Executive Summary: An Introduction to Sarbanes-Oxley & Its Impact on Supply Chain Management

S. Scott Nadler & John F. Kros
Assistant Professors of Marketing & Supply Chain Management
East Carolina University

Intro to Sarbanes-Oxley

The Sarbanes-Oxley Act, or SOX, was enacted on July 30, 2002 in response to numerous corporate scandals & is intended “to protect investors by improving the accuracy & reliability of corporate disclosures made pursuant to the securities laws, & for other purposes” (Sarbanes-Oxley Act page 1). While the intent of the SOX is modest its impact is both far-reaching & costly in terms of time & the financial resources necessary to ensure compliance. Consequently, SOX is possibly one of the most important & controversial pieces of corporate legislation of the last decade.

The act is comprised of eleven titles & sixty-six subtitles. Each primary title area is comprised of subsections, which pertain to specific subfields & types of business transactions. However, only four sections are directly pertinent to supply chain managers due to their emphasis on reporting, off-balance sheet functions, & penalties for non-compliance. These sections include: 401 Disclosures in periodic reports, 404 Management Assessment of Internal Controls, 409 Enhanced Financial Disclosures, & Section 802 Criminal Penalties.

Study Demographics

The researchers obtained 3753 supply chain professionals’ email addresses via two locales: the Institute for Supply Management (ISM) & the Association for Operations Management (APICS). A pilot sample of 100 emails was sent & resulted in the addition of one question. Thirty supply chain managers participated in this preliminary pilot study & were not included in the final sample. Overall, recipients returned 304 questionnaires, for a response rate of 9.6%. Fourteen questionnaires were inadmissible due to purposeful non-response (e.g., “I have no idea what SOX is, so I am assuming my firm is not affected by SOX”).

Major Study Findings

This study finds that to date:

1) there has been very little difference in the impact that SOX has had on publicly or privately held companies,

2) the impact has been relatively constant across all industries with the exception of the transportation industry which has probably been effected to a slightly greater extent due to Section 404,

3) most respondents reported that SOX in general has had very little impact on their firm’s day-to-day business activities,

4) SOX has had minimal impact on the six planning functions that most supply managers are familiar with, &

5) comments appear to indicate that respondents are generally supportive of the intent of SOX but that it is far too restrictive & costly to implement & maintain.

Managerial Implications

The lack of findings would therefore seem to indicate that while most companies have expended significant resources to bring their accounting, finance & IS functions into compliance they are only beginning to make meaningful efforts to bring the supply function into compliance. Alternatively, it appears that many companies are as yet unaware of the potential liability that they face by continuing to neglect the supply function. These findings were somewhat surprising given the negative media coverage that has been directed toward SOX. Supply managers are therefore, advised to

1) take the time to read the Sections 401, 404, 409, & 802 of the act, which are readily available, online

2) begin reviewing each aspect of their job in order to better understand how their job effects corporate profitability, &

3) to take a more active role in helping their department & company become SOX compliant.
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S. Scott Nadler
Assistant Professor of Marketing and Supply Chain Management
East Carolina University

John F. Kros
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Abstract

The purpose of this manuscript is to provide readers with an overview of the Sarbanes Oxley Act, its origins, important sections, and its impact on Supply Chain Management. Study results generally contradict the negative affects that this important piece of legislation has reportedly had. The authors provide recommendations to supply chain managers and offer suggestions for future research. Finally, this manuscript seeks to educate readers on Sarbanes Oxley in order help them better understand how this important Act has impacted the business community.

Key words: Sarbanes Oxley Act, SOX, Supply Chain Management
INTRODUCTION

The Sarbanes-Oxley Act was enacted on July 30, 2002 in response to numerous corporate scandals and is intended “to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes” (Sarbanes Oxley Act page 1). While the intent of the Sarbanes Oxley Act is modest its impact is both far reaching and costly in terms of time and the financial resources necessary to ensure compliance (The Economist, May 21, 2005). Consequently, the Sarbanes Oxley Act is possibly one of the most important and controversial pieces of corporate legislation of the last decade (Barratt, Savidge, and Barratt, 2006).

The Sarbanes Oxley Act, which is more commonly known as SOX or Sarbox was enacted to force companies to enhance and extend their accountability, integrity, transparency, and to clarify financial reporting in order to regain investor confidence (Abrahami, 2005). Sarbanes Oxley is comprised of eleven titles and sixty-six subtitles. The eleven titles covered by this act are: I. Public Company Accounting Oversight Board, II. Auditor Independence, III. Corporate Responsibility, IV. Enhance Financial Disclosures, V. Analysts Conflicts of Interest, VI. Commission Resources and Authority, VII. Studies and Reports, VIII. Corporate and Criminal Fraud Accountability, IX. White-Collar Crime Penalty Enhancement, X. Corporate Tax Returns, and XI. Corporate Fraud and Accountability (Sarbanes Oxley Act, 2002).

Each primary title area is comprised of subsections which pertain to specific subfields and types of business transactions. However, this study similar to others finds that only three sections are directly pertinent to supply chain managers, the duties they perform, and this manuscript. These sections include: 401 Disclosures in periodic reports, 404 Management Assessment of Internal Controls, 409 Enhanced Financial Disclosures. This study extends past research by providing readers and more
especially supply chain managers with an overview of Section 802 Criminal Penalties and the penalties that face if they are found guilty of violating this important Act.

Given the overarching importance of the Sarbanes Oxley Act and the rigor with which it is being enforced the purpose of this manuscript is threefold. First, it seeks to provide readers with an overview of the four sections of this important legislation that are relevant to supply chain managers. Second, it seeks to educate readers on how this Act impacts supply chain professionals. Third, it seeks to assess the impact that the Sarbanes Oxley Act has had on the planning processes of companies that are affected by it. Specific attention will be given to the problems that this legislation is intended to rectify. This manuscript will begin with an overview of the intent of the Sarbanes Oxley act followed by an overview of the four most important sections. Following this discussion the authors will present an overview of how Sarbanes Oxley is believed to affect supply chains. The manuscript will then provide four important research questions and a discussion of the study results. This will be followed by study implications and limitations, suggestions for future research and study conclusions. Specific comments from respondents will be provided throughout to provide additional support for the study findings. This research makes an important contribution to the supply chain management literature because it is one of the first to empirically assess the impact of Sarbanes Oxley on supply chain management.

**LITERATURE REVIEW**

The purpose of the Sarbanes Oxley Act is threefold. These purposes include: holding top management accountable for their actions, providing harsher penalties for violators and to regain investor confidence (Shister, 2005). This section will provide a general discussion of each of these important directives beginning with holding top management accountable.

**The Purpose of Sarbanes Oxley**
The first of the three purposes of the Sarbanes-Oxley Act is to hold executives accountable for their actions (LT Staff, 2004). More specifically it seeks to protect investors from the potentially illegal activities which some corporate executives have engaged in (Fox 2005). This portion of Sarbanes Oxley was enacted in an attempt to close the numerous legal loopholes that companies were exploiting while doing business. Since its implementation, many companies have been forced to reorganize top management, replace retiring board members, and rethink managerial planning and reporting processes (Beeson 2005).

The second purpose of the Sarbanes-Oxley Act is to provide harsher punishments for violators and to effectively scare business people into compliance. Penalties range from fines to up to twenty years in prison for a single offense. The result of these increased penalties was best illustrated during an interview with Jack Welch, the former CEO of General Electric. During this interview the question was asked, “Do you think Sarbanes-Oxley is an effective way of bringing integrity to an organization?” Mr. Welch replied, “First of all, Sarbanes-Oxley had to happen. We needed to get confidence back in the investment community. And now, the question that we must ask is: what are the unintended consequences? How much are we spending, just not money but time? The CEO and CFO always had to sign the financial statement – that is not new. The only new bit is you can now go to jail for it!” (Torrance 2004 pp. 6).

In another highly publicized case Arthur Anderson was found guilty of obstructing justice by ordering employees to destroy the company’s financial papers related to the Enron case before investigators arrived. Under Section 802 these individuals were convicted of unethical behavior and the firm received a $500,000 fine (Thomas 2002).

The third purpose of the Sarbanes-Oxley Act was to restore investor confidence and to improve business performance and investor confidence in financial statements and capital markets. An additional
benefit that the Act sought to achieve was to strengthen investor confidence in the accounting profession as a whole (Waxman 2004). This was and continues to be extremely important given the reductions in Foreign Direct Investment in the U.S. (see the Current Account and Balance of Payments Statements for the U.S.), investor losses due to misstated earnings (Hemani 2005; Kaikati and Kaikati 2006), the globalization of supply chains, and the increasing number of multinational organizations with operations in the U.S. Given the overall intent of the Sarbanes Oxley Act (transparency and financial statement accuracy) specific attention will be given to each of the titles that are believed to directly impact supply chain managers and the duties that they perform.

**Important Sections**

**Section 401: Disclosures of Periodic Reports**

At the heart of the Sarbanes-Oxley Act is Section 401. This section requires financial statements published by external auditors to be accurate and presented in a manner that does not contain incorrect statements or misrepresent material information. Financial statements are now required to include all material off-balance sheet liabilities, obligations, or transactions and to note the effect that these activities have on transparent reporting. More specifically, Section 401, subsection (a) DISCLOSURES REQUIRED.—Section 13 of the Securities Exchange Act of 1934 (15 U.S.C. 78m) is amended by adding at the end the following:

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(j) OFF-BALANCE SHEET TRANSACTIONS.—Not later than 180 days after the date of enactment of the Sarbanes-Oxley Act of 2002, the Commission shall issue final rules providing that each annual and quarterly financial report required to be filed with the Commission shall disclose all material off-balance sheet transactions, arrangements, obligations (including contingent obligations), and other relationships of the issuer with unconsolidated entities or other persons, that may have a material current or future effect on financial condition, changes in financial condition, results of operations, liquidity, capital expenditures, capital resources, or significant components of revenues or expenses.”
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Investopedia.com defines *off-balance sheet* as “separate legal entities (separate companies of which the parent holds less than 100% ownership) or contingent liabilities such as letters of credit or loans to separate legal entities that are guaranteed by the parent”. Generally Accepted Accounting Principles (GAAP) allows entries such as these to be excluded from the parent's financial statements provided they are described in the financial footnotes (Wayman 2002). However, from a supply chain perspective off-balance sheet activities have been found to include commonly used business transactions such as the receipt or payment of slotting fees or promotional allowances (Kaikati and Kaikati 2006), vendor managed inventories (Hemani 2005) and guarantee contracts, long-term volume purchase agreements or take-or-pay commitments (Barratt, Savidge, and Barratt, 2006). While off balance sheet transactions are generally legal many companies view these activities as proprietary competitive advantages and go to great lengths to protect them. Unfortunately, corporate efforts to protect competitive advantages may conflict with the intent of the Sarbanes Oxley Act.

**Section 404: Management of Internal Controls**

Of the eleven Titles contained in Sarbanes Oxley Section 404 has received the most criticism from business people because it requires managers to maintain adequate internal control structures and procedures for financial reporting and demands that company’s auditors attest to management’s assessment of those controls and to disclose any material weaknesses (The Economist, May 21, 2005).

(a) RULES REQUIRED.—The Commission shall prescribe rules requiring each annual report required by section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) to contain an internal control report, which shall— (1) state the responsibility of management for establishing and maintaining an adequate internal control structure and procedures for financial reporting; and (2) contain an assessment, as of the end of the most recent fiscal year of the issuer, of the effectiveness of the internal control structure and procedures of the issuer for financial reporting.
Section 404 contains four subsections which include: (1) establish internal controls and procedures (2) certify their completeness and quality, (3) file an internal controls report, and (4) have external auditor attest to the adequacy of internal control systems (O’Conner 2005). Part of the purpose of Section 404 is to require companies to establish internal controls and procedures that support and document financial reporting. This documentation includes but is not limited to supporting accounting documents such as purchase orders and sales orders, corporate memos, and emails. Internal controls must be documented and verified in order that the independent auditors can sign off on their effectiveness (Scott 2004).

Section 404 is also one of the most costly aspects of Sarbanes Oxley to implement. One recent study of 217 public companies found that the expected total cost of complying with this section was $3.14 million but after one year the total cost that each of the survey companies paid averaged $4.36 million or 39% more than was anticipated (The Economist, May 21, 2005).

While many of the costs associated with SOX compliance appear to have stabilized supply managers can expect to see their cost of compliance increase in the near future as more companies come to realize that they must now maintain copies of documents such as purchase and sales orders, bid and contract proposals, internal company memos, cost of doing business comparisons, and emails in order to ensure compliance. Companies can also expect to have to certify that the quality of these internal controls meets the minimum standards necessary for compliance prior to verification during the annual audit process.

Section 409: Enhanced Financial Disclosures

Section 409 requires companies to have a “timely” reporting of material events that have an impact on financial reporting. Timely, has been interpreted under this section of the Sarbanes Oxley Act to be two working days or less. This section also states that each issuer must disclose any information concerning material changes in the financial condition or operations of the company on a current basis.
As soon as a company declares a material event, they must also document it before they are allowed to claim that they have adequate process controls under Section 404 (One Hundred Seventh Congress, 2002).

“(l) REAL TIME ISSUER DISCLOSURES.—Each issuer reporting under section 13(a) or 15(d) shall disclose to the public on a rapid and current basis such additional information concerning material changes in the financial condition or operations of the issuer, in plain English, which may include trend and qualitative information and graphic presentations, as the Commission determines, by rule, is necessary or useful for the protection of investors and in the public interest.”.

Section 409 is of great concern to supply managers because, as written, commonly occurring supply disruptions such as late or damaged shipments or incomplete or lost orders are considered to be material events that must be reported. This new requirement is especially onerous because it is difficult to accurately calculate the true financial impact that these events have on safety stocks, profitability, and customer retention (Goodman, 2004).

Section 802: Criminal Penalties for Altering Documents

Another important element of the Sarbanes-Oxley Act is Section 802. Under Section 802 both individuals and corporations are subject to criminal prosecution if they are found to be non-compliant. Each of the punishments are clearly stated in Section 802.

“§ 1519. Destruction, alteration, or falsification of records in Federal investigations and bankruptcy ‘“Whoever knowingly alters, destroys, mutilates, conceals, covers up, falsifies, or makes a false entry in any record, document, or tangible object with the intent to impede, obstruct, or influence the investigation or proper administration of any matter within the jurisdiction of any department or agency of the United States or any case filed under title 11, or in relation to or contemplation of any such matter or case, shall be fined under this title, imprisoned not more than 20 years, or both.

This provision directly affects accountants but may also apply to supply managers because this section requires auditors to keep and review work papers for a period of no less than five years starting from the end of the fiscal year in which that particular audit was concluded. Generally speaking, there
have always been penalties for engaging in illegal activities while doing business. However, under SOX the existing penalties have been become more clearly defined and severe. Much of Sarbanes Oxley’s strength stems from its protections for whistleblowers (see Section 1107). Under Sarbanes Oxley any individual that comes forward to authorities to report a crime is protected under law. However, this does not exempt the individual from criminal prosecution.

At the individual level the penalty for violating the provisions of Sarbanes Oxley are significant. The most notable of penalties is reserved for CEOs and CFOs who are required to attest to the validity of the firm’s financial reports. Individuals that violate this provision, either knowingly or unknowingly are subject to up to $5 million in fines and/or 20 years in prison (Claypool, Tackett and Wolf, 2004). Individuals can also receive penalties for larceny, embezzlement, and theft. In cases where there are at least 250 victims judges have the authority to double stated penalties for each such offense (a level six offense).

Companies may also find themselves facing legal difficulty if they are caught destroying, altering, or fabricating documents and records in federal investigations or in the case of bankruptcy proceedings. In such cases, shredding records or changing numbers is prohibited by law. Any knowing person who is found tampering with these records in any matter within the jurisdiction of any department under the United States or any case filed under Title 11 will be prosecuted. Any person who is found guilty of falsifying these records and having the intent to impede or influence the investigation will be fined and/or imprisoned for up to 20 years (Miller and Pashkoff, 2002). In addition to the penalties for destroying or altering records, companies also face severe punishments for destroying corporate audit records. Any person that knowingly violates this particular section by failing to keep records for the five year period faces up to ten years in prison and/or fines under this title.

**Sarbanes Oxley’s Impact on Supply Chain Management**
The Sarbanes-Oxley Act (SOX) is commonly believed to have had numerous impacts on both public and private companies. These impacts have ranged from higher than anticipated compliance costs; costs incurred due to noncompliance; and it has reportedly led some smaller firms to either delist from their affiliated stock exchange and in some cases to go private (Hannon, 2005). Ultimately, the cost of implementing SOX has greatly exceeded all early estimates and most companies have reported that annual audits are significantly more complex and costly due to the additional reporting requirements and the corresponding man hour requirements (Harrington 2005).

While there were many strong arguments regarding why this act was needed some analysts wonder if the costs outweigh the benefits (Barratt, Savidge, and Barratt 2006). Critics of the act have noted that SOX is intrusive, costly, and it assumes that all of the corporate executives are guilty until proven innocent (Clark 2005). While the true benefit (if any) of SOX is debatable its impact on supply chain management is widely cited in the trade press as having been significant (Testa, 2005). More specifically SOX has reportedly impacted many common business planning processes (LT Staff, 2004). The next section will be devoted to the study rationale and research questions.

**STUDY RATIONALE AND RESEARCH QUESTIONS**

The Sarbanes Oxley Act (2002) has reportedly had a profound effect on publicly held corporations and negligible effects on private companies doing business in the U.S. (Goodman, 2004). While these impacts have been studied from financial, accounting, IT, and insurance perspectives this has not been the case for supply chain management functions. Therefore, the purpose of this study is to assess the extent to which the Sarbanes Oxley Act has impacted supply chain management. Given the exploratory nature of this study the following research questions are provided:

*RQ1: How familiar are Supply Chain Managers with SOX?*

*RQ2: To what extend has Sarbanes Oxley impacted companies’ ability to compete?*
**RQ3: To what extent has Sarbanes Oxley affected companies’ planning processes?**

**RQ4: To what extent are companies working to comply with Sarbanes Oxley?**

**Research Method**

The researchers obtained supply chain professionals’ email addresses via two locales: the Institute for Supply Management (ISM) website and the Association for Operations Management (APICS) website. Each of these organizations makes the email addresses of board members and organization constituents addresses available online. A total of 3753 emails were obtained. The order of those emails was randomized and a pilot sample of 100 emails was sent. Thirty supply chain managers participated in this preliminary pilot study and were not included in the final sample. Upon completion of the pilot study the authors added one additional question “is your firm public or private?” to the web-based survey instrument. After this change was made the first wave of 3653 emails was sent. There were 167 responses and 840 emails were returned as undeliverable or timed out. After four weeks a second wave of emails was sent. The second wave generated 107 responses.

Overall, recipients returned 304 questionnaires, for a response rate of 9.6% (274 / (3653-840)) which corresponds to the typical response rates for articles published in the Journal of Business Logistics (Griffis, Goldsby, and Cooper 2003). Fourteen questionnaires were inadmissible due to purposeful non-response (e.g., “I have no idea what SOX is, so I am assuming my firm is not affected by SOX and I do not know how to fill out this survey?”). Non-response bias was assessed by comparison of early to late respondents. There were no significant mean differences between the groups on measures such as familiarity with SOX, impact from SOX, time spent working on SOX compliance, extent of SOX compliance, years employed with current company, industry type, or public versus private categorization.

**Respondent Demographics**
The respondents were a seasoned group with an average of more than 10 years work experience. With few exceptions the group appeared very familiar with the extent of their firm’s SOX compliance efforts. The average response for the entire group was 5.10 on a scale of 1 (Not at All) to 7 (Very Much) with those in publicly held companies being significantly more involved with SOX than those in private companies (e.g., an average response of 6.12 versus an average response of 3.54 for public versus private firms respectively). The breakdown of public to private firms was 148 versus 112 or about 57% to 43%.

Table 1 presents the industry representation for the survey respondents juxtaposed with the industry breakdown for the ISM membership. ISM membership was chosen for comparison because it is the largest and one of the most respected supply management associations in the United States.

### Table 1

<table>
<thead>
<tr>
<th>Industry Subcategory</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
<th>Survey %*</th>
<th>ISM %**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>71</td>
<td>37</td>
<td>108</td>
<td>41.5%</td>
<td>42.4%</td>
</tr>
<tr>
<td>Electronics</td>
<td>35</td>
<td>12</td>
<td>47</td>
<td>18.1%</td>
<td></td>
</tr>
<tr>
<td>Automotive</td>
<td>8</td>
<td>7</td>
<td>15</td>
<td>5.8%</td>
<td></td>
</tr>
<tr>
<td>Plastics</td>
<td>7</td>
<td>8</td>
<td>15</td>
<td>5.8%</td>
<td></td>
</tr>
<tr>
<td>Aerospace</td>
<td>11</td>
<td>3</td>
<td>14</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td>Paper and Printing</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>5.0%</td>
<td></td>
</tr>
<tr>
<td>Textiles</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>18</td>
<td>11</td>
<td>29</td>
<td>11.2%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>18</td>
<td>11</td>
<td>29</td>
<td>11.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Mining/Oil/Gas</td>
<td>12</td>
<td>8</td>
<td>20</td>
<td>7.7%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Utilities/Government</td>
<td>0</td>
<td>18</td>
<td>18</td>
<td>6.9%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Transportation</td>
<td>10</td>
<td>7</td>
<td>17</td>
<td>6.5%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Hospitality</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>5.0%</td>
<td></td>
</tr>
<tr>
<td>Travel/Hotel/Leisure</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Food and Beverage</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>4.6%</td>
<td></td>
</tr>
<tr>
<td>Professional Services</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>4.6%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Wholesale/Retail Services</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2.3%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>
From Table 1 it can be seen that 41.5% of the respondents categorized themselves as working in the manufacturing sector. Within the survey instrument, the manufacturing sector is broken down into six subsets for added detail and includes the specific industries of electronics, automotive, plastics, aerospace, paper and printing, and textiles. Electronics made up the largest subset in the manufacturing industry. Construction and healthcare together represented 22.4% of the total, mining/oil/gas represented 7.7% of the total, utilities/government represented 6.9% of the total, while the other six industries made up 21.5% of the total.

It should be noted that the Hospitality industry contains two subsets: travel/hotel/leisure and food and beverage. In comparison, the overall ISM membership was recently profiled as follows: manufacturing (42.4%), construction combined with healthcare (6.9%), mining/oil/gas (2.4%), utilities/government (11.7%), and five additional industries/categories (36.6%). Consider that the percentages for the manufacturing categories for both the survey and ISM profile are very similar, the survey included a hospitality category (while the ISM profile does not), and the ISM reports a category defined as “Other” whereas the survey did not. These differences notwithstanding the distribution of industry demographics uncovered in this survey reasonably represent the ISM industry demographics.

**Familiarity with SOX**

The first research question was designed to assess respondent’s level of familiarity with SOX. Overall, respondents were familiar with the SOX legislation with an average response of 5.34 on a scale
of 7. Respondents from publicly held corporations were significantly more familiar with SOX than those in private firms (e.g., an average response of 5.64 versus an average response of 5.04 for public versus private firms respectively p < .000) as was expected.

The authors then asked respondents to rate their firm’s response to SOX. This analysis indicated that the average responses were statistically different from the “Neither Familiar or Unfamiliar” response for all familiarity questions in the case of public firms (p < .000). Not surprisingly, the responses obtained from publicly held firms to all familiarity questions were once again statistically different than those reported by privately held firms (p < .000). These findings were expected given the fact that the overarching intent of SOX is to help restore investor confidence in publicly held corporations.

**Impact of SOX**

Table 2 presents the descriptive statistics for the questionnaire section entitled “Please rate the level of impact the Sarbanes-Oxley Act has had thus far from the following broad perspectives” and includes the specific questions: my firm overall (referred to as overall impact), my firm’s operational effectiveness (referred to as operational effect), my firm’s ability to compete (referred to as ability to compete), and my personal workload (referred to as workload). Respondents were asked to the impact that SOX has had on their firm based on a scale from 1 (Very Negatively) to 7 (Very Positively).

The results of this portion of the study are illustrated in Table 2 which shows that both groups of respondents felt that SOX had produced slightly positive effects (e.g., a response of 4 signified no effect) on Overall Impact and Ability to Compete. However, the results were mixed for Operational Effectiveness. Specifically, public firms reported a slightly negative effect while private firms reported a positive effect. Both public and private firms reported a negative impact on Workload. While the
results for this portion of the analysis were largely mixed they do indicated that both public and private firms have been affected by SOX.

Public firm: We have seen many controls put into place that create “make work” in purchasing but do little in the way of adding value.

Private firm: As a first tier supplier of publicly held firms we have had to increase the size of our accounting department by 300% just to put more auditors into the mix of payments and validation of bills. This added at least two more weeks to the check payment process.

Table 2

DESCRIPTIVE STATISTICS SOX IMPACT QUESTIONS

<table>
<thead>
<tr>
<th>Question</th>
<th>Public Mean</th>
<th>Public Std. Deviation</th>
<th>Private Mean</th>
<th>Private Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Impact</td>
<td>4.13</td>
<td>1.448</td>
<td>4.24</td>
<td>.961</td>
</tr>
<tr>
<td>Operational Effect</td>
<td>3.84</td>
<td>1.403</td>
<td>4.08</td>
<td>.974</td>
</tr>
<tr>
<td>Ability to Compete</td>
<td>4.23</td>
<td>1.145</td>
<td>4.11</td>
<td>.817</td>
</tr>
<tr>
<td>Workload</td>
<td>3.21</td>
<td>1.299</td>
<td>3.54</td>
<td>.922</td>
</tr>
</tbody>
</table>

Table 3 illustrates that although public firms reported a slightly positive impact from SOX their responses overall were not statistically different than a response of 4 (i.e., no effect). However, private firms responses were statistically different from a response of 4 and felt SOX had a positive impact overall. This result could be attributed to some private firms’ belief that SOX has leveled the playing field in their favor when it comes to head-to-head competition with public firms.

Public firms’ responses to the Ability to Compete were positive and statistically different than 4 on Ability to compete. Whereas private firms responses were not statistically different from 4 on the same question. Both public and private firms reported a negative impact on Workload and these negative responses were also statistically different than the no effect response of 4. In addition, responses from public firms regarding Workload were statistically different than private responses (p =
These results were expected as they had been posited by the popular press and industry anecdotes which suggest that SOX is a time consuming process. However, it would also seem that SOX has produced some positive impacts on supply chains which have heretofore not been reported.

Public firm: We look at SOX as being both a good business audit and an opportunity to improve, streamline, and fix our processes. From a SCM perspective, it has had an overall positive impact by forcing changes upstream as well as downstream.

Table 3

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Impact</td>
<td>4.13</td>
<td>1.036</td>
<td>0.302</td>
</tr>
<tr>
<td>Operational Effect</td>
<td>3.84</td>
<td>-1.362</td>
<td>0.175</td>
</tr>
<tr>
<td>Ability to Compete</td>
<td>4.23</td>
<td>2.346</td>
<td>0.020</td>
</tr>
<tr>
<td>Workload</td>
<td>3.21</td>
<td>-7.364</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Private</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Impact</td>
<td>4.24</td>
<td>2.655</td>
<td>0.009</td>
</tr>
<tr>
<td>Operational Effect</td>
<td>4.08</td>
<td>.877</td>
<td>0.382</td>
</tr>
<tr>
<td>Ability to Compete</td>
<td>4.11</td>
<td>1.401</td>
<td>0.164</td>
</tr>
<tr>
<td>Workload</td>
<td>3.54</td>
<td>-5.249</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Impact of SOX on Six Planning Functions

Respondents were then asked to rate the impact that SOX has had on six standard planning functions with which supply chain managers typically have some degree of familiarity. The six planning functions investigated included: sourcing, production, warehouse, transportation, distribution, and sales. These areas were chosen since they represent the core planning functions of supply chain management (Monczka, Trent, and Handfield, 2002; Simchi-Levi, Kaminsky, and Simchi-Levi, 2008). Respondents rated the significance of each source from very negatively (1) to very positively (7) with no effect being the average (4) response. None of the planning functions as a whole were statistically
significant when tested against the no effect response (i.e., a mean of 4). Table 4 displays the average ratings of the six planning functions.

Table 4

<table>
<thead>
<tr>
<th>Planning Function</th>
<th>Mean</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sourcing</td>
<td>3.98</td>
<td>-.259</td>
<td>.796</td>
</tr>
<tr>
<td>Production</td>
<td>3.95</td>
<td>-.961</td>
<td>.338</td>
</tr>
<tr>
<td>Warehouse</td>
<td>3.98</td>
<td>-.377</td>
<td>.706</td>
</tr>
<tr>
<td>Transportation</td>
<td>3.95</td>
<td>-.980</td>
<td>.328</td>
</tr>
<tr>
<td>Distribution</td>
<td>3.96</td>
<td>-.704</td>
<td>.482</td>
</tr>
<tr>
<td>Sales</td>
<td>3.97</td>
<td>-.573</td>
<td>.567</td>
</tr>
</tbody>
</table>

The data was then analyzed controlling for public versus private companies. While both public and private firms on average rated the six planning functions consistently lower than the no effect rating of 4, neither the public or private respondents rated the functions statistically different than the no effect rating. Furthermore, the responses provided by both groups were not statistically different regarding the impact SOX had from the perspective of the six planning functions. This would seem to imply that both public and privately held corporations planning processes have been equally impacted.

This finding was surprising given the alleged impact that SOX has had on corporate planning functions. However, it would also seem to imply that many companies have successfully adapted to the new regulations and that they may not be as onerous as the trade press has lead readers to believe.

Public firm: Other than lost productive time, I see no other impact or benefit to the firm.

Private firm: As a privately held company we have had limited impact from SOX. However, we do maintain financial controls that are in concert with the intent of SOX.

Controlling for Industry
The authors also tested to determine if there was a statistical difference in the planning function ratings based on industry. Table 5 contains the results of these one-sample t tests which controlled for industry. Only one industry, Transportation, displayed a significant difference from the no effect response (i.e., a mean of 4). Significant differences from the no effect response were found for the Transportation industry with regard to the transportation and sales planning functions. When controlling for both private and public firms and industry no significant effects were revealed. This finding can be explained in part by Section 409. Under Section 409 commonly occurring supply disruptions such as late, damaged, or lost shipments must be reported and their financial impacts must be accounted for which places greater pressure for compliance on the transportation industry from operational and sales perspectives.

Private firm: I am part of a privately held 3PL and transportation firm. While we don’t spend a lot of time considering complying with SOX, many of our customers do. Consequently, we have had to make changes to our administrative policies and procedures in addition to rethinking our contracting and transportation agreements and rates.

Table 5

<table>
<thead>
<tr>
<th>Industry</th>
<th>Planning Function</th>
<th>Mean Difference</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Transportation</td>
<td>-.412</td>
<td>-2.135</td>
<td>.049</td>
</tr>
<tr>
<td></td>
<td>Sales</td>
<td>-.235</td>
<td>-2.219</td>
<td>.041</td>
</tr>
</tbody>
</table>

ANOVA Testing – Factor Effects

The data was then analyzed to determine which, if any, of the independent factors impacted the planning functions. Of the independent factors (familiarity with SOX, impact from SOX, operational effectiveness, ability to compete, time spent working on SOX compliance, extent of SOX compliance, years employed with current company, industry type, or public versus private) tested that could affect
the different planning functions, impact from SOX, operational effectiveness, ability to compete, and time spent working on SOX compliance were significant for of the planning functions. Summary results, provided in Tables 6, 7, 8, and 9, detail the statistical relationships.

In general, the independent variables regarding the impact of SOX on firm performance (impact from SOX, operational effectiveness, and ability to compete) affected the six planning functions similarly. Tables 6, 7, and 8 illustrate that if a respondent viewed the impact of SOX as a positive, they would also be likely to view the impact SOX has had on the six planning functions as positive. The converse of this statement is also true. This is evident from the increase in the mean responses when moving from the negative portion of the rating scale to the positive portion of the rating scale in tables 6, 7, and 8 (i.e., respondents who believed SOX was having a more positive impact overall also believed that SOX was having a more positive effect on the six planning functions).

The ANOVA results also indicated that those respondents who reported spending more time working to comply with SOX provided lower ratings on the six planning functions than those who spent less time working toward SOX compliance (see Table 9). Not only did those respondents who reported spending more time working toward SOX compliance provide lower ratings but their responses were also negative and below the no effect response of 4. This is not surprising since it is logical that if a respondent spends more time on SOX compliance they will have less time to spend on other initiatives such as the six planning functions.

Public firm: SOX has forced well managed companies such as ours to add procedures, approvals, and documentation to our processes that are not particularly value added. This has negatively effected our accounting, purchasing and IS resources.

Private firm: In addition to my regular duties I must now police signatures on paper requisitions and ensure they have the necessary approvals which greatly increased my workload.

Table 6
### ANOVA TESTS – Overall Impact of SOX

<table>
<thead>
<tr>
<th>Planning Function</th>
<th>Mean Response</th>
<th>7=Very Positively</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=Very Negatively</td>
<td>2</td>
<td>3</td>
<td>4=No Effect</td>
</tr>
<tr>
<td>Sourcing</td>
<td>4.00</td>
<td>3.21</td>
<td>3.27</td>
<td>4.00</td>
</tr>
<tr>
<td>Production</td>
<td>3.00</td>
<td>3.11</td>
<td>3.53</td>
<td>3.96</td>
</tr>
<tr>
<td>Warehouse</td>
<td>4.00</td>
<td>3.47</td>
<td>3.47</td>
<td>3.98</td>
</tr>
<tr>
<td>Transportation</td>
<td>3.00</td>
<td>3.50</td>
<td>3.54</td>
<td>3.96</td>
</tr>
<tr>
<td>Distribution</td>
<td>4.00</td>
<td>3.35</td>
<td>3.60</td>
<td>3.96</td>
</tr>
<tr>
<td>Sales</td>
<td>4.00</td>
<td>3.16</td>
<td>3.68</td>
<td>3.97</td>
</tr>
</tbody>
</table>

### Table 7

### ANOVA TESTS – Impact of SOX on Operational Efficiency

<table>
<thead>
<tr>
<th>Planning Function</th>
<th>Mean Response</th>
<th>7=Very Positively</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=Very Negatively</td>
<td>2</td>
<td>3</td>
<td>4=No Effect</td>
</tr>
<tr>
<td>Sourcing</td>
<td>3.50</td>
<td>2.91</td>
<td>3.64</td>
<td>3.94</td>
</tr>
<tr>
<td>Production</td>
<td>2.83</td>
<td>3.00</td>
<td>3.78</td>
<td>3.93</td>
</tr>
<tr>
<td>Warehouse</td>
<td>3.50</td>
<td>3.29</td>
<td>3.72</td>
<td>3.95</td>
</tr>
<tr>
<td>Transportation</td>
<td>3.17</td>
<td>3.38</td>
<td>3.70</td>
<td>3.92</td>
</tr>
<tr>
<td>Distribution</td>
<td>3.20</td>
<td>3.38</td>
<td>3.73</td>
<td>3.93</td>
</tr>
<tr>
<td>Sales</td>
<td>3.00</td>
<td>3.27</td>
<td>3.82</td>
<td>3.94</td>
</tr>
</tbody>
</table>

### Table 8

### ANOVA TESTS – Impact of SOX on Ability to Compete

<table>
<thead>
<tr>
<th>Planning Function</th>
<th>Mean Response</th>
<th>7=Very Positively</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=Very Negatively</td>
<td>2</td>
<td>3</td>
<td>4=No Effect</td>
</tr>
<tr>
<td>Sourcing</td>
<td>3.00</td>
<td>2.56</td>
<td>3.31</td>
<td>3.90</td>
</tr>
<tr>
<td>Production</td>
<td>2.00</td>
<td>3.22</td>
<td>3.52</td>
<td>3.90</td>
</tr>
<tr>
<td>Warehouse</td>
<td>3.00</td>
<td>3.22</td>
<td>3.76</td>
<td>3.90</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.00</td>
<td>3.44</td>
<td>3.54</td>
<td>3.90</td>
</tr>
<tr>
<td>Distribution</td>
<td>1.00</td>
<td>3.22</td>
<td>3.69</td>
<td>3.91</td>
</tr>
<tr>
<td>Sales</td>
<td>2.50</td>
<td>3.33</td>
<td>3.64</td>
<td>3.92</td>
</tr>
</tbody>
</table>

### Table 9
Implications of these results for supply managers and SCM researchers are presented in the next and final section.

**SUMMARY AND IMPLICATIONS**

This section briefly summarizes study results and then discusses implications for supply chain managers and researchers.

**Summary**

The stated purpose of this manuscript was threefold. First, it sought to provide readers with an overview of SOX. Secondly, it sought to educate readers on how SOX impacts supply chain professions. Third, it sought to assess the impact that the Sarbanes Oxley Act has had on companies that are affected by it. To accomplish these objectives the authors sought to answer four research questions which were designed to assess the impact that SOX has had on supply management. The results of this study indicate that in general both public and private corporations are familiar with SOX. Both groups feel that the implementation of SOX has been at least somewhat beneficial but that it has increased their workload. Surprisingly, SOX was found to have had a limited effect on the six planning functions and that its impact was felt equally across all industries. Finally, both public and private companies are
working to comply with SOX but the majority of their time is spent on compliance issues related to
distribution and transportation.

**Implications for Supply Chain Managers**

There are a number of important implications for supply chain managers given the results of this study. First, supply chain managers are still having problems understanding and complying with this important piece of legislation. While respondents impressions have been largely mixed they do recognize the benefits that may be realized through compliance. However, it must be noted that SOX has not impacted supply chain managers to the extent put forward in the trade press. The authors suggest that supply managers that wish to better understand the implications of SOX review Titles 401, 404, and 409 which are available via an online search.

Public firm: It is too little understood by most of the line management and the attorneys have made all management very risk adverse. This leads to redundant activities that neither help prevent abuse or clarify reporting.

Second, companies that seek to comply with SOX cannot look at each functional area in isolation (LT Staff 2004). Rather, linkages between departments must be identified in order to develop effective checks and balances that can be meaningfully implemented and maintained. Doing so should further most companies compliance efforts while reducing the resources necessary to ensure compliance. Supply managers must also realize that for every function that occurs within the realm of their operational control there are corresponding functions in other departments such as accounting, finance, shipping and receiving and production / sales.

Based on the results of this study it would appear that some supply managers feel that their firms have not been affected by SOX and in some rare cases are even making efforts to circumvent federally mandated compliance objectives. The authors give words of caution to companies that adopt this
approach because there are strict penalties for non-compliance and Security Exchange Commission prosecutors have an excellent record of fining or sending offenders to prison.

Public firm: The company that I was working for circumvented SOX through wordsmithing to the SEC. When I questioned the CFO and Vice President of Finance I was released from employment.

Finally, Sarbanes Oxley compliance should not be viewed yet another onerous federally mandated directive.

Public firm: I believe that the original intent was good, but like everything else the government gets involved in, it has gone astray and are trying to kill flies with a 10 pound hammer.

Instead, it should be viewed as an opportunity to improve competitiveness and efficiency.

Public firm: I compare SOX to ISO9000. If procedures are documented and deviation does not occur audits will have positive outcomes. Documentation of procedures should be ongoing and up to date in any well run company.

Limitations and Future Research

Limitations of the study include its small sample size (n = 260), its snapshot approach, and its geographic focus (USA). The functional and geographic limitations which potentially limit our ability to generalize study results do provide future research opportunities. To make more detailed statistical comparisons a larger sample size is needed. Future survey research on this topic would involve contacting each of (ISM and APICS) local chapters to solicit their support prior to contacting individual members about participating in the survey in order to increase response rates. An additional follow up email might also be beneficial in increasing the response rate. Nevertheless, the results of this study provide an important first step toward determining the true effect of the Sarbanes Oxley Act.

However, there are a number of implications that are important to supply chain managers that have yet to be explored. One area that demands immediate attention is a study of off-balance sheet activities as covered under Section 401. Given the nature and importance of off-balance sheet activities
such as vendor managed inventories, slotting fees and promotional allowances to supply managers
research in this area should prove fruitful.

Secondly, in an increasingly global economy a wholly domestic approach to answer any question
of strategic importance seems out of place. Therefore, it would seem appropriate to study the impact
that SOX has had on firms that are headquartered in other countries, which possess differing cultural
values, have different accounting standards, and which have differing levels of economic development.

A third equally important stream of suggested research would seek to answer the question, “Has
the Sarbanes Oxley Act been effective or has it simply added additional reporting requirements that
ultimately reduce firm profitability”? Finally, all future research must seek to answer the overarching
question “Has investor confidence been restored”? While each of the suggested area of future research
is highly relevant and important not enough time has passed for us to truly understand how this
important Act has affected supply chains and supply chain managers.
NOTES


Sarbanes Oxley Act 2002.


