact at a minimum?” was addressed by the following questions:

Interview Question Q1. *What is the experience of executives with the implementation and use of continuous auditing procedures for maintaining their corporate requirements with financial audits, reporting, and regulatory compliance?*

Q1-1. What internal factors within your organization would motivate, or motivated, you to employ continuous auditing capabilities in your organization?

Q1-2. What factors external to your organization would motivate, or motivated, you to employ continuous auditing capabilities in your organization?

Q1-3. What internal factors cause you to be reluctant to employ continuous auditing capabilities in your organization?

Q1-4. What external factors cause you to be reluctant to employ continuous auditing capabilities in your organization?

Q1-5. Are you of the opinion that industry leaders in general are reluctant to implement continuous auditing capability? Why?

Q1-6. What extent may external auditors rely on audit evidence generated by internal auditors for financial audits?

Interview Question Q2. *What are the perceptions of executives regarding the introduction of new technology for continuous auditing?*

Q2-1. What continuous audit approach is being used in your organization? What were your original reactions to this process and why?

Q2-2. What extent has continuous auditing influenced your organization, positive and negative?

Q2-3. In what areas must internal audit and management work together in the implementation of a continuous auditing program?

Q2-4. What barriers (if any) were encountered when implementing continuous auditing?

Appendix B:
Informed Consent Form

Exploring Experiences and Perceptions of Executives Regarding the use of Continuous Auditing. You are invited to participate in a research study being conducted for a dissertation at Northcentral University in Prescott, Arizona. The purpose of this qualitative, multi-case study is to explore the practice of continuous auditing in support of financial reporting and regulatory compliance. The study involves an exploration of continuous auditing methods from a sampling of Fortune 500 information technology services organizations with financial and auditing functions. I am interested in your opinions and reflections about continuous auditing.

Participation requirements. You will be asked to complete an interview about continuous auditing processes, controls, and solutions. A personal interview would follow to clarify and discuss the topic in further detail. The session will last one to two hours.

Research Personnel. The following person is a doctoral researcher involved in this research project and may be contacted at any time: *Susan Cart, 321-632-7631, carts@bellsouth.net, Cocoa, Florida.*

Potential Risk/ Discomfort. Although there are no known risks in this study, some of the information may be business related. However, you may withdraw at any time and you may choose not to answer any question that you feel uncomfortable in answering.

Potential Benefit. There are no direct benefits to you of participating in this research. No incentives are offered. The results will have scientific interest that may eventually have benefits for people in the auditing and information technology industries.

Anonymity/ Confidentiality. The data collected in this study are confidential. All data are coded such that your name is not associated with them. In addition, the coded data are made available only to the researcher associated with this project. The data will be residing on a computer that is encrypted and password protected. Data will be retained for four years and then destroyed at that time.

Right to Withdraw. You have the right to withdraw from the study at any time without penalty. You may decline to answer any question if you do not want to answer.

I would be happy to answer any question that may arise about the study. Please direct your questions to *Susan Cart, 321-632-7631, carts@bellsouth.net, Cocoa, Florida*

Signatures

I have read the above description of the Exploring Experiences and Perceptions of Executives Regarding the use of Continuous Auditing study and understand the conditions of my participation. My signature indicates that I agree to participate in the experiment.

Participant's Name: _____ Researcher's Name: _____
Participant's Signature: _____ Researcher's Signature: _____
Date: _____

*Appendix C:**Chain of Evidence*

Case Study Questions



Case Study Interview (Follow Up) Questions



Case Study Database



Case Study Report

Appendix D:

Number of Tagged Phrases per Participant/Organization

Participant Code	# of Tagged Phrases (participant)	# of Tagged Phrases (organization)
A5M09	14	26
J5S09	12	
M4T10	20	35
C5M10	15	
K4L12	14	23
J4H12	9	
V4K05	13	22
A4S05	9	
J4V19	13	21
S4L19	9	
A5M10	16	30
G5H10	14	
A5M11	11	23
M5N11	12	
J4L08	5	14
M4A08	9	
D5L09	13	28
B5B09	15	
Overall	223	223