

**THE UNINTENDED CONSEQUENCES OF SARBANES-OXLEY ON TECHNOLOGY  
INNOVATION AND SUPPLY CHAIN INTEGRATION\***

Vicky Arnold  
University of Central Florida  
University of Melbourne

Tanya Benford  
University of Central Florida

Joseph Canada  
University of Central Florida

John R. Kuhn  
University of Central Florida

Steve G. Sutton  
University of Central Florida  
University of Melbourne

May 2007

\* This research was funded by the Institute of Internal Auditors – Research Foundation. The authors wish to thank the IIARF for their generous funding and Miklos Vasarhelyi, Chris Wolfe, Bruce Dehning, Jean C. Bedard and two anonymous reviewers for their feedback on earlier versions of the paper.

# THE UNINTENDED CONSEQUENCES OF SARBANES-OXLEY ON TECHNOLOGY INNOVATION AND SUPPLY CHAIN INTEGRATION

## Abstract

This paper reports the results of a series of case studies conducted to explore the impact of the Sarbanes-Oxley Act of 2002 on the performance of **small and medium-sized enterprises (SMEs)**. This issue is critical as the SEC and the PCAOB continue to defend the requirement that SMEs adhere to the internal control reporting requirements of Section 404 in the Act, albeit at a revised level of expectation focusing on more of a top-down risk-based approach. Cross-sectional case study data is used to explore the impacts of SOX on SMEs adopting organizational theories as a lens for observing behavior and outcomes. The results of the study confirm that there are both benefits and costs associated with SOX compliance. All of the organizations studied experienced substantial improvements in enterprise risk management approaches. However, the level of difficulty experienced by the various organizations in implementing SOX requirements was highly variable and could be traced back to the underlying factors in structural inertia theory: size, complexity, experience with change, experience with strict controls, and adaptability. Perhaps the most important finding is that SOX does impact organizational flexibility to various degrees as predicted by theory; and this impact can in turn affect production cycle times, information technology investment, supply chain performance, and ultimately market competitiveness.

# **THE UNINTENDED CONSEQUENCES OF SARBANES-OXLEY ON TECHNOLOGY INNOVATION AND SUPPLY CHAIN INTEGRATION**

## **I. INTRODUCTION**

The Sarbanes-Oxley Act of 2002 (SOX) was signed into law by the U.S. in July, 2002, with the express purpose of making financial reporting of publicly traded companies more reliable and transparent for stakeholders (Allen 2002). Key components of SOX address issues related to corporate governance, management reporting on internal controls, and auditors' assurance over management's assertions related to internal controls. All companies required to file reports under either Section 13 (a) or 15 (d) of the Securities Exchange Act of 1934 (with limited exceptions) must adhere to the new guidelines for internal control reporting (SOX 2002). SOX impacts publicly traded companies whether they are located in the U.S. or elsewhere as long as they meet the guidelines prescribed under the 1934 Act (e.g., Taub and Leone (2005) report that around 300 European companies are impacted).

While SOX has been viewed by many as one of the most important pieces of legislation related to financial reporting and the protection of the public interest (Canada et al. 2007), many within the corporate environment have questioned whether the benefits outweigh the costs (Holstein 2006). The most contentious discussions regarding SOX compliance pertain to the impact on small and medium-sized enterprises (SMEs). One of the primary concerns expressed by the Securities and Exchange Commission (SEC) has been one of the unintended consequences of SOX—the decrease in small-cap companies listed with the SEC. Graham et al. (2005, 4) note that 380 firms de-registered and de-listed to trade on pink sheets between 1996 and 2003, but 198 of these occurred in 2003 providing some evidence of active de-listing after facing SOX implementation. Similarly, O'Connor (2005) notes a substantial decrease in small-cap companies participating in the U.S. initial public offering (IPO) market during the first half

of 2005 while the London Stock Exchange's AIM experienced substantial growth in registrations (i.e. 148 non-U.K. companies listed on the exchange at the end of 2005—double the number of registrants prior to 2005). While no U.S. companies launched IPOs on non-U.S. exchanges ten years ago, more than a dozen went public on the U.K. exchange in 2006 (Macey 2007). The Shumer-Bloomberg-McKinsey report (2007) notes that in the first 10 months of 2006, U.S. Exchanges had only one-third the market share of global IPOs that they had in 2001. Both the London and Hong Kong exchanges have recently surpassed the U.S. in the global market for IPOs (Macey 2007).

In response to the de-listings on U.S. exchanges and the increased listings on non-U.S. exchanges, the SEC and Public Company Accounting and Oversight Board (PCAOB) sponsored roundtable discussions directly addressing the impact of SOX on SMEs. These discussions yielded a litany of concerns about the potential impact on business operations (Katz 2006). These concerns are reiterated in the Shumer-Bloomberg-McKinsey report (2007) that was prepared for consideration by the U.S. Senate, and that highlights SOX as a key component of a growing threat to U.S. Exchanges' financial markets leadership position. Clearly, the cost of SOX 404 implementation for SMEs has been the most vocalized concern (e.g. Katz 2006; Reason 2006). Perhaps of even greater concern, however, are the unintended consequences of SOX regulations on the ability of SMEs to maintain competitiveness in the marketplace. Maintaining competitive business processes is a concern that spans multiple dimensions that are perceived to negatively impact innovation, job creation, and global competitiveness (Reason 2006). These impacts are viewed as primarily growing from the restrictiveness of intricate internal control structures that are incompatible with many SMEs' needs for fast-changing and flexible structures (Katz 2006). Additionally, the cost of SOX is seen by many SMEs as directly drawing funds away from

research and development activities that are so critical to maintaining current competitiveness and spurring future growth (Leffall 2006). One recent survey of companies with under \$1 billion in revenue reported average costs of \$563,000 associated with lost productivity (Hartman 2006). This raises concerns as to whether organizations become less effective in meeting supply chain and other related business objectives as they become more consumed with meeting internal control objectives to the detriment of organizational flexibility and agility.

While some SMEs' management have noted that they may need to be a private rather than a public company in order to survive, de-listing or remaining private is not necessarily an automatic solution to avoiding compliance with SOX 404 requirements. Many companies required to report under SOX 404 outsource non-core competencies to service organizations (e.g. payroll, data center hosting, credit card transaction processing, etc.). Many organizations have also developed very tightly coupled supply chains whereby operations that might have once been completed in-house are now completed by a cadre of suppliers linked through electronic communications and shared data. These outsourced and supply chain related activities frequently have a financial impact resulting in the requirement that management of the company covered under SOX assess the internal controls of the partner organization as they relate to activities affecting that company. Thus, many SMEs that might otherwise not be covered under SOX are forced to meet the same stringent guidelines for internal control reporting as a result of being a key supplier or outsourcing provider to an organization that is required to report under SOX 404.

While the SEC has been sensitive to the concerns of SMEs with repeated delays in the implementation date, the latest delay is relatively small with non-accelerated filers required to begin reporting management's assessment of internal controls with their first fiscal year-end on or after July 15, 2007. In addition, the PCAOB has revised Audit Standard No. 2 (AS2) and the

SEC has supported the directions put forth within the new internal control standard. Both AS2 and the new SEC guidance provide for a more top-down risk-based approach to identifying key financial controls and defining the scope of management's assessment over internal controls (SEC 2007). Thus, as the debate continues to rage, the SEC remains in a position of being able to further delay, rescind and/or modify internal control assurance requirements (SEC 2006).

The purpose of this study is to investigate the impact of Section 404 internal control reporting and assurance requirements on the business performance capabilities of SMEs. Public outcry by many SME's top management suggests that increased emphasis on internal controls will affect the organizational agility and strategic investment in key development areas such as information technology and supply chain collaboration. Further, the lost agility threatens to handicap the cycle time SMEs can achieve in reacting to trading partner needs across supply chains. Accordingly, the research in this study focuses directly on experiences of SMEs who have already complied with the Section 404 guidelines in order to better understand the actual impacts of SOX on business performance. This focus includes a variety of business aspects including enterprise risk management, manufacturing flexibility, agility in reacting to changing business requirements, investments in IT and other strategic initiatives, and the absorption of SOX compliance costs into existing budgets. Given this purpose, a series of case studies was conducted in order to systematically examine the effects of SOX on different types and sizes of SMEs along with the strategies used to achieve SOX objectives.

The remainder of this paper is divided into five sections. Section II examines various aspects of concern in overall enterprise risk management and presents a series of specific research questions as a basis for understanding the overall issues. Section III presents the methodology, Section IV documents the discoveries uncovered within each of four SMEs

studied, and Section V presents a closer examination of the research questions through an integration of the findings across the four SMEs. Section IV summarizes the overall findings and provides some perspectives on future research opportunities with a particular focus on how emerging technologies could ease concerns through efficient automation.

## **II. UNDERSTANDING SMEs AND SOX: THE RESEARCH QUESTIONS**

Lost in the discussion of the potential negative impacts of SOX on SMEs are the perceived benefits of SOX 404 guidelines. These benefits were summarized in comments by Michael McConnell (managing director of Shamrock Capital Advisors) during his panelist comments at the fourth SEC/PCAOB panel on SOX and its application to small-cap companies:

“the preliminary benefits investors are witnessing include enhanced transparency, improved corporate governance, and better business processes and financial statements” (Shaw 2006).

Analogously, the improvement in internal control monitoring processes should enhance an organization’s enterprise risk management. Discussions and frameworks for enterprise risk management that have evolved post-SOX focus on organizations’ identification and prioritization of risks, monitoring and mitigation of key risks, and strategic planning for improved processes leading to reduced risk (Tillinghaust-Towers Perrin 2001; Treasury Board of Canada Secretariat 2001; Arnold et al. 2004). The various aspects of improvement noted by McConnell during the SEC/PCAOB panel discussion are key components of improved enterprise risk management. As such, the overarching research question for this study which forms the first research question of interest can be stated as:

*RQ1: Does the implementation of SOX 404 reporting requirements assist SMEs in improving enterprise risk management processes?*

To really understand the impact on enterprise risk management, defining the scope of enterprise risk management is critical. The Committee of Sponsoring Organizations of the

Treadway Commission (COSO 2004) offers the following definitions:

*“Enterprise Risk Management provides a framework for management to effectively deal with uncertainty and associated risk and opportunity, and thereby enhance its capacity to build value.*

*Enterprise Risk Management provides enhanced capabilities to align risk appetite and strategy; link growth, risk and return; enhance risk-response decisions; minimize operational surprises and losses; identify and manage cross-enterprise risks; provide integrated responses to multiple risks; seize opportunities; and rationalize capital.”*

The first definition lends itself to a focus on the implementation of rigid control structures that identify problems and provide mechanisms for assuring identified problems are documented and mitigated. However, the second definition raises the need to also focus on balancing controls with strategy and assuring that operations work effectively and efficiently. Herein lies the concern voiced by many SMEs—that SOX requirements actually hinder an organization’s strategic behavior and potentially have a strong negative impact on operations.

Organizational theory provides a lens through which such impact on SMEs can be viewed and understood. Structural inertia and organizational flexibility theories in combination provide insights into the effects that might be expected to exist in SMEs during implementation and maintenance of SOX 404 documentation and reporting processes. First, an organization’s structural inertia is generally considered to be a primary determinant of how well an organization adapts to change. Second, flexibility is associated with smaller organizations’ ability to adapt and succeed in generating innovation and competing, but flexibility is usually enhanced by decentralized organization with loose top level controls—a situation not conducive to meeting SOX 404 expectations in relationship to controls. These theoretical aspects are explored in greater detail to provide a foundation for understanding the likely impacts of SOX 404 implementation within SME environments.

## **Structural Inertia**

Hannan and Freeman's (1984) structural inertia theory of organizational ecology presents a model for viewing the process of organizational change to answer the question, "How changeable are organizations?" The theory examines the internal and external constraints placed on organizations that affect the ability to change under conditions of environmental turbulence. Firm age and size are considered the two most significant sources of structural inertia (i.e. resistance to change). Over time, a firm's core structures, operating procedures, and strategies institutionalize causing increased inertia (Hannan and Freeman 1984; Kim et al 2006). As firm size increases, the organization establishes predictable, formalized roles leading to control systems and behavior becoming predictable, rigid, and inflexible. The result is a limiting of the speed at which larger organizations can adjust to environmental change (Hannan and Freeman 1984; Clegg et al. 1996).

Original formulations of structural inertia theory, however, omit experience with change as a factor impacting ability to manage change. Ambergey and Miner (1992) introduce strategic momentum to the organizational change research and define the phrase as the tendency to maintain or expand the emphasis and direction of prior strategic actions in current strategic behavior. Repetitive momentum, the most basic type of strategic momentum, occurs when an organization repeats specific previous actions. From repeated actions comes competence and stability with specific change. Amburgey et al. (1993) expand structural inertia theory by incorporating change experience as a contributing type of inertia (momentum) that results when organizations develop modification routines and change operations through processes established over time to handle changes that likely will be repeated over time.

Structural inertia theory provides a basis for considering not only the impact of SOX 404

implementation on an SME, but also a basis for understanding why the impact will likely differ across different SMEs. Generally, older and larger organizations should experience more difficulty developing new structured procedures for evaluating internal controls over financial reporting than younger, smaller firms. This effect should be moderated by the degree to which the SME operates in constantly changing environments or is exposed to heavy regulation and oversight prior to SOX. Both organizations that have previously faced the issues of developing well-controlled processes and/or embrace constant change as a part of doing business should be better prepared to adapt to Section 404 requirements with less resistance and impact.

This leads to three additional research questions of interest:

*RQ2: Do larger and more mature SMEs face greater challenges in implementing SOX 404 internal control requirements?*

*RQ3: Does an SME's experience in dealing with prior regulatory and mandate-based requirements for control procedures help mitigate the challenges of implementing SOX 404?*

*RQ4: Does an SME's participation in a volatile market that mandates constant change help mitigate the challenges of implementing SOX 404 related changes?*

### **Organizational Flexibility**

Aaker and Mascarenhas (1984, 74) define strategic flexibility as “the ability of an organization to adapt to substantial, uncertain, and fast-occurring (relative to required response time) environmental changes that have a meaningful impact on the organization’s performance”. Fundamental to flexibility is the ability to respond to changes in the environment.

Aaker and Mascarenhas (1984) outline two necessary components for quick response: aggressive external diversification and internal liquidity. Aggressive external diversification includes a focus on differentiating products through strong research and development efforts. Internal liquidity refers to maintaining access to funds in order to exploit opportunity. Generally,

decentralized organizational structures are associated with increased organizational flexibility (Ansoff and Brandenburg 1971).

Early research examining organizational flexibility indicates that organizational structure, technology choices, and the people within the organization all have an affect on strategic flexibility. Information technology (IT) infrastructure is also considered to be intimately involved in all three aspects (Allen and Boyton 1991; Davenport and Linder 1994). Given the control nature of SOX 404 mandates, it seems predictable that the structure of the organization will become more rigid—the antithesis to flexibility. Additionally, the cost of evaluating, assessing, documenting and reporting upon internal controls provides a disincentive to changing technologies and systems as all such changes necessitate an occurrence of these costs once again. Hence, technologies also become more rigidly engrained into an organization’s processes. Finally, as SOX efforts absorb substantial funds, other budgetary support will become more limited with key projects either being delayed or simply dropped. Given that IT often absorbs the highest relative percentage of the SOX related work and that such work appears to have used up much of the available IT resources, IT investment in particular is expected to suffer.

This leads to five additional research questions.

*RQ5: Does the focus on internal control structures reduce the organizational flexibility (e.g. agility) of SMEs?*

*RQ6: Does the focus on stabilizing well-documented technologies and systems limit new IT investments?*

*RQ7: Do reductions in agility and IT investment affect organizations’ cycle time and overall performance in supply chain relationships?*

*RQ8: Does investment in IT hardware, software and maintenance decrease (as a proportion of total IT budgets, as well as overall budgets) due to reallocation of expenses to SOX compliance activities?*

*RQ9: Do SMEs’ IT strategic plans change in response to budget shifts for SOX 404 compliance and changes in organizational structure?*

### **III. RESEARCH METHOD**

Based on the exploratory nature of the questions, the research method selected supports the building and development of theory as opposed to methods more conducive to the testing of established theories (Arnold 2006; Rom and Rhode 2007). Accordingly, a case-based field study approach was selected as the most appropriate method. The case approach used in this study focuses on interviews with key informants from multiple organizations—in this case the key individuals involved in the SOX 404 compliance efforts of their respective firms.

Researchers have recently begun to focus on strategies for improving the robustness of field methods such as the case study method. Lillis and Mundy (2005) note the advantages of cross-sectional field study methods including the use of cross-sectional strategies within applications of the case study method. Application of a cross-sectional approach entail use of limited-depth studies conducted at a non-random selection of field sites. Lillis and Mundy (2005) advocate the use of a cross-sectional approach when there is doubt or disagreement about the nature of the constructs on which theory is being built, relationships among the constructs, or empirical interpretation of the constructs and relationships. Such approaches are particularly beneficial during the theory refinement stages where data is needed from specific dimensions to enhance the precision of theoretical concepts. Cross-sectional analysis is advocated as a means of avoiding the limitations of standard case study methods where little is generally known after conclusion of a study as to the applicability of the findings beyond the one organization studied.

Adopting such a strategy, this study consists of four targeted case studies on a set of SMEs that recently completed their first SOX 404 reporting year. In approaching each of the four organizations, the focus was on garnering access to the individuals that took the lead position in the SOX 404 compliance effort as opposed to targeting a certain position within the organization.

For this research, gaining the perspectives of those individuals heavily involved in the day to day activities was far more important than simply garnering views of a top executive or some other individual's outside observations of the process.

Similarly, organizations were selected for participation based on a concerted effort to provide a diversity of perspectives based on the theoretical expectations. Thus, two of the SMEs are considered medium-sized enterprises and two are considered small-sized enterprises. This size dimension is critical to understanding structural inertia related issues. Two organizations were selected within each size grouping—one organization with a positive and successful experience and one organization with a more negative experience. This diversity was considered important to understanding both the benefits and detriments of SOX 404 mandates on SMEs.

In an effort to enhance the validity and the reliability of the results, every effort was made to adhere to the case guidelines outlined by Yin (2003). First, the study was grounded in theory in order to generate appropriate research questions (see Table 1). Second, a replication process was used in which the same questions were used to guide the interview with each informant. Third, two or more of the researchers were present during each interview and each researcher took a separate set of notes; these notes were compared and reconciled shortly after interview completion. Fourth, informants were provided with the interview questions in advance of the interview in order to allow an informant to aggregate supporting evidence/information to assist in answering the questions. Fifth, organizations were selected for participation based on fit with specific criteria established a priori by the researchers. Four of the five firms approached agreed to participate, helping to minimize the risk of a self-selection bias from participating firms.

--- Please insert Table 1 about here ---

As documented in the following two sections of this paper, the diversity in organizations

provide a rich foundation for understanding the impact of SOX 404 compliance on organizations and individuals within those organizations. Additionally, the diversity of experiences and organizational structures provide a means of understanding the factors that are influential in determining the experiences an SME will encounter during compliance efforts. In documenting these findings, a brief review of the key findings on an organization by organization basis is presented first while the actual examination of the specific research questions through an integration of the data across organizations is provided in the following section.

#### **IV. INDIVIDUAL CASE COMPANIES**

While there are commonalities among all of the organizations studied, the richness of the study comes from understanding how differences in the organizations led to very different experiences during the initial SOX 404 reporting year. Company A is a medium-sized enterprise that competes in the global marketplace, thus adding substantial complexity to business operations beyond just differences in competitive landscape. Company A was most pessimistic about SOX among the four companies studied. Company B is also a medium-sized enterprise, but B deals primarily with government contracting and sub-contracting. Hence, B to some degree had already been forced to address internal control adequacy before SOX was ever passed.

The two small-sized enterprises are referred to hereafter as companies Y and Z. Both companies work in the manufacturing arena, both companies experienced improved risk management and control environments from going through SOX, but clearly the process went much more smoothly and easily for Z. There is much that can be learned from each company's experiences. An overview of the four companies is provided in Table 2.

Insert Table 2 about here

#### **Company A**

Company A provides air-freight, ocean-freight forwarding, and related logistics services including customs brokerage. The company coordinates all aspects of customer shipments which generally exceed more than 50 pounds through a network of 400 facilities in more than 100 countries with over 10,000 employees. In 2005, the company earned \$3.1 billion in revenue with \$1.09 billion in assets. Company A is audited by a Big Four public accounting firm. With a market cap of \$1.5 billion, the company was required to comply with SOX Section 404 in 2004.

Company A felt that their experience with SOX was particularly grueling for no other reason than the general lack of overall guidance by the SEC and PCAOB to both auditors and companies in the first year of 404 compliance. Due to this lack of guidance, the company incurred significant SOX consulting fees. The company felt they needed the best advice available to deal with the ambiguity of the regulation and hired two of the Big Four public accounting firms to assist in planning, documenting, and testing internal controls. New workflow and document repository software was added and one external consultant was required to implement the software and make it operational within the compliance process. As a result, Company A incurred significant expenses associated with SOX consultants. This expense was exacerbated by rises in audit fees that pre-SOX averaged \$1.3 million, but rose substantially to \$4.7 and \$4.9 million in 2004 and 2005, respectively.

In approaching SOX requirements, management viewed the system of internal controls and the 404 compliance process, not as an individual project, but rather as an ongoing process in the normal context of everyday business that requires assessment of risks, identification of controls to mitigate those risks, and alignment of controls with business priorities. The process began with an assessment of risks and weaknesses that were subsequently aligned with business priorities. Company A implemented a balanced scorecard approach to the risk assessment in

order to determine priorities. For those risks perceived as important but not aligned with a planned business priority, a task list was drawn and this task list became additional work beyond the normally planned business projects for addressing business priorities. The work required the addition of two full-time equivalent staff to the IT department in order to address risk issues. This additional staff represented an additional compliance cost; Company A felt these risk issues could have been addressed over time through integration with normal procedures and processes as opposed to being addressed independently.

In the view of management, incorporating very structured internal controls into the business processes hurt the company competitively in the global market. Process time and costs increased; as a result, the delivery time must be extended and additional cost must be passed along to the customer. When bidding against foreign competitors who are not required to comply with SOX 404, Company A feels that they face almost insurmountable challenges when a potential customer bases their decision primarily on cost and speed of delivery. Ultimately, the company is experiencing a permanent change in their overall competitive place in the market.

### **Company B**

Company B manufactures defense and space systems and sells primarily to major defense contractors and the U.S. military. The company employs over 3,000 people solely in the U.S. and reported \$624 million in revenue and \$1.06 billion assets in 2005. Company B is audited by a Big Four public accounting firm. With a market cap of \$1 billion, the company was required to comply with SOX Section 404 in 2004.

Similar to Company A, B felt that the costs of SOX compliance work was unnecessarily excessive due to the lack of adequate SEC and PCAOB guidance. The resulting ambiguity compelled management to hire a Big Four public accounting firm to provide SOX consulting

services. Beyond the expense from consulting services, audit fees rose from a pre-SOX average of \$2.8 million to \$5.3 and \$4.9 million in 2004 and 2005, respectively. For year three of SOX, a Director of SOX 404 (a new position) has been hired. The controller estimates that about 20% of the total SOX cost has been productive.

Given the stringent internal control requirements placed on contractors by the U.S. government, management felt Section 404 requirements did not significantly impact the company as many controls were already in place and operating effectively. Management viewed SOX 404 compliance primarily as a regulatory activity rather than an opportunity to improve processes. Overall, compliance with Section 404 affected the organization minimally. When the question was raised as to whether they have considered it a good investment of resources if SOX had not been legislated, an emphatic “NO!” was expressed. They felt that their control systems were already in excellent condition and that they had simply absorbed an extra cost in the form of assurance over their controls that did not provide reciprocal benefit.

### **Company Y**

Company Y manufactures and sells a wide range of corporate identification, career apparel, and accessories for the healthcare fields, hotels, restaurants, public safety, industrial, transportation and commercial markets, as well as corporate and resort embroidered sportswear. Over 70% of the company's products are produced by offshore suppliers. The founding family controls about 30% of the company. The company operates several manufacturing facilities throughout the U.S. with no international operations and employs approximately 700 people. In 2004, the company reported \$144 million in revenue and \$106 million in assets with a market cap of \$104 million audited. Company Y is audited by a non-Big Four public accounting firm.

In order to minimize the cost of SOX consulting fees, Company Y elected to hire a non-

public accounting, non-mainstream consulting firm that had recently entered the internal controls consulting market. Additionally, no staff was added to fulfill SOX compliance efforts; instead SOX compliance was added to the duties of existing employees. Company Y initially took responsibility for documenting policies and procedures. Unfortunately, the consulting firm needed to re-perform much of the initial documentation and testing, and the auditors re-audited those efforts resulting in significantly higher compliance costs than originally expected. While incurring steep consulting fees, Y also incurred over a 100% increase in audit fees as pre-SOX averages of \$154,000 rose to \$369,000 and \$409,000 for 2004 and 2005, respectively.

Financial management of the company understood the potential ramifications of the requirements and initiated the corporate compliance effort—acting quickly to document, test, and evaluate internal controls over financial reporting. The effort was hindered however, as the Vice President of Information Technology initially resisted the mandates, feeling they were unnecessary and unrelated to the IT function. Additionally, an SAP upgrade was in progress and the IT staff was heavily committed to a successful upgrade as first priority. Only later did the VP of IT fully appreciate the value of IT internal controls on financial reporting after becoming more familiar with the goals of Section 404. Once the VP of IT became supportive of the SOX compliance effort, resistance in the IT department immediately dissipated and the entire IT staff embraced the compliance efforts, starting the compliance process in June of 2004.

### **Company Z**

Company Z leases and sells durable medical equipment to home-bound patients. The company operates through 490 locations in 48 states with approximately 4,600 employees. In 2005, the company reported \$533 million in revenue and \$1.02 billion in assets, and was audited by a Big Four public accounting firm. With a market cap of \$426 million, the company was

required to comply with SOX Section 404 in 2004.

Preparatory work began in 2003 for the SOX compliance effort. Internal audit initially scoped out the specific risk areas and processes of the organization that affect financial reporting, and assessed the criticality levels of each area. Internal audit, which was a new function created to address the SOX issues, consisted primarily of financial auditors focused on accounting related activities. Given the deficiency in IT audit, an outside SOX consulting firm (an international firm lead primarily by former managers and partners of a former Big Five firm) was brought in to assist with documenting and assessing the IT function. The IT audit function was subsequently brought in-house, but the consulting firm does continue to provide some controls testing support. Content repository software was also purchased from the external consultant. For the most part the initial plan covered the necessary work and costs were reasonably contained. Audit fees on the other hand soared with pre-SOX average audit fees of \$332 thousand rising relatively slowly in 2004 (i.e. \$433 thousand) before quadrupling in 2005 to \$1.2 million.

The CFO never quite agreed with the mandates of SOX Section 404 requirements and fiercely resisted the entire compliance process causing a rift with the audit firm who had to complete substantial additional testing to meet SOX audit requirements for internal controls. However, the Director of Internal Audit understood the severity of non-compliance and worked with the auditors to complete the internal controls assessment. The Director subsequently hired the consulting manager from the external consulting firm as the Internal Audit Manager. After the first year of compliance, the company released the CFO promoting the Director of Internal Audit to that position and the Internal Audit Manager to the Director's position.

## **Summary**

Given the ill-defined nature of SOX expectations at the beginning of the process, each of

our firms approached SOX compliance slightly differently. With the limited expertise that is common to most SMEs, all four relied on a consulting firm to some degree to help them through the process. Different individuals led the SOX effort for each company and the role of internal audit versus the IT function versus the accounting function was quite different in each instance. Nonetheless, the challenges were similar and the nature of the firms appeared to have a profound affect on how those challenges were addressed and the pitfalls that subsequently developed.

## **V. CROSS-SECTIONAL ANALYSIS**

While an understanding of how individual organizations have approached SOX compliance efforts is beneficial, our understanding of the impact of SOX compliance and the factors that facilitate or hinder success in executing compliance efforts is enhanced most when organizations' experiences are examined comparatively and within a theoretically grounded rationale. Nine research questions were put forth previously. These nine research questions fall into three categories: (1) impact on SMEs' enterprise risk management approaches, (2) role of structural inertia in adaptation to change, and (3) impact on organizational flexibility. The research questions are considered within these three overarching areas of interest and concern.

### **Enterprise Risk Management**

While much has been alleged about the potential negative impacts on SMEs from SOX requirements, what has largely been omitted from the discussion are the primary benefits that should be derived. The primary objectives of SOX legislation were to assure strong corporate governance and effective enterprise risk management in order to protect shareholders' and other stakeholders' interests. Within the context of this study, the primary goal was to understand how enterprise risk management, and the related processes that enable enterprise risk management, were impacted by the SOX compliance process. Even at Company A, which felt most negatively

affected by SOX compliance requirements, the CIO noted that “SOX does not ask for companies to do anything that they should not have been already doing.”

The most recognizable differences are structural effects. These structural effects were observed at most of the SMEs. Company A noted the efforts put into improving segregation of duties and automating enforcement of segregation and controls. The risk assessment process has now been formalized and assessed risks are matched with business priorities using a balanced scorecard based approach. Company B instituted a training program to educate employees on SOX related issues with the goal that the employees will embrace control procedures and take ownership over control effectiveness. Company Y adopted a risk matrix provided by the consultant and once a year conducts a risk analysis led by a cross-functional group. Possible risks are rated high or low in terms of consequence and probability with two high ratings requiring a written report. Company Z started an internal audit function to prepare for SOX compliance and then two years later added an IT audit function to the accounting-focused internal audit function.

Cultural change is generally even more important than structural changes, however, in terms of truly improving overall risk management (Arnold et al. 1999). Again, even Company A with its negative experience noted, “I think it has forced us to apply our practical/pragmatic business approach to these types of issues and stop ‘reacting’ to perceived issues. We have improved in recognizing the importance to the company, as well as having a balanced approach.” At Company B, the new training program is clearly targeted at cultural change. Company Y, a government contractor, noted that while no real changes occurred because of their compliance efforts, the formalization of policies and procedures provided a long-term impact on infrequent risks that might otherwise have been ignored. Company Z noted that one big benefit from the SOX compliance process was that it served to greatly improve the relationships between internal

audit and the other departments. As internal audit helped resolve complex SOX compliance issues for the departments, the departments garnered a much greater appreciation for the risk assessment and internal control system—clearly a cultural shift within Z.

While the question asked only about the existence of benefits, and not whether the benefits exceeded the costs, the informants from every company across the board responded positively that they had benefited from SOX compliance. The brief summaries of related discussions in the preceding paragraphs provide an overview of some of the benefits that were derived from the process. In short, there seems little doubt that enterprise risk management is much more effective at all of the firms now than it was pre-SOX.

### **The Impact of Structural Inertia**

Structural inertia appears to play a role in the difficulties encountered by the SMEs in this study. Recall that structural inertia suggests that older, more mature organizations have more difficulty addressing significant change, but that this effect may be mitigated to some degree by experience in the domain of the change or by general experience with constant change as normal for the business. Company A, a medium-sized enterprise, appeared most affected by SOX and had the toughest experience. Company B, also a medium-sized firm, is the one firm that believes little has changed in the way things are done as a result of SOX. Due to their federal government contracts and sub-contracts, Company B was required to maintain and document strong internal control systems. Consistent with structural inertia theory, their experience prepared them well for the pending changes. Hence, experience appeared to mitigate the size effect in this circumstance.

Company A's size and maturity effect seems even more consistent when the structure of A is considered. Not only is A larger than the other companies, it also has global operations. The recognition by Company A that a U.S. based company must be globally compliant meant that

they needed to have a good handle on global operations and processes. The CIO at Company A noted that the situation was further complicated by recent major acquisitions—A had failed to integrate those organizations into their system platforms and processes. A is also the one SME studied with very strong connections across the supply chain and extensive use of EDI and 3<sup>rd</sup> party processors that act as a hub. Thus, Company A was not only the largest company studied, it also had the most complex structure. Accordingly, they struggled much more during the process.

Observing the two small-sized enterprises, the results also seem consistent with structural inertia. While company Y got off to a slow start when the VP of IT initially fought the changes mandated by SOX, the company was able to recover fairly quickly once the VP of IT got on board. Part of this is likely because of the early embracing of change by Y's financial management group coupled with the strong tone-at-the-top effect in smaller organizations. The financial management group had the processes moving forward; and, once the VP of IT put his support behind the effort, everyone else in the IT group fell in line.

Company Z received perhaps the greatest benefit from going through the SOX compliance effort. Arguably this could be considered a combination of size and openness to change. While Z cannot be categorized as an entity that faces constant change in its business activities and therefore has learned through experience how to deal with change, Z did go externally to hire one of their consultants to head up a new internal audit function. Hence, they embraced change by quickly adopting a new structure with internal audit, and headed this group with a consultant who had previously dealt with continual change—the nature of consulting. As a result, they developed an environment akin to an organization experienced in constant change—at least for the component driving the SOX compliance effort. This provides an interesting dimension when considering structural inertia theory in that Z was able to act as a

company with well-developed internal knowledge through an outsourcing type arrangement before bringing the outsourcer into the organization.

Examining our sample of four organizations, the results appear to be consistent with what would be expected when viewed through a structural inertia lens. Larger, more complex organizations struggle more with change, but organizations that are experienced with strict control environments or have a culture that views constant change as normal are better able to adapt to the major changes effected by SOX mandates.

### **Organizational Flexibility**

Organizational flexibility is considered an element critical to the contemporary business environment (Byrd and Turner 2000, 170). However, flexibility thrives in environments that are generally more decentralized, while highly controlled environments tend to be more centralized. This raises the research questions regarding whether SOX impacts organizational flexibility, whether the need to document systems limits new systems implementations, and whether reductions in agility due to structuring of processes affects cycle time and supply chain performance. The SMEs studied in this research would basically say “Yes!” to all of the above.

When asked if their organizations suffered as a result of SOX compliance, informants frequently addressed flexibility. Company B’s CFO noted that SOX “negatively impacted flexibility due to a fear that doing anything not in the documented procedures would result in a material weakness.” Company A noted that customers did not always understand that something could not be done because of control limitations when their competitors did not face the same issues. Company Z’s Head of Internal Audit noted “there are specific areas where having to comply with SOX has made processes more involved, resulting in more time and/or effort required to perform a process in order for controls in that specific area to operate effectively.”

There was also an overall feeling that SOX documentation requirements were hindering IT investment. Company Z noted that when new systems interfacing with the financial reporting package were implemented, the associated SOX documentation had to be available before implementation. But that was only if the project was approved. The change management process had been informal pre-SOX with no formal documentation. Now, an IT Tactical Committee reports to the IT Strategic Committee where projects are evaluated, voted on, and only allowed to go forward after the formal change control process has been signed off. Many projects are no longer going forward. Company B noted that while the IT strategic plan was not altered, the cost of incremental SOX compliance is now factored into the cost/benefit analysis of all projects and the increased cost very likely eliminates some projects. Company A noted that there had been plans to implement upgraded versions of software and associated processes, however there were concerns that testing could not be done without introducing significant exposure and upgrades were delayed. Finally, while Company Y noted that they had decided to drop SAP HR, the decision did not appear to be entirely based on SOX issues. Hence, while there was not evidence of major projects being cancelled, there certainly were implications across the board that SOX was impacting the timing and selection of planned and new projects.

Perhaps of greater concern were responses related to the impact on organizational cycle time and supply chain performance. Company A was clearly most affected. Company A noted that “time to process normal business transactions has increased an estimated 5%. In the transportation industry, that additional time the customer experiences can and probably has lost us business.... The time impact is greater as transactions increase in complexity.” In short, A viewed SOX as putting them at a definite disadvantage that was heightened even further when competing for business outside the U.S. against non-U.S. companies who did not have to comply

with SOX. Company Z noted similarly that there were specific areas where SOX compliance made processes more involved in order for controls in the given area to operate effectively, resulting in more time and effort to perform processes. Thus, while not all organizations were affected, it was a major issue for Company A and certainly one of which Z was quite aware.

Logic suggests that funding is being diverted from some other projects to SOX compliance work. Company Z reported a direct effect from SOX on IT budget allocation, noting that the “[s]ystems group had to focus on SOX compliance. Some IT projects were delayed.” Similarly, company B noted that some projects were delayed due to pressures on the capital budget. However, Company A noted that technology investments are heavy to support their industry and that the demands to share information and collaborate with third party suppliers necessitate the ability to automate information across the supplier base. Thus A did not see a hindrance on IT investment due to the strategic business concern.

Issues related to the overall IT strategic plan were directly addressed. Company A noted that you would intuitively think that the plans would change, but that was not the case. Assessing risks under SOX included an assessment of business drivers, priorities, and the need for technology evolution which all supported the current IT strategic plan. Thus, Company A did not see real changes in the overall IT strategic plan. However, A did note that planned software upgrades had been delayed because of the perceived risk inherent in testing the new system. Company B noted that the IT strategic plan was not altered; however, SOX compliance costs were now budgeted into projects for the cost-benefit analysis. Company Z noted that a new balanced scorecard approach was implemented for use in justifying new projects and all future projects had to be justified on this basis. Each project must also be voted on by the IT strategic committee. This leaves the potential for some planned projects to disappear.

On an overall basis, SOX does appear to have negatively impacted organizational flexibility. In turn, this impact on flexibility appears to have some limiting effect on strategic IT investment as well as having a negative impact on organizational agility and overall supply chain performance in certain situations. Delays in projects caused by IT involvement in SOX related work was common, but significant changes in budgets and strategic plans due to SOX absorption of resources did not appear to be common. SOX seemed more likely to put organizations' IT plans on pause, than to actually stop projects altogether—a phenomenon consistent with the perceived negative impacts on flexibility.

## **VI. CONCLUSIONS**

This paper reports on a study conducted with four SMEs in order to better understand the impact of SOX on SMEs. The on-going debate related to whether SMEs should be exempted from SOX Section 404 mandates on internal control reporting questions whether the benefits are worth the cost. This study does not attempt to answer the question of whether the benefit is worth the cost, but rather is designed to shed light on the benefits and costs that companies are experiencing in order to better understand the surrounding issues.

The results suggest that there are definite benefits as all four of the participating SMEs believed that they had accrued benefits from SOX, and the improvements in enterprise risk management observed for all four organizations suggests benefits are present. The results also indicate that an organization's preparedness for change and embracing of change can make a fundamental difference in the level of difficulty experienced in implementing SOX appropriate control structures. Structural inertia theory provides a framework for understanding and analyzing the impact of SOX on organizations and the level of difficulty experienced. Perhaps most concerning, however, are the negative effects of SOX compliance on organizational

flexibility. While tighter control structures would be expected to limit flexibility, the related negative effects on production cycle times and supply chain performance are disconcerting. Finally, expected impacts on budgeting processes and budgets for IT investment were not found. Rather than observing negative behavior from distrust in budgets being reallocated to fund SOX efforts, the primary budget changes that were observed appeared to be improvements in business practices that more carefully scrutinize budget expenditures and strategic IT planning.

The results of this study are indicative of a need for substantial research in the area of emerging technologies that provide the potential for alleviating, or at least minimizing, a number of challenges faced by SMEs in meeting SOX 404 requirements. Most notable among these issues have been challenges related to over relying on manual controls as opposed to focusing on automation of controls that could be less of a hindrance to business process efficiency. As evidenced by the experiences of the four SMEs in this study, the technical capability of the staff is unlikely to be able to facilitate broad integration of automated controls. As enterprise systems software vendors continue to focus on SMEs as the primary expansion area for enterprise software, a focus on integration of automated controls that can replace manual controls is critical. For implementation of such software to be feasible for many SMEs, the enterprise software must be able to provide advantages in meeting control objectives under SOX rather than posing an additional challenge to compliance as is the current situation. From a research standpoint, what is needed is a better integration of control mechanisms into enterprise modeling. Enterprise models need to provide an easy and effective means for assuring sufficient control coverage across a given business process. Current modeling approaches largely ignore control mechanisms and certainly do not provide the logic and language necessary to ensure control sufficiency.

Furthermore, enterprise software also needs the embedded capability to automatically

generate documentation for controls that have been implemented within an enterprise system instantiation. Automatic documentation generation is dependent on the integration of control logic into existing data models; rather than focusing on completeness, this aspect of the software should focus on the documentation of existing controls to facilitate review for sufficiency. In time, combining sufficient logic and automated documentation will provide the optimal solution.

Beyond the documentation and formulation of adequate systems of internal controls, the organizations studied also expended substantial resources testing controls. Early research on the integration of continuous audit modules with enterprise systems software to automate control testing provides the potential capability for improving the efficiency of internal control testing efforts (e.g. Alles et al. 2006). Additional research in this area is needed, primarily in terms of how such control testing can be efficiently integrated within enterprise software as opposed to requiring external software to connect into the enterprise system (e.g. Alles et al. 2006, Kuhn and Sutton 2006). Ideally, such internal control testing capabilities would be generated automatically by the enterprise systems software based on controls documented within the underlying model.

The limitations in the study are essentially the opportunities for future research. Case studies can be very effective for theory building, but it is not a strong methodology for testing theory (Arnold 2006; Rom and Rhode 2007). There is much that can be learned from case studies, and our understanding of the underlying phenomena is generally enhanced. However, case studies do have limited external validity. The use of multiple case studies in a cross-sectional analysis helps to improve external validity (Lillis and Mundy 2005), but alternative methodologies can yield higher levels of external validity. Accordingly, further research should take the results from this study combined with the theory that has been discussed and extend the breadth of the research to cover a wide range of organizations. Consideration should also be

given to the on-going impact of SOX on SMEs over subsequent years where the cost of 404 compliance may hinder IT investment and business process re-design. There is a need to know much more about the impact of SOX compliance efforts on SMEs before the SEC and PCAOB alter the reporting requirements for SMEs. Any such change should only come after solid research can show that any such changes would be in the public interest. Such a decision should be made based on solid empirical evidence and not based on political influence.

## REFERENCES

- Aaker, D., and Mascarenhas, B. 1984. The Need for Strategic Flexibility. *The Journal of Business Strategy*, 5(2); 74-82.
- American Institute of Certified Public Accountants (AICPA). 2006. *Service Organizations*. Statement of Auditing Standards (SAS) No. 70 June. New York, NY: AICPA.
- Allen, B. and Boynton, A. 1991. Information Architecture: In Search of Efficient Flexibility. *MIS Quarterly*, 15(4); 43-445.
- Allen, M. 2002. Bush signs corporate reforms into law; President says era of 'false profits' is over. *Washington Post*. (July 31): A04.
- Alles, M., G. Brennan, A. Kogan, and M. A. Vasarhelyi. 2006. Continuous Monitoring of Business Process Controls: A Pilot Implementation of a Continuous Auditing System at Siemens. *International Journal of Accounting Information Systems* 6(2).
- Amburgey, T.L and A.S. Miner. 1992. Strategic Momentum: The Effects of Repetitive, Positional, and Contextual Momentum on Merger Activity. *Strategic Management Journal* (13): 335-348.
- Amburgey, T.L., D. Kelly, and W.P. Barnett. 1993. Resetting the Clock: The Dynamics of Organizational Change and Failure. *Administrative Science Quarterly* (38): 51-73.
- Ansoff, H., and Brandenburg, R. 1971. A Language for Organizational Design: Parts I and II. *Management Science*, 17(12); 717-731.
- Arnold, V. 2006. Behavioral research opportunities: Understanding the impact of enterprise systems. *International Journal of Accounting Information Systems* 7(1): 7-17.
- Arnold, V., C. Hampton, D. Khazanchi, and S.G. Sutton. 2004. *Enterprise Risk Management: Identifying Risks in B2B E-Commerce Relationships* (Altamonte Springs, FL: Institute of Internal Auditors Research Foundation).
- Arnold, V., J.C. Lampe, and S.G. Sutton. 1999. Understanding the factors underlying *ethical organizations*: Enabling continuous ethical improvement." *Journal of Applied Business Research* 15(3): 1-20.
- Byrd, T., and Turner, D. 2000.. Measuring the Flexibility of Information Technology Infrastructure: Exploratory Analysis of a Construct. *Journal of Management Information Systems* 17(1): 167-208.
- Canada, J., J.R. Kuhn, and S.G. Sutton. 2007. Accidentally in the public interest: the perfect storm that yielded the Sarbanes-Oxley Act. *Annual Congress of the European Accounting Association* (Lisbon, April).
- Clegg, S.R., C. Hardy, and W.R. Nord. 1996. *Handbook of Organization Studies*. Thousand Oaks, CA: SAGE Publications.
- COSO. 2004. *Enterprise Risk Management – Integrated Framework*. (Committee of Sponsoring Organizations of the Treadway Commission, AICPA: New York).

- Davenport, T. and Linder, J. 1994.. Information Management Infrastructure: The New Competitive Weapon. *Proceedings of 27<sup>th</sup> Hawaii Conference on System Sciences*, 4; 885-896.
- Glaser, B.G. and A. Strauss. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago: Aldine).
- Graham, A., B. Lin, D Michayluk, and P. S. Stuerke. 2005. Sarbanes-Oxley: Some unintended consequences. Annual Meeting of the American Accounting Association (San Francisco, August).
- Hannan, M.T. and J. Freeman. 1984. Structural Inertia and Organizational Change. *American Sociological Review* (49) 2:149-164.
- Hartman, T.E. 2006. *The Cost of Being Public in the Era of Sarbanes-Oxley*. (Foley & Lardner LLP, [www.foley.com/publications/](http://www.foley.com/publications/)).
- Holstein, W.J. 2006. Rethinking SOX. *Directorship*, (June): <http://www.directorship.com/publications/oxley.aspx>.
- Katz, D.M. 2006. Panels on 404 skirt small-company woes. *CFO.com* (May 02).
- Kim, T., H. Oh, and A. Swaminathan. 2006. Framing Interorganizational Network Change: A Network Inertia Perspective. *Academy of Management Review* (31) 3:704-720.
- Kuhn, J.R. and S.G. Sutton. 2006. Learning from WorldCom: Implications for Fraud Detection Through Continuous Assurance. *Journal of Emerging Technologies in Accounting* 3.
- Leffall, J. 2006. Next from Sarbox: Industry exemptions? *CFO.com* (July 2006).
- Libby, T. 1999. The influence of voice and explanation on performance in a participative budgeting setting. *Accounting Organizations and Society* 24: 125-137.
- Lillis, A.M. and J. Mundy. 2005. Cross-sectional field studies in management accounting research—Closing the gaps between surveys and case studies. *Journal of Management Accounting Research* (forthcoming).
- Macey, J. 2007. What Sarbox wrought. *Wall Street Journal* (April 7): A9.
- Modell, S. 2005. Triangulation between case study and survey methods in management accounting research: an assessment of validity implications. *Management Accounting Research* 16: 231-254.
- O'Connor, C.M. 2005. Sarbanes-Oxley: Frying the small fry; as third anniversary looms, many small caps are turning private or going overseas. *Investment Dealers Digest* (June 27).
- Public Company Accounting Oversight Board. 2006. *Release No. 2006-007: Proposed Auditing Standard-An Audit of Internal Control Over Financial Reporting That Is Integrated with an Audit of Financial Statements* December. Washington, D.C.: PCAOB.
- Reason, T. 2006. Cry of pain from small companies. *CFO.com* (May 10).
- Rom, A. and C. Rohde. 2007. Management accounting and integrated information systems: A literature review. *International Journal of Accounting Information Systems* 8(1): (forthcoming).

- Sarbanes-Oxley Act of. 2002. Public Law No. 107-204. Washington, D.C.: Government Printing Office.
- Schumer, C.E., M.R. Bloomberg, and McKinsey Consulting. 2007. *Sustaining New York's and the U.S. Global Financial Services Leadership*. U.S. Senate [www.senate.gov/~schumer](http://www.senate.gov/~schumer) (January 22).
- Securities and Exchange Commission. 2007. *SEC Approves New Guidance for Compliance Section 404 of Sarbanes-Oxley*. (May 23, 2007).
- Shaw, H. 2006. Revise 404 for the market, panelists say. *CFO.com* (May 10).
- Taub, S. and M. Leone. 2005. U.K. group seeks 404 delay. *CIO.com* (February 8).
- Tillinghast-Towers Perrin. 2001. *Enterprise Risk Management: Trends and Emerging Practices* (Altamonte Springs, FL: Institute of Internal Auditors Research Foundation).
- Treasury Board of Canada Secretariat. 2001. Integrated Risk Management Framework. *tbs-sct.gc.ca* (January 4).
- U.S. Securities and Exchange Commission. 2006. *Further Relief from the Section 404 Requirements for Smaller Companies and Newly Public Companies*. (SEC 2006-210 [www.sec.gov/news/press/2006/](http://www.sec.gov/news/press/2006/)).
- WebCPA. 2006. SEC and PCAOB: SOX is staying. *WebCPA.com* (June 19).
- Wentzel, K. 2002. The influence of fairness perceptions and goal commitment on managers' performance in a budget setting. *Behavioral Research in Accounting* 14: 247-272.
- Yin, R.K. 2003. *Case Study Research: Design and Methods* 3<sup>rd</sup> ed. (Thousand Oaks, CA: Sage Publications Inc.).

Table 1  
Interview Questions for Case Study Informants

<ul style="list-style-type: none"> <li>• What was your initial plan/approach for SOX compliance (i.e., what resources internal and external were initially identified as necessary for overall compliance)?</li> </ul>
<ul style="list-style-type: none"> <li>• Was your initial plan modified during the course of completing the compliance activities, and if so how?</li> </ul>
<ul style="list-style-type: none"> <li>▪ How did SOX compliance affect your normal operating budget? <ul style="list-style-type: none"> <li>○ Was the cost and resources required greater than expected initially?</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>▪ Are investments in hardware, software, and systems maintenance declining or increasing due to the impact of SOX compliance? <ul style="list-style-type: none"> <li>○ Are these long-term and/or short-term effects if investment has changed?</li> <li>○ If these are short term effects, please describe.</li> <li>○ If these are long term effects, please describe.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>▪ Has the overall IT strategic plan altered in consideration of ongoing compliance? <ul style="list-style-type: none"> <li>○ Were any key strategic projects dropped from the plan due to concerns over SOX compliance affects?</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>▪ What are the challenges your company and organization faced in order to comply?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Has SOX changed the way your company and organization react to opportunities/threats (including technological and business opportunities/threats)?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Do you feel that your organization has benefited from SOX compliance? <ul style="list-style-type: none"> <li>○ If so, please describe.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>▪ Do you feel that your organization has suffered as a result of SOX compliance? <ul style="list-style-type: none"> <li>○ If so, please describe.</li> </ul> </li> </ul>
<p>Supply Chain:</p>
<ul style="list-style-type: none"> <li>▪ Describe the supply chain environment, both from a process standpoint (overall processes and cycle times) and the level of investment in information technology supporting these relationships.</li> </ul>
<ul style="list-style-type: none"> <li>▪ How tightly connected are you to key trading partners in the Supply Chain?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Did your relationship with these key trading partners affect any of the decisions you made in becoming SOX compliant?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Did your relationship with these key trading partners affect your ability to meet SOX requirements?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Has SOX compliance impacted your overall supply chain agility and if so how? <ul style="list-style-type: none"> <li>○ Has it caused you to pass up opportunities you might otherwise have pursued with trading partners?</li> <li>○ Has it had an impact on the efficiency (including time to react and produce) or the effectiveness (including ability to compete) across the supply chain?</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>▪ Do you require SAS 70 reports from your suppliers? <ul style="list-style-type: none"> <li>○ If yes, what type of SAS 70 report?</li> <li>○ If yes, have you required suppliers to have additional procedures performed beyond the standard SAS 70 and have these required additional procedures changed with the implementation of SOX?</li> </ul> </li> </ul>

- |                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>▪ Do you provide SAS 70 reports to any of your customers?<ul style="list-style-type: none"><li>○ If yes, what type of SAS 70 report?</li><li>○ If yes, have your customers required additional procedures beyond the standard SAS 70 and have these changed with the implementation of SOX?</li></ul></li></ul> |
| <ul style="list-style-type: none"><li>▪ Have you discontinued any supply chain relationships (supplier or customer) directly or indirectly due to the impact of SOX compliance? If so, why?</li></ul>                                                                                                                                                 |

**Table 2**  
**Company Demographics**

<b>2005</b>	<b>Company A</b>	<b>Company B</b>	<b>Company Y</b>	<b>Company Z</b>
<b>Market Capitalization</b>	\$1,502 million	\$1,004 million	\$74 million	\$426 million
<b>Total Assets</b>	\$1.09 billion	\$1.06 billion	\$106 million	1.02 billion
<b>Total Revenue</b>	\$3.1 billion	\$624 million	\$144 million	\$533 million
<b>SIC 2 Digit Industry Group</b>	SIC: 47 Transportation Services	SIC: 30 Fabricated Rubber Products	SIC: 23 Fabricated Textile Products	SIC: 80 Health and Allied Services
<b>Auditor</b>	Big Four	Big Four	National Non-Big Four	Big Four
<b>SOX Consultants (# of Firms)</b>	Big Four (2)	Big Four (1)	Regional Non-public Accounting Firm (1)	International Non-public Accounting Firm (1)
<b>Company Interviewee(s)</b>	CIO	CFO, Controller and Assistant Controller	CIO	Director of Internal Audit