

IMPORTANCE OF ACCOUNTING SOFTWARE SELECTION ACTIVITIES FOR  
SMALL BUSINESSES

by

Bryan D. Sisson

A dissertation submitted in partial fulfillment  
of the requirements for the degree

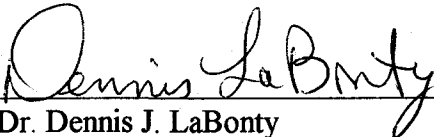
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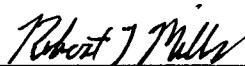
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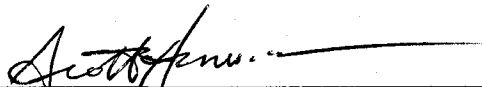
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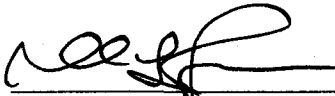
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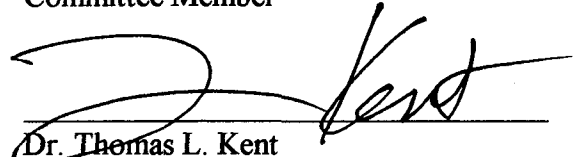
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## ABSTRACT

Importance of Accounting Software Selection Activities for Small Businesses

by

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The purpose of this study was to identify and assess the importance attached to accounting software selection activities by working accounting professionals in the small business community. The study was conducted using a questionnaire mailed out to certified public accountants (CPAs) and controllers of companies with 500 or less employees in the largest cities of four western states. Data were analyzed using a two-way ANOVA in a 2x3 factorial design. The study groups were CPAs, controllers, and controllers with CPA certification across software selection experience. Twenty software selection activities were recommended from the literature review and were incorporated into the questionnaire. A 5-point Likert scale was provided for the respondents to assess the importance of each of the 20 questions. Study results, the 20 selection activities rank ordered by their means, indicated that a hierarchy of software

selection activities did exist. Management of a small business, using this information, could conceivably optimize the selection of accounting software for their firm.

(136 pages)

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Finally, I am grateful for the support of my wife, Debbie, on this special quest over the last six years. She has endured and sacrificed beside me each moment of this very special experience. Particularly noble has been her patient listening to me go on and on about topics she had no interest in, knowledge of, or use for but just because I needed a friendly ear.

Bryan D. Sisson

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## CHAPTER I

### INTRODUCTION

Small businesses in the United States are the growth engine for economic expansion and job growth. From a June 1998 report on small business firms prepared by the Office of Economic Research of the U.S. Small Business Administration's Office of Advocacy, it states that the small business share of nonfarm gross product was 51%. Further, that same study found that even small firms with fewer than five employees created more than 1 million net new jobs; of the net new jobs created, new establishments accounted for 69% of new jobs (Glover, 1998).

Small businesses, occupying such a prominent position in the United States economy, could benefit greatly from the research and body of expertise that have been generated for the development and selection of accounting information systems for medium and large organizations.

Accounting information systems, their design, development, or acquisition for big businesses is taught from a variety of textbooks. In the literature review, the most recent 10 textbooks representative of those used in the instruction of accounting information systems were examined (Bodnar & Hopwood, 2001; Cushing & Romney, 1990; Davis, Alderman, & Robinson, 1990; Gelinas, Sutton, & Oram, 1999; Hall, 2001; Leitch & Davis, 1992; Moscove, Sinpkin, & Baganoff, 1999; Romney & Steinbart, 2000; Smith & Smith, 2002; Wilkinson, Cerullo, Raval, & Wong-on-Wing, 2000). These textbooks vary in size from 500 pages to almost 700 pages. From an examination of the table of contents and the chapter introductions in these textbooks, it was evident

that the focus of instruction was on the operation, design, development, and acquisition of accounting information systems for medium to large organizations or businesses. Each of these textbooks had two to three chapters devoted specifically to the identification and explanation of the activities involved in the selection of accounting systems software for medium to large organizations or businesses. A presentation of the textbooks by authors and their recommendations for accounting software selection activities is shown in Table 2 later in this document (page 18). In all, 20 activities are recommended for inclusion in an accounting software selection plan for medium to large organizations. These activities are not represented in this study as a model; rather, they are a diverse group of activities related to the accounting software selection process. However, only three of the textbooks specifically address the accounting software selection activities for small businesses. Two of the three textbooks (Bodnar & Hopwood; Davis et al.) devote only two to three pages each to the topic. Leitch and Davis (1992), the last textbook on the right in Table 2, includes a whole chapter discussing "Systems for Small Entrepreneurial Enterprises."

### Problem Statement

Small businesses are not always employing the most effective activities in selecting their accounting and operational software (Chewing, 2000). They generally rely on the owner or a computer-oriented, technical staff person to choose their accounting and operational computer software. This is usually accomplished by immediate direct contact with local software vendors who tend to dominate the

software-selection process.

Many small businesses cannot afford to have experts on staff to objectively analyze their system requirements and needs, nor can they afford the expensive consultants required to obtain optimum accounting software. What remains is a situation where one department can dominate the software selection process, generally to the detriment of the other departments in the company. An example of this would be the dispatch department over the accounting department. This practice, more often than not, results in a firm buying an optimum operational software system—albeit a less than adequate set of accounting modules for that business (Davis et al., 1990). A poor fitting accounting software system can result in gross inefficiencies in the accounting areas that will result in more staff requirements, produce late and inaccurate reports, and cause the company to lose its competitive advantage to companies with more efficient software systems (Davis & Leitch, 1992). A system that does not automatically post payroll data to departments and cost centers is an example.

If these companies knew what activities in the software selection process were most important they could conduct a more productive accounting software search process (Budiak, 2000; Chewing, 2000; Collins, 2000; Needle, 2000a). What hierarchy of software selection activities is most effective in the software selection process in order to insure that the optimum software is selected for a small business?

This study identified potential activities to be used by small businesses in the selection of new accounting and operational software. The journal articles and textbooks referred to in the literature review present 20 potential accounting software

selection activities for consideration. Certified public accountants (CPAs), professors, and consultants wrote the journal articles. The textbooks were written by professors to emphasize the design of accounting information systems to be used by large organizations and businesses. They include chapters that address in whole or part the software selection activities they recommend be used by large businesses. The body of knowledge that exists, as represented by these textbooks, for the use of big business in obtaining efficient accounting software systems will be invaluable to small business as they struggle with the selection process. The problem addressed by this researcher was how to assess the importance of these activities in order to provide a guide to a small business leader as they proceed through the accounting software selection process.

The researcher achieved this by using the list of 20 software selection activities identified from the articles and textbooks described in the literature review. The 20 software selection activities were compared among six groups of working accounting professionals who dealt with small businesses on a daily basis. These six groups were CPAs with prior software-selection experience, CPAs with no prior software-selection experience, controllers with prior software selection, controllers with no prior software-selection experience, controllers who had CPA certification and prior software-selection experience, and controllers who had CPA certification but no prior software-selection experience. A list of 20 software-selection activities were synthesized from the literature and presented to a sample of working accounting professionals (CPAs and accounting controllers) in the form of a survey questionnaire for their assessment as to utility and importance in conducting an accounting software selection search.

## Research Questions

The purpose of this study was the identification of the most important accounting software selection activities among the 20 activities synthesized from the literature review by working accounting professionals. Therefore, the research questions used to obtain that information are as follows.

1. Software selection experience: Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that experience? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

2. Job type and training: Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training, such as (a) CPAs, (b) controllers, and (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

3. Interaction between software selection experience and job type or training: For the 20 software selection activities, is there interaction between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents?

Synthesizing the information from the literature review resulted in 20 software



selection activities that were potential activities for consideration in a company's software-selection plan. The real test of the research questions in relation to these 20 selection activities has to come from the accounting software user community. This community consists of the accounting controllers of small businesses, and the CPAs that support those controllers. These controllers and CPAs, who have to "make it work" every day as hands on users, are those who have the responsibility in the small business community for the selection and utilization of accounting and operational software. This "user community" of controllers and CPAs further breaks down into the six groups identified in the research questions. Therefore, this researcher proposed utilizing the 20 software selection activities recommended by the authors of the literature in the field for medium to large businesses as a survey vehicle for comparison of responses between the six groups resulting from the CPAs and controllers of small businesses. This process resulted in the identification of those activities in the accounting software selection process that would be most useful for small businesses to utilize in objectively selecting their accounting software.

#### Importance of the Study

The authors of the articles, professional books, textbooks, and reviews examined in this study presented a variety of activities to be used in the accounting software selection process for larger businesses. From the diversity of opinions presented in the literature review by the article authors and the design of large business accounting systems orientation by the textbook authors, there was not a consensus on what

constituted a hierarchy of the activities that, if followed, would optimize the software-selection process for small businesses. This study, using the 20 software selection activities identified in the literature review, and a comparison among groups of a sample of practicing CPAs and controllers, revealed which software selection activities might be used by a sample of practicing accounting professionals and what level of importance they attached to each activity. With this information, a small business might be better able to optimize their accounting software selection process.

#### *Limitations*

The population for this study was practicing CPAs and company controllers of the small business communities of the largest cities of four western states, Utah, Colorado, Wyoming, and New Mexico. It was assumed that these accounting professionals would have an active interest in the accounting software selection process because they are the professionals who have the responsibility of choosing accounting software and making it work for the small businesses under their care. In order to keep the cover letter and questionnaire concise enough to induce the survey subjects to respond but long enough to extract useful data, detailed definitions of the concepts embodied by the 20 software selection activities were not included. Even though the activity concepts were piloted on a university accounting professor, the understanding of the respondents of the concepts represented in the 20 questions may or may not coincide exactly with those of the researcher.

### *Delimitations*

Practicing accounting professionals in small business communities of the largest cities the four western states Utah, Colorado, Wyoming, and New Mexico were the specific target population of this study. This type of professional was chosen because the choosing and the subsequent using of the accounting software system for a business is critical to its internal functioning and to its ability to make informed business decisions in a competitive market environment. The findings of this study provide lists of accounting software selection activities to small business management that are rated important in the selection process by accounting professionals in their communities. While accounting and small business management professionals in other geographical areas of the United States may find these results useful in selecting their accounting software, they should take in to account the fact that there may be differences in ratings of importance due to geographical regional and culture. The researcher makes no representation as to applicability of these findings in any other country or business application.

### Definition of Terms

*Controller:* This term includes all titles that might be used by small businesses to indicate their full-time employee who is the chief financial officer. For example: accounting manager, controller, chief accountant, treasurer, or vice-president of finance.

*Controller/CPA:* Some controllers may have studied for and passed the exams for Certified Public Accountant or some controllers may have been practicing CPAs

earlier in their careers.

*CPA:* This term refers to currently practicing, full-time, Certified Public Accountants.

*Federal administrative area 9:* This area encompasses the states of Utah, Colorado, Wyoming, and New Mexico as defined by the Department of Transportation of the Federal Highway Administration. This information was obtained from map #289 of The National Atlas of the USA, 1970.

*Small business:* A small business as defined by the Small Business Administration (SBA) is “one which is independently owned and operated and which is not dominant in its field of operation.” The SBA, in a report on small firms prepared by the Office of Economic Research of the U.S. Small Business Administration’s Office of Advocacy dated June 1998, says that generally, “Small firms are defined as those with fewer than 500 employees” (Glover, 1998).

*Systematic sampling or selection:* This involves selecting every  $n$ th element in the population starting with a randomly chosen element between 1 and  $n$  (Sekaran, 2000).

*SAP:* SAP is a specific Enterprise Resource Planning product that is utilized by many companies throughout the Americas and Europe. It is used to integrate and standardize information and to manage processes across an enterprise (Cooke & Peterson, 1998).

*City population:* The city population numbers in Table C-1 that are used for allocating how many respondents were to receive the questionnaires in each city

involved in the survey were taken from the 2000 Rand McNally road atlas. This source of population data was used because the 2000 U. S. Census data was not available for the smaller cities at the time the study was conducted. For the 2000 Rand McNally the U.S. population figures are from the 1990 census or latest available estimate.

Populations for states and places of 25,000 or more their estimates are from Market Statistics, S&MM Survey of Buying Power estimates of January 1, 1998 (Rand McNally, 2000).

*SIC codes:* This is a numerical coding system (Standard Industrial Classification/SIC) used by the United States federal government to classify companies and organizations within industry groups (Miller, 1987).

## CHAPTER II

### REVIEW OF THE LITERATURE

In selecting accounting and operational software for a small business or organization, what are the most important activities one could employ in the software selection process in order to ensure that the optimum software is selected for that organization? The literature review was conducted to identify a list of activities, recommended by a body of expert opinion, which, if followed closely, would most likely ensure a successful software selection effort.

The six areas of the literature review included (a) review methodology and scope, (b) types of sources reviewed, (c) discussion of reviews, (d) integrated overview, (e) profiles of authors, and (f) software selection activities.

#### Review Methodology and Scope

The search criteria used for identifying research materials were: (a) selecting accounting software, (b) selecting software, (c) selecting computer software, (d) accounting software, and (e) software and applications. Utah State University (USU) library facilities were used to examine electronic databases such as: EBSCO Masterfile, ABI/Inform, Educational Resources Information Center (ERIC), Dissertation Abstracts International, Econ Lit, Education Abstracts, and various business journal indexes. A search of paper documents was conducted through the USU online catalogue and the listing of current accounting information systems textbooks through the USU bookstore.

### *Types of Sources Reviewed*

The software selection reviews located consisted of four reviews from the Information Systems (IT) field and one review from the Enterprise Resource Planning (ERP) field. Four of the five reviews focused primarily on the implementation phase of the software selection process and the issues and problems related to that activity. One review focused on developing potential computer applications that would improve the strategic position of the organization. The IT reviews consisted of two Meta-Analyses (one of 33 studies and the other of 71 studies) and two surveys of organizations that have experienced the implementation of information systems (one of 80 organizations and the other of 114 small businesses). The ERP review was a Conference Board study on the SAP (see definitions) implementation efforts of 186 companies. Most of the companies involved in the study had annual revenues that ranged from \$1 billion to \$10 billion.

Eleven textbooks were found that addressed the topic of software selection for businesses. These textbooks focused on the design of accounting information systems for large companies and organizations that would be able to afford their own staff of programmers and systems analysts. This was evident from the constant textual references to a firm's in-house programmers and systems analysts performing various tasks and components of the design process. This was also apparent from the occasional references to how the topics under discussion would apply to small businesses. In these textbooks software selection issues were usually addressed as an alternative to designing in-house systems. Three of the textbooks had discussions (two to three pages)

of the software selection issues for small businesses. None of these textbooks addressed or referred to empirical research on the process of software selection for small businesses and organizations. The ideas and concepts in these textbooks were presented, for the most part, as expert knowledge of the authors. One textbook, published before 1990, was omitted from the review because it was considered outdated. The remaining current textbooks (10) were all authored by Ph.D. holders (eight of whom have CPA certification) and are included in the integrated review following.

There were 21 journal articles found that addressed the research topic. Three articles, addressing two or less steps in the selection process, were omitted from the study because of their limited scope. The remaining 18 journal articles are referenced in the integrated overview that follows. Seven CPAs, two PhD holders, and eight consultants authored the 18 journal articles.

#### *Discussion of Reviews*

The five reviews focused primarily on the implementation and needs analysis phases of the software selection process and not the full spectrum of activities relating to the software selection process. One of the reviews specifically studied accounting information systems and focused on small business issues. Discussion of the five reviews follows.

*Revisiting DSS implementation research: A meta-analysis of the literature and suggestions for researchers* (Alavi & Jochimsthaler, 1992). The focus of this journal article (a meta-analysis of 33 studies) was to conduct a review of decision support system (DSS) implementation literature in order to develop guidelines for improved



implementation management. The findings indicated that user-situational variables such as employee training on the new system, employee experience with like systems, and direct employee involvement in the implementation process improved the level of success of the implementation plan. This review supported the activities, consider training time and cost, and use own experienced staff as discussed in the integrated overview following.

*Exploring the research in information technology implementation* (Lai & Mahapatra, 1997). This article used a meta-analysis (of 71 articles) to examine the intellectual development and evolution of IT implementation research. The results of this study indicated that the research methods used most often in IT research were case study and field study (using a survey instrument), with a shift toward empirical field studies. This review supported the researcher's use of a survey questionnaire to conduct research on the software selection process.

*The implementation of strategic information systems planning (SISP) methodologies* (Lederer, Katz, & Sethi, 1988). The focus of this journal article (a survey of 80 organizations) was on the problems information systems managers encountered as they attempted to implement SISP methodologies. This study centered on organizations large enough to have information systems managers on staff, a condition not prevalent in most small businesses, as they tend to be resource poor. The conclusion of the study was that detailed and lengthy SISP efforts might have had little top management acceptance and, therefore, little value to the organization. The authors suggested that less time-consuming and more economical alternatives to SISP needed to be developed.

This review did emphasize the need for evaluating present systems, as discussed in the integrated overview.

*Top management support, external expertise and information systems implementation in small business* (Thong, Yap, & Raman, 1996). The focus of this journal article (a survey of 114 small businesses) was on assessing the criticality of top management, outside information systems vendors, and outside information systems consultants in the information systems implementation process. Most of the small businesses in this study had installed accounting systems and related software modules, all of the businesses employed outside IS consultants, and the whole sample was selected from businesses in Singapore. The results of the survey indicated that for small businesses the engagement of expert outside vendors and IS consultants was essential and exceeded the importance of top management support in the IS implementation process. This review supported the activities of hiring a consultant, evaluating present systems, considering training time and cost, sending out a request for quote, examining vendor reliability, and supervising implementation.

*SAP implementation: Strategies and results* (Cooke & Peterson, 1998). The focus of this ERP study was a survey of 186 companies in order to examine their experiences in implementing a specific ERP system software product SAP R/3 (the client-server version of SAP's software). Most of the companies involved in the study had annual revenues that ranged from \$1 billion to \$10 billion. Fifty-eight percent of the respondents were from the Americas. The results indicated that the most effective activities for SAP implementation were top management support, training of

employees, and early introduction of change management programs. The major problems in implementation of SAP was employee resistance to change, lack of employee training, and complexity of the SAP software. This review supports the software selection activities of hiring a consultant, evaluating present systems, considering training time and cost, sending out a request for quote, using own experienced staff, considering system interface issues, preparing new system budget, developing implementation plan, supervising implementation, and obtaining written documentation.

### Integrated Overview

An integrated overview of the articles and textbooks are presented in Tables 1 and 2, respectively. There are 20 activities in the software selection process as identified from the journal articles researched and presented in Table 1. Not every author addressed all the activities. The totals at the bottom of the chart show how many of these activities are discussed in each author's article. The average number of activities addressed per article was seven, with the most being 14 and the least being five. The column "activities addressed by articles" on the right of the table shows how many articles addressed each of the activities identified. The 1s and 0s in the body of the table represent whether each article addressed the software selection activity so indicated. Finally, the percentage of articles addressing each activity in the selection process is presented in the last column. For example the number 4 near the right end of the row "hire independent consultant" represents that four of the 18 articles (22%) indicated

Table 1

*Frequency with Which Software Selection Activities Are Recommended by Journal Authors*

Software selection activity (20)	Author (N = 18)																Activities addressed by articles	%		
	Bangranoff (1999)	Bangranoff & Simkin (1992)	Blaisdell & Winslow (1991)	Budiac (2000)	Charlton & Stello (1999)	Chewing (2000)	Collins (1999b)	Collins (1999c)	Collins (2000)	DGG's (2000)	Doyle (1999)	Frey (1999)	Gamblin & Stiegel (1997)	Myaing (1996)	Needle (2000a)	Needle (2000b)			Needle (2000c)	Roe (1999)
A. Hire a consultant	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	4	22
B. Compile vendor list	0	1	1	0	1	1	0	0	1	0	0	1	0	1	1	1	0	0	9	50
C. Use actual data for demos	0	0	0	0	1	1	0	0	0	0	0	0	1	1	1	1	0	0	5	28
D. Call vendor customer lists	0	0	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	4	22
E. Evaluate present systems	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	0	1	14	78
F. Develop a scoring instrument	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	5	28
G. Consider training time and cost	0	0	0	0	1	1	0	0	0	1	1	0	1	1	1	0	0	0	7	39
H. Consider future system expansion	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	0	1	0	6	33
I. Determine system capacity	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	11
J. Buy a software selection program	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	5	28
K. Review vendors and products	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	1	6	33
L. Send out a request for quote	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
M. Consider program ease of use	0	0	1	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	5	28
N. Use own experienced staff	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	4	22
O. Examine vendor reliability	0	0	1	1	1	0	1	0	0	0	0	0	1	0	1	0	1	0	7	39
P. Consider system interface issues	0	0	0	1	1	0	1	1	0	0	1	1	0	0	1	1	1	0	9	50
Q. Prepare new system budget	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	3	17
R. Develop implementation plan	0	0	0	1	1	0	0	1	1	0	1	0	0	1	1	0	1	0	8	44
S. Supervise implementation	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	4	22
T. Get written documentation	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	11
<i>Totals</i>	4	5	6	7	8	8	4	5	9	4	4	5	5	8	12	7	6	4		

Note. 1 = activity was addressed by author

Table 2

*Frequency with Which Software Selection Activities Are Recommended by Textbook**Authors*

Software selection activity (20)	Author (N = 10)										Textbooks addressing activities	%
	Bodnar & Hopwood (2001)	Cushing & Romney (1990)	Davis et al. (1990)	Gelinas et al. (1998)	Hall (2001)	Leitch & Davis (1992)	Moscove et al. (1999)	Romney & Steinbart (2000)	Smith & Smith (2002)	Wilkinson et al. (2000)		
A. Hire a consultant	1	0	1	0	1	0	1	0	0	0	4	40
B. Compile vendor list	0	1	1	1	1	1	1	1	1	1	9	90
C. Use actual data for demos	0	1	0	1	0	0	1	1	0	1	5	50
D. Call vendor customer lists	0	1	0	1	1	0	0	1	1	1	6	60
E. Evaluate present systems	1	1	1	1	1	1	1	1	1	1	10	100
F. Develop a scoring instrument	0	1	1	1	1	0	1	1	0	1	7	70
G. Consider training time and cost	1	1	1	1	1	1	1	1	1	1	10	100
H. Consider future system expansion	1	1	1	1	1	1	1	1	0	1	9	90
I. Determine system capacity	1	1	1	1	1	1	1	1	0	1	9	90
J. Buy a software selection program	1	0	0	0	0	0	0	0	0	0	1	10
K. Review vendors and products	1	1	1	1	1	1	1	1	1	1	10	100
L. Send out a request for quote	0	1	1	1	1	1	1	1	1	1	9	90
M. Consider program ease of use	0	1	1	1	1	1	1	1	0	1	8	80
N. Use own experienced staff	1	1	0	1	1	1	1	1	1	1	9	90
O. Examine vendor reliability	1	1	1	1	1	1	1	1	1	0	9	90
P. Consider system interface issues	1	1	1	1	1	1	1	1	1	1	10	100
Q. Prepare new system budget	0	1	1	1	1	0	1	1	1	1	8	80
R. Develop implementation plan	1	1	1	1	1	1	1	1	1	1	10	100
S. Supervise implementation	1	1	1	1	1	1	1	1	1	1	10	100
T. Get written documentation	1	1	1	1	1	1	1	1	1	1	10	100
<i>Totals</i>	<i>13</i>	<i>18</i>	<i>16</i>	<i>18</i>	<i>18</i>	<i>14</i>	<i>18</i>	<i>18</i>	<i>13</i>	<i>17</i>		

Note. 1 = activity was addressed by author

that that activity should be included in the software selection process. An activity in the selection process addressed by many authors may indicate some measure of its importance.

There are 20 activities in the software selection process as identified from the textbooks researched and presented in Table 2. Not every textbook author addressed all the software selection activities. Some of the activities may have come from textbooks with “Life cycle system development” models and are not a new model nor are they intended to be a complete representation of the “Life cycle.” Thirteen of the selection activities were addressed by all of the textbook authors. The totals at the bottom of Table 2 show how many of these activities are discussed in each textbook. The average number of activities addressed per textbook is 15, with the most being 18 and the least being 13. The column “Textbooks addressing activities” to the right of the table shows how many textbooks addressed each of the activities identified. The 1s and 0s in the body of the table represent whether each textbook addressed the software selection activity so indicated. An activity in the selection process addressed by many authors may indicate some measure of its importance. Only one of the textbook authors recommended the activity, “use smart selection software.” Whereas, 28% of the journal article authors in Table 1 recommended that activity. The authors of the articles, taken together, and the authors of textbooks, taken together, do not always agree on which software selection activities are to be used.

### *Profiles of Authors*

Appendix B contains a full set of the data gathered on the article and textbook

authors. The type of information gathered consists of: (a) name, (b) degree and/or certification, (c) affiliation, (d) type of publication, and (e) the number of editions per textbook. A summary of that information is presented here.

*Authors by degree or certification.* There were 37 authors in all for the 10 textbooks and 18 journal articles included in the study. Twenty-four of the 37 authors have Ph.D.s and six only have CPA certification. It can be pointed out that of the 24 authors with Ph.D.s, 14 were full professors and eight also have CPA certification.

*Authors by affiliation.* Twenty-three of the 37 authors were affiliated with universities and all of them have Ph.D.s. Five of the authors with Ph.D.s were chairs of accounting departments.

*Authors by type of publication.* Twenty-two of the 37 authors had written the 10 textbooks utilized in this study, 14 authors wrote the 18 journal articles, and the remaining author wrote the professional development book included in the study.

*Author's textbooks by number of editions.* The textbooks used in the study are presented in Figure 1 showing the number of editions as of midyear 2002. Nine of the 10 textbooks were into three or more editions.

### *Software Selection Activities*

An evaluation of methods of accounting software selection reviewed in the literature indicates that the following 20 generic activities are those recommended by the group of authors reviewed in the literature search used in Tables 1 and 2. In this section, each of the 20 software selection activities is further supported with the ideas and recommendations of several of the journal articles, textbook authors, and reviews

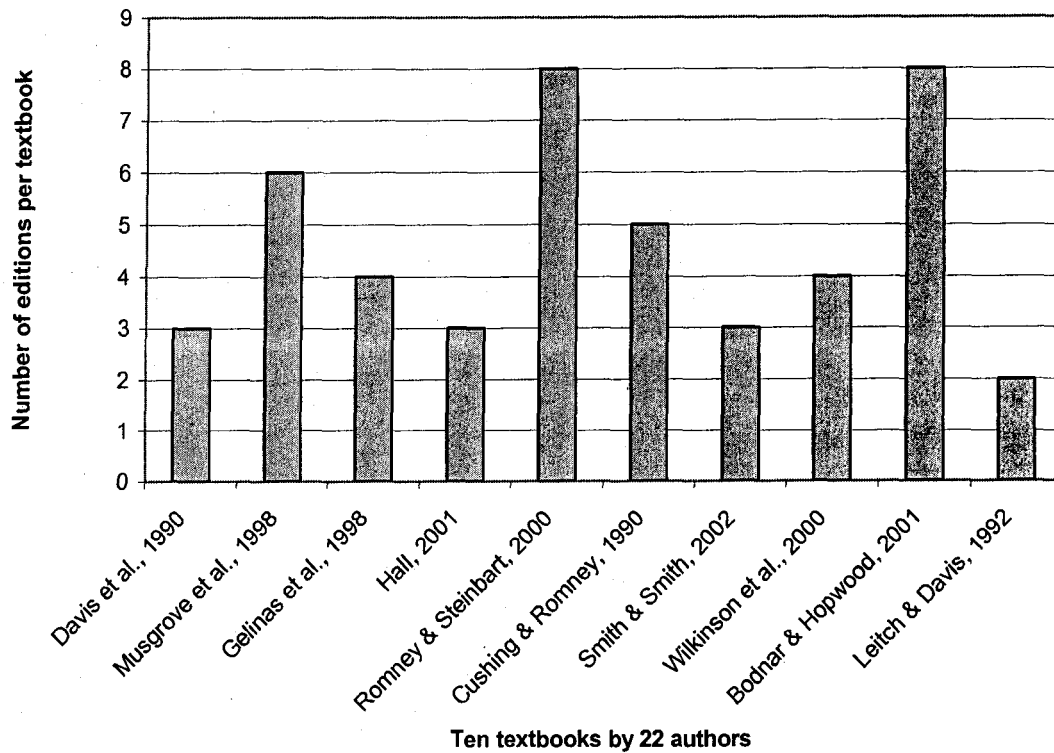


Figure 1. Number of editions for each of the 10 textbooks in the study.

from the literature review. The researcher has attempted to select those authors who expressed the ideas most clearly and precisely.

*Hire independent consultant.* Roe (1999) explained that hiring an independent consultant could help a firm through the confusion of identifying what a firm's needs are and finding the best vendor and product. He indicated that this was an optional activity to consider. Bodnar and Hopwood (2001) suggested hiring an independent consultant for employee training during the implementation phase.

*Compile list of software vendors.* Bagranoff (1999) recommended getting help on the Web. She stated, "Web sites are a good source of product information. By using the Web, specific accounting software vendors can be quickly identified and listed" (pp.



3-4). Gelinas et al. (1999) counseled that a company could build a vendor list from previously used vendors or research the computer press for vendor evaluations.

*Use actual cases.* Both Charlton and Stello (1999) and Myaing (1996) recommended that an organization use their own data and cases to develop a model of their accounting systems to test the vendor's products. Needle (2000a) recommended that one should also prepare a script for the vendor to use in conducting product demos at the buyer's site.

*Call vendor's customer lists.* Charlton and Stello (1999) indicated that one should ask the vendor's customers about the problems encountered with the vendor and how the vendor resolved them. Blaisdell and Winslow (1999) suggested that one should explore what a customer would have done differently in their selection process.

*Evaluate present systems.* Bodnar and Hopwood (2001) stated that one must understand the existing system and the needs of the users before changing it. According to Bagranoff (1999), a company should analyze their organizational unit's business. The first step in this process is to designate a knowledgeable employee to conduct a needs analysis on the organization. Needle (2000a) recommended that in this process one should also consider financial reporting needs--both current and anticipated. Needle (2000b) said that one should address all features of the desired system no matter the size. Anderson (1984) recommended developing specific criteria for comparison of products so that each feature of the desired system could be adequately covered.

*Develop instrument for evaluation/measurement of software systems.* Conforti (1989) suggested the use of a worksheet format for organizing and evaluating the

critical features of each software module and category of questions. From a worksheet, one can record a numerical assessment score for each of the critical criteria under several categories. These categories may include current system, new system, future system, and vendor responses.

*Consider training time and cost.* Bodner and Hopwood (2001) emphasized that employee training (both new hires and existing employees) was essential to the successful installation of any new accounting software system. Hall (2001) indicated that a firm should budget training costs into the implementation plan.

*Consider future system expansion.* Needle (2000a) suggested choosing software that address each organizations future expansion possibilities and anticipated needs. Wilkinson et al. (2000) recommended that a buyer should ensure that the new system could handle future growth and adapt quickly to unusual occurrences.

*Determine system capacity.* Bodnar and Hopwood (2001) suggested that when considering the closeness of fit between the existing system and new products that one should evaluate the degree of modification required to effectively use the proposed system. Wilkinson et al. (2000) asked if the new system could handle the buyer's usual volume of data without backlogs.

*Utilize smart selection software tools.* Bagranoff and Simkin (1992) recommended using spreadsheets or commercial decision-support tools to provide a structure for judging variables (i.e., software needs and features) and alternatives. In order to evaluate potential software products, according to Bagranoff and Simkin, one may purchase commercially prepared and administered decision support software, or a

generalized commercial decision support package, or develop a model on a spreadsheet.

*Prepare and send a "request for quote" (RFQ) to a vendor list.* Collins (1999a) suggested that this activity could be useful in that an organization could supply a vendor with a detailed list of their requirements and questions. In return, an organization can receive proposals from vendors that explain features specific to the desired products. Romney and Steinbart (2000) stated, "When an RFP is solicited based on exact-software specifications, the total costs are usually lower and less time is required for vendor preparation and company evaluation--the more information a company provides to a vendor, the better the chances of receiving a system that meets its requirements" (p. 660).

*Review and analyze vendor responses.* Bagranoff (1999) and Myaing (1996) stated that each software package should be examined with a scoring plan that assigns points according to how well selected criteria were met. Bagranoff and Myaing also recommended that a scoring plan should include a final summation score for performance and an average score for each vendor and their products.

*Consider program ease of use.* Choosing an accounting system that included the features needed and at the best price was only part of the selection process. Ease of use by employees was a major consideration in acquiring an accounting system that helps the business to succeed (Chewing, 2000).

*Use your experienced staff.* Needle (2000a) explained that an organization needed to have their own person head up the software-selection project. Conforti (1989) suggested the possibility of actually having a selection committee. An organization's

staff knows best how the new software was to be used (Bagranoff, 1999).

*Examine vendor reliability and support.* Budiac (2000) explained that you need to consider the type of support the vendor can provide at your site and what their past performance has been for other customers. Bodnar and Hopwood (2001) consider vendor stability, number of other like installations of that software, and the possibility of a trial period important. An organization should obtain, early in the selection process, written copies of warranties, prices, and maintenance agreements (Blaisdell & Winslow, 1991). Hall (2001) warned that vendor promises of extensive support might not be true. The buyer should be ready to pay for the level of support desired.

*Consider system interface issues.* Bodnar and Hopwood (2001) questioned whether the new system would require modification of existing company procedures or modification of the new software. Needle (2000a) counseled that hidden conversion costs might arise in attempting to interface with other systems after the new software was selected and implementation was underway. Budiac (2000) raised the question of whether the new software would function fully with existing hardware and related systems? One should choose the product that provides the closest parallel to its organizational structure and system needs. Focus on a product that allows maximum flexibility for tailoring it to fit the requirements (Budiac; Charlton & Stello, 1999).

*Prepare new system budget.* Blaisdell and Winslow (1991) recommended that an organization put together a budget that included all aspects of the selection process (e.g., acquisition, installation, training, and operation). Romney and Steinbart (2000) explained that budgeting for a new system should include capital and expense budgeting

items related to the initial outlay and ongoing operating costs for the new system.

*Develop implementation plan.* Needle (2000a) counseled the selection team to plan their implementation carefully and allow enough time for each phase. Bringing in a new system brings many costs that a company may not have considered. These hidden costs include maintenance of software, conversion costs, and staff training. Needle also noted that the actual installation, training, conversion, and support costs would be much more than the cost of the software. His rule of thumb was “The project will cost two to three times the cost of the software” (p. 3). Moscove et al. (1999) stated, “The work required to prepare the physical site location...can be quite time consuming. Additional incremental costs include air conditioning, electrical outlets, a library to store data files and computer programs, and for furniture and fixtures” (p. 395).

*Supervise implementation.* Myaing (1996) suggested setting up a project steering committee of users to implement the new system. This committee should also plan training for the system end users. The original software selection team from accounting should assemble documentation about the new vendor and their company’s internal procedure manuals. They should also resolve any data problems that might have existed in their old accounting systems before conversion to the new system. Examples might be corrupted files, miss-coded data, and imbalances in the trial balance. Management should choose a support team consisting of a person from each user department. A member of the original software selection team should chair the support team. This new support team should monitor the new system operations and interface with vendor personnel to resolve problems. Gelinis et al. (1999) recommended that the company’s

project team develop an implementation plan and budget that allocates resources for all phases and facets of the implementation of the new software system. Hall (2001) indicated that a firm should prepare and monitor the organization's budget of resources in step with the project schedule.

*Get written documentation.* Budiak (2000) expressed the concern that when the vendor completed the installation and leaves, has he left written documentation of sufficient quality to allow the employees to conduct the firm's business and solve routine problems. Bodnar and Hopwood (2001) expressed the same concern and also asked if the instructions are complete, clear, and easy to follow.

### Summary

Evaluation of the related research was conducted in six areas. First, the review methodology and scope area noted the search criteria used and the types of databases examined. The electronic databases and the current textbook listings of the USU bookstore proved to be the most productive.

Second, the types of sources reviewed area discussed the process of choosing the journal articles and textbooks used in the study. There were 18 journal articles and 10 textbooks that were finally used in the study.

Third, the discussion of reviews area provided support for the use of a survey questionnaire in studying software selection. One of the reviews indicated that the engagement of expert outside vendors and IS consultants is critical in the implementation of software systems for small businesses. Collectively, the reviews

supported activities to (a) examine vendor reliability, (b) hire a consultant, (c) evaluate present systems, (d) consider training time and cost, (e) send out a request for quote, (f) use own experienced staff, (g) consider system interface issues, (h) prepare new system budget, (i) develop implementation plan, (j) supervise implementation, and (k) get written documentation.

Fourth, the integrated overview area provided 20 potential activities that could be considered for inclusion in any small to mid-sized business accounting software selection plan. These activities are: hire a consultant, compile a vendor list, use your actual cases, call vendor customer lists, evaluate present systems, develop scoring instrument, consider training time and cost, consider future system expansion, determine system capacity, use “smart selection” software, review vendors and products, prepare and send a RFQ, consider program ease of use, use your experienced staff, examine vendor reliability, consider system interface issues, prepare new system budget, develop implementation plan, supervise implementation, and get written documentation. The average number of selection activities addressed by the journal article authors was seven; whereas, the textbook authors, on the average, addressed 15 of the selection activities. The journal article authors tended to focus on a few specific activities in the software selection process and covered them in more depth, whereas the textbook authors were more comprehensive in software selection activity coverage but addressed the activities in less depth.

Fifth, the profile of author’s area presents information on the article and textbook authors. Twenty-four of the authors have Ph.D. degrees; 23 of the Ph.D.

degree authors were affiliated with universities, and 22 of the Ph.D. holder authors wrote the 10 textbooks used in the study.

Sixth, the software selection activities area presented evidence supporting the selection of the final 20 software selection activities used in the study. From these activities a “software selection questionnaire” (see appendix A) was developed for conducting the proposed survey described in the methodology. The lack of any comprehensive academic (empirical) study clearly outlining the activities in the process of selecting accounting software for small businesses and their relative importance to that process indicated a potential need for this study. This researcher used the above list of software selection activities resulting from the literature review to survey controllers of small businesses and the CPA firms supporting them, and compared the responses of the resulting six groups of respondents in order to discover the most important activities to employ in the process of accounting software selection.



## CHAPTER III

### METHODS AND PROCEDURES

The four areas of the methods and procedures chapter include (a) purpose of the study, (b) population and sample, (c) data collection method, and (d) data analysis.

#### Purpose of the Study

The purpose of this study was to determine what level of importance small business accounting professionals attached to each of the 20 activities in the accounting software selection process that were identified from the literature review.

#### Population and Sample

A small business, as defined by the SBA, is one that is independently owned and operated and not dominant in its field. The SBA also uses many other criteria that vary from industry to industry. Their recommended criteria are number of employees or dollar volume of business. For many industries, a business with more than 500 employees is classified as a big business (Glover, 1998). From a logical point of view, the factors influencing the choice of criteria for selecting survey subjects in software needs assessment for small businesses seem to be that the company be large enough to need an accounting manager or controller but small enough to not be able to afford their own programmers and systems analysts on staff. In this study, companies with 500 or fewer employees were chosen for the survey.

The greatest threat to internal validity for this type of research would be that of

unequal distribution of subject-related variables in the selection process. The procedures outlined in the following paragraphs were designed to minimize the threat of unequal distribution in the selection process. Two thirds of the sample population were made up of individuals from the small businesses having 500 or fewer employees that resided in the largest city of each of four western states of the United States identified as “federal administrative area 9.” These cities and states are: Salt Lake City, Utah; Denver, Colorado; Albuquerque, New Mexico; and Cheyenne, Wyoming. The remaining third of the sample population consisted of individuals from CPA firms who served the same business areas, Salt Lake City, Denver, Albuquerque, and Cheyenne. The individuals from the CPA firms who received the questionnaire were systematically selected from the Yellow Pages of Salt Lake City, Denver, Albuquerque, and Cheyenne. The individuals from small businesses who received the questionnaire were systematically selected from the geographical section of Dun and Bradstreet’s (D&B) Million Dollar Directory (2002 series) for the cities of Salt Lake City, Denver, Albuquerque, and Cheyenne. The small business survey participants were initially selected from the D&B directory city lists using the following criteria: Companies with 500 or fewer employees, and then by systematic sampling of the resulting qualified list. The quantity of participants selected from each city was determined by the size of each city’s population as indicated by Appendix C. One third of the sample participants chosen from each city were CPAs and two thirds were small business controllers in order to obtain a desired final sample size of about 325 that is composed of approximately 108 CPAs and 217 controllers. This ratio of one third of the CPAs to two thirds of the

controllers was to obtain six approximately equal size groups from the sampling process for the two by three factorial experimental design described in the data analysis.

#### Data Collection Method

Each potential participant was mailed a cover letter (see Appendix D) and a questionnaire (see Appendix A). The cover letter and questionnaire were initially sent to 1,000 subjects out of a population of 2,144 elements. One thousand was selected in order to obtain a desired sample size of about 325, assuming a questionnaire response rate of about 33%. The sample size was determined by reference to Table 11.3 from Sekaran (2000). In addition, 200 more questionnaires were sent to controllers only.

The questionnaire contained specific questions about the recipient's background, a question on each of the 20 accounting software selection activities chosen from the literature review, and a 5-point Likert scale (Sekaran, 2000) for each question to measure the relative importance of the selection steps in the selection process. The background questions asked whether or not they are a CPA, what their work experience was (in years), if they had prior software selection experience, if they had attended software selection seminars, and what computer hardware or software they were using. These questions were included to identify the desired study groups and gather data on seminars, computer hardware, and computer software for future use.

To overcome the look of a mass-processed mailing, the envelopes were hand addressed. In a survey involving members of the same profession (CPAs) there is the potential threat to external validity of intact groups interacting to skew the results. This

has been minimized by randomly selecting the subjects from an unbiased source (the yellow pages) and from major cities of four different states (Salt Lake City, Denver, Albuquerque, and Cheyenne).

The questionnaires were mailed out in two batches of 500 each. The batches were followed up by another mailing to all nonresponders of that particular batch. Early returns showed that there was an imbalance between CPAs (one third) and controllers (two thirds) responding, a third mailing of 200 was made to attempt to address the imbalance.

Finally, a telephone survey of 10% of the remaining nonresponders was conducted using a shortened questionnaire covering 10 of the software selection activities (see Appendix E). The results of the telephone survey were extrapolated, by comparison to the survey responses of the respondents who had no software selection experience, to provide a basis for comparison to the overall survey results to determine if the nonresponders would have answered differently from the responders and if the differences had an impact on the conclusions of the study.

### Data Analysis

The software tool SPSS (Version 11.0) was used to process and evaluate the data. The sample responses fell into three categories: (a) CPAs, (b) controllers, and (b) controllers who had CPA certification. The researcher used a 2x3 factorial design (Stevens, 1999).

The method to be used to analyze the data was a two-way ANOVA. This

method was chosen because it enabled study of the three natural groups of users of accounting software in the small business community across whether or not they had software selection experience. The assumptions of the two-way ANOVA are: (a) the dependent variables are normally distributed; (b) the population variances of the dependent variables are the same for all their respective cells; and (c) the cases represent random samples from the populations, and the scores on the dependent variables are independent of each other. The researcher tested for statistical significance to determine if the differences between the respondent groups were larger than would be expected in a chance situation and to examine for two-way interaction between job groups across software selection experience. A multiple comparison analysis (also referred to as a post hoc analysis) was conducted of the ANOVA results. Because the study was of intact groups that were to be subdivided, it was expected that the resulting cell sizes in the 2x3 factorial design would vary somewhat. The data analyzed consisted of the respondent's assessment of the importance of each of the 20 potential activities in the software selection process as represented in the questionnaire. The respondent accomplished this by indicating the questions relative importance on a 5-point Likert scale (a 1 being least important and a 5 being most important.)

The following research questions were addressed.

1. Software selection experience: Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that

experience? A two-way ANOVA was employed to analyze each of the 20 software selection activities. The resulting data (means) were organized into the respective columns of the tables described below for examining the differences in responses between all those who had prior software selection experience in the accounting and operational software selection process and all those who did not.

2. Job type and training: Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training (a) CPAs, (b) controllers, and, (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

If the analysis indicated significance by type of job, then a multiple comparison (post hoc) analysis would be conducted to determine which job combinations were significant. The resulting data (means) were organized into the respective columns of the tables described below and examined for differences in responses between the groups: (a) All CPAs, (b) all controllers without CPA certification, and (c) all controllers with CPA certification.

3. Interaction between software selection experience and job type or training: For the 20 software selection activities, was there any interaction on ratings of importance between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents? A two-way ANOVA was employed to analyze each of the 20 software selection activities. If there

was no interaction between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents that would be so noted.

The statistics resulting from the two-way ANOVA were organized into tables and charts for analysis and interpretation. The alpha level of 0.05 was selected for this analysis to determine significance.

The researcher planned the study around the three job types of accounting professionals that are responsible for selecting and using accounting software in small businesses, across software selection experience. It was anticipated that the respondents of the six resulting study groups would provide data that would be mutually reinforcing of a usable hierarchy of software selection activities. The structure of the research questions was designed to extract the data necessary to enable such a comparison. The usual statistical approach followed in the data analysis in Chapter IV was informative and provided answers to the research questions as well as a foundation to the research. It provided some evidence related to the problem statement. Additionally, a conceptual approach grouping the activities in quarters as explained in the following discussion was found to be a productive method in addressing the problem statement.

The problem statement was: "Small businesses could more effectively select the accounting software that is best for their firm if they knew which activities in the software selection process were most important." The software selection activities represented by the 20 questions in the questionnaire were rank ordered by the grand mean of the six groups in the 2x3 factorial design.

The software selection activities, ranked by grand mean, were organized by quarters as follows: (a) activities with a grand mean between 1.0 and 1.99 were assigned to the first quarter, (b) activities with a grand mean between 2.0 and 2.99 were assigned to the second quarter, (c) activities with a grand mean between 3.0 and 3.99 were assigned to the third quarter, and (d) activities with a grand mean between 4.0 and 5.0 were assigned to the fourth quarter. A comparison of the activities organized by quarters was made between the six groups of the study, the telephone follow-up, and the whole survey to determine if they agree or disagree on which activities are the most important in the software selection process. The higher the means on a question the higher the level of importance assigned by that group to that step in the selection process. The degree to which the six groups were consistent in ranking certain selection steps as the lowest (especially if the steps so ranked were below a natural break in the data) determined if those selection steps would be considered useful in software selection.

As a further check on which selection activities were most important, the frequency of response data on each of the 20 questions for the textbook authors in the literature review was compared to the same question's ranked means. The frequency data for the textbook authors is found on the right side of Table 2 (page 18). A low mean and a low frequency of response would reinforce the undesirability of using that selection activity in the software selection process. The list of software selection activities resulting from a consensus of this analysis could be used to formulate a software selection plan for a small business.



### Summary of the Procedures

The methods and procedures chapter was sectioned into four areas. The purpose of this study was to determine what level of importance small business accounting professionals attached to each of the 20 activities in the accounting software selection process that were identified from the literature review. The population and sample area identified the population as the controller individual at small businesses and the CPA individual at CPA firms in the cities of Denver, Colorado; Albuquerque, New Mexico; Salt Lake City, Utah; and Cheyenne, Wyoming.

The data collection method area indicates that a 20-question survey with additional background questions was mailed out to a representative sample of accounting professionals (334 CPAs and 666 accounting controllers) from the four western states indicated in Appendix C. Each question addressed a potential software selection activity derived from the literature review.

The data analysis area explained that responses to each question were tabulated into six groups: (a) CPAs with prior software selection experience, (b) CPAs with no prior software selection experience, (c) controllers with software selection experience, (d) controllers with no prior software selection experience, (e) controllers who have CPA certification and who have software selection experience, and (f) controllers who have CPA certification and who have no prior software selection experience.

The researcher tested for statistical significance to determine if the differences between the respondent groups were larger than would be expected in a chance situation and to examine for two-way interaction between job groups across software selection

experience. A two-way ANOVA was employed in a 2x3 factorial design to enable analysis of the three natural subgroups of the study across software selection experience. The means for all 20 of the survey questions for each group in the study were organized into tables and charts in order to answer the research questions.

Finally, the problem statement was addressed. The benchmark for selecting the most “important” software selection activities was determined by ranking the 20 questions by their grand means and then by quarters. The 20 software selection activities (in quarters) were then examined for differences and consensus between the six study groups, the telephone follow-up, and the completed survey. Further, the frequency data from the textbook authors in the literature review was organized into tables for comparison with that of the ranked selection steps (by the grand mean) of the groups in the study. The frequency data comparison was used to reinforce the perceptions of the respondents as analyzed in the factorial analysis.

## CHAPTER IV

### FINDINGS

The five areas of Chapter IV include (a) purpose of the study, (b) research questions, (c) population and sample, (d) data collection, and (e) data analysis. The data analysis area addresses reliability findings, the descriptive statistics findings, validity findings, the research questions findings, and the problem statement findings.

#### Purpose of the Study

The purpose of this study was the identification of a hierarchy of software selection activities that would ensure that the optimum software is selected for a small business. This would be accomplished by determining what level of importance small business accounting professionals (CPAs and controllers) attached to each of the 20 activities in the accounting software selection process that were identified from the literature review.

#### Research Questions

The following research questions were used to guide the statistical analysis that lead up to the resolution of the problem statement. The actual findings related to the research questions are discussed later in Chapter IV.

1. Software selection experience: Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature

review differently than fellow accounting professionals who do not have that experience? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

2. Job type and training: Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training (a) CPAs, (b) controllers, and, (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training? A two-way ANOVA was employed to analyze each of the 20 software selection activities. If the analysis would indicate significance by type of job then a multiple comparison (post hoc) analysis would be conducted to determine which job combinations were significant.

3. Interaction between software selection experience and job type or training: For the 20 software selection activities, was there any interaction on ratings of importance between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

### Population and Sample

A small business, as defined by the SBA, is one which is independently owned and operated and which is not dominant in its field. The SBA also classifies a business with less than 500 employees as a small business (Glover, 1998). In this study,

companies with 500 or fewer employees were chosen for the survey.

Two thirds of the sample population was made up of individuals from the 1,298 small businesses having 500 or fewer employees that resided in the largest city of each of four western states of the United States identified as “federal administrative area 9.” These cities and states are: Salt Lake City, Utah; Denver, Colorado; Albuquerque, New Mexico; and, Cheyenne, Wyoming. The remaining third of the sample population consisted of 846 individuals from CPA firms that served the same business areas, Salt Lake City, Denver, Albuquerque, and Cheyenne. The 334 individuals from the CPA firms who received the questionnaire, were systematically selected from the Yellow Pages of Salt Lake City, Denver, Albuquerque, and Cheyenne (comprising 846 population elements). The 866 individuals from small businesses, who received the questionnaire, were systematically selected from the geographical section of Dun & Bradstreet’s Million Dollar Directory (2002 series) for the cities of Salt Lake City, Denver, Albuquerque, and Cheyenne (comprising 1298 population elements).

The questionnaires were mailed out in two batches of 500 each. Another mailing followed the batches to all that respective batch’s nonresponders. Preliminary analysis of the responses of the first two batches and their follow-up mailings indicated that there was an imbalance between CPAs (42%) and controllers (22%) responding. Therefore, a third mailing of 200 questionnaires was made to controllers only to increase the number of controllers participating in the survey. This brought the response rate of the controllers up to 27% (see Table 3).

For full detail of the responses by mail-out groups, city and type of respondent

Table 3

*Results of the Survey*

Variable	City population	Survey population elements	Number of mailing participants	Actual sample response	Response rate
<i>City/state</i>					
Salt Lake City, UT	171,500	739	250	81	32%
Denver, CO	503,000	861	538	170	32%
Cheyenne, WY	53,200	54	46	12	26%
Albuquerque, NM	421,000	490	366	112	31%
<i>Total</i>	<i>1,148,700</i>	<i>2,144</i>	<i>1,200</i>	<i>375</i>	<i>31%</i>
<i>Groups</i>					
CPAs (1/3 of elements planned)		846	334	140	42%
Controllers (2/3 of elements planned)		1,298	866	235	27%
<i>Totals</i>		<i>2,144</i>	<i>1,200</i>	<i>375</i>	<i>31%</i>

see Appendix F. The final response rate of usable questionnaires for the whole survey was 31%. This response rate was considered reasonable (Sekaran, 2000) considering that the survey was unsolicited and that the questionnaire recipients, for the most part, were employees of “for profit organizations.” In all, there were 375 usable questionnaires that resulted from the survey.

#### Data Collection

Each potential participant was mailed a cover letter (see Appendix D) and a questionnaire (see Appendix A). The questionnaire contained specific questions about the recipient’s background, a question about importance on each of the 20 accounting software selection activities chosen from the literature review, to be rated on a 5-point

Likert scale (Sekaran, 2000).

The background questions were: (a) Do you have CPA / CMA / CIA / other \_\_\_\_\_ certification? (b) Title. (c) Prior software selection experience? Yes/No. (d) Years of work experience [     ]. (e) Have you attended software selection workshops or seminars? Yes / No. (f) What computer hardware are you using? and, (g) What computer software are you using? The questionnaire importance questions on the 20 activities were pretested using an Accounting Information Systems class of accounting seniors at USU and a panel of three accounting professionals (a professor of accounting and two small business controllers, one controller had been a CPA and one had not). As a result of the pretest, three of the 20 activity titles in the survey were reworded for greater clarity. The responses of the accounting class were not included in the survey sample. The data collection process included five mailings. Each mailing's responses were returned to the principle investigator in about three weeks in the pre-paid reply envelope provided. The respondents were assured of the confidentiality of their responses.

Missing data on the returned questionnaires (see Appendix A) were handled as follows: If a certification was not indicated then it was assumed that the respondent did not have the requested certification (CPA, CMA, or CIA). If the respondent did not indicate software selection experience, then "NO" was assumed (2.2% of respondents did not indicate Yes or No on this item). The researcher's reasoning for assuming "NO" was that if a person had software selection experience they would be more likely than not to indicate it. If attendance at software selection workshops was not indicated then

“NO” was assumed (1.4% of respondents). Again, the researcher’s reasoning for assuming “NO” was that if a person had attended software selection seminars they would be more likely than not to indicate it. If the number of years of work experience was blank then the mean was entered, 21 years for controllers and 26 years for CPAs (1.9% of respondents). This action did not appreciably change the overall mean of the work experience for the study and provided more accurate numbers for examining the respondent groups. For the 20 activity questions, if an importance number was not circled then the mean for the respective question was used (2.4% of respondents). If the words low/high were circled instead of the Likert scale numbers 1-5, then a 1 or a 5 was entered, respectively (7.3% of respondents). The inclusion of the words low/high on the lines containing the Likert scale for the assessment of the importance of the activities appears to have introduced some confusion as to whether there was a five point Likert scale or a seven point scale, therefore the indicated responses were adjusted as noted to present all the data on a five point Likert scale basis. If the number of years of work experience was listed (i.e., 30+), then the number was incremented up to the median of the highest decade indicated (i.e., 35, 1.6% of respondents). During the telephone follow-up this question also came up with one of the respondents. That respondent stated that their actual work experience was about four to six years more than the 30 years they originally gave out. Nine of the questionnaires were considered nonresponsive because they had too much incomplete data (greater than 50%).

The survey respondents are represented in Table 4 by study groups for the two-way ANOVA. Table 4 shows that the three study groups are approximately equal,



Table 4

*Survey Respondents by Study Group*

Groups	Software selection experience		Total	Percent
	Yes	No		
CPAs	112	26	138	37
Controllers	94	29	123	33
Controllers/CPA	96	18	114	30
<i>Total</i>	<i>302</i>	<i>73</i>	<i>375</i>	<i>100</i>
<i>Percent</i>	<i>81</i>	<i>19</i>		

which is the desired condition for the following analysis. However, 81% of the survey respondents have software selection experience as opposed to the expected 50%. Those with software selection experience may have responded at a higher rate.

A telephone follow-up survey of 10% of the mailing nonresponders was conducted. The results of the telephone survey were extrapolated to provide a basis for comparison to the overall survey results to determine if the nonresponders would have answered differently from the responders. The response of the telephone survey was 28%. The smaller than desired response to the telephone follow-up was attributed to the "for profit" business environment. Secretaries and voice mail screening was used extensively as a barrier to access. Only two of the respondents that were reached actually declined to answer the questions, one, due to time considerations, and the other categorically declined to respond to surveys. The details of the responses of the telephone survey by city and study group are presented in Appendix G.

Appendix G displays telephone survey detail by mailing, Table 5 shows the number of respondents by job type and training across software selection experience.

Table 5

*Telephone Survey Respondents by Study Group*

Groups	Software selection experience		Total	Percent
	Yes	No		
CPAs	2	3	5	26
Controllers	4	7	11	58
Controllers/CPA	3	0	3	16
<i>Total</i>	<i>9</i>	<i>10</i>	<i>19</i>	<i>100</i>
<i>Percent</i>	<i>47</i>	<i>53</i>	<i>100</i>	

Telephone survey respondent data is represented by study groups in Table 5 for comparison to the full survey study group data as shown in Table 4. In Table 5 it can be observed that the three study groups (CPAs, controllers, and controllers with CPA certification) as represented in the telephone survey are not as uniformly equal like the full survey. However, 53% of the telephone survey respondents were more likely to have no software selection experience as opposed to the 19% on the full survey. This difference in amount of respondents having software selection experience between the telephone follow-up and the full survey does indicate the possibility of nonresponder bias. The researcher's concern was whether the 53% from the telephone follow-up was more representative of the survey population as a whole or was the 19% from the full survey; and, are there differences between the full survey's respondent answers on the 20 questions relating to the software selection activities being studied and the telephone survey's respondent answers.

Characteristics of the sampled personnel are presented in Figures 2 through 4. In

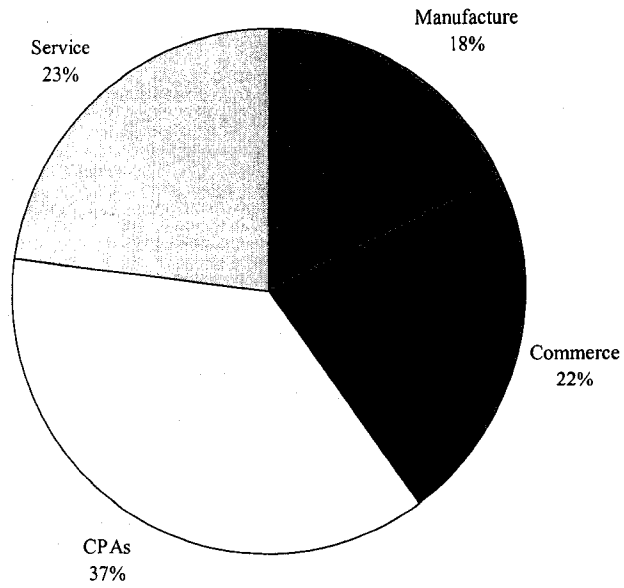


Figure 2. Survey respondents by industry.

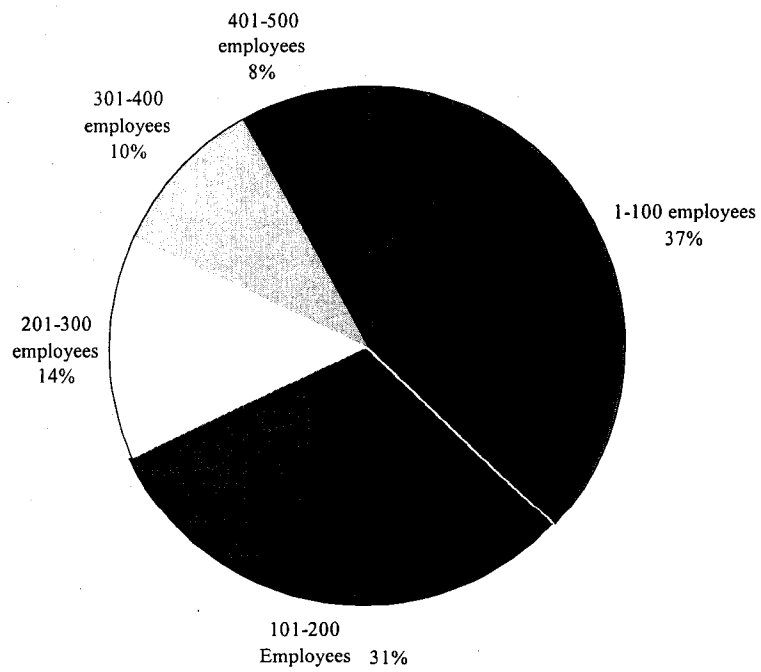
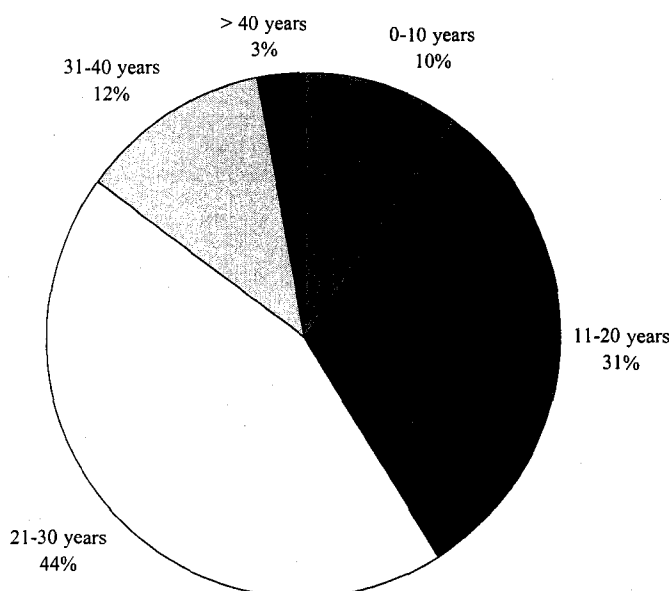


Figure 3. Survey controller's companies by number of employees



*Figure 4.* Survey respondent's years of work experience (Mean = 22.9 years)

Figure 2 it can be observed that the major industry segments are fairly evenly represented in the sample. The CPA segment represents all of the practicing CPAs responding to the survey and are presented here as their own service segment.

The three segments, manufacturing, commerce, and service represent all the controllers who responded to the survey and the type of companies they work for. The manufacturing segment is composed of companies involved in agriculture, mining, and manufacture (SIC codes 01 through 39). The commerce segment includes firms engaged in transportation, utilities, and trade (SIC codes 40 through 59). The service segment comprises all service organizations other than CPA firms (SIC codes 60 through 99).

Figure 3 is composed only of the companies at which the controllers work. From Figure 3 it can be seen that two thirds of the companies represented by the survey's controller respondents are from companies with less than 200 employees. Because two thirds of the companies have less than 200 employees, the researcher is confident that the sample represented interests of small businesses.

Figure 4 displays all the survey respondents by years of work experience. From Figure 4 it can be viewed that 75% of the survey respondents had between 10 to 30 years of work experience. However, the CPAs, with a mean of 25.8 years of work experience, as a group, were more experienced than the controllers, with a mean of 21.1 years of work experience (see Figures H-1 and H-2 in Appendix H).

The second page of the survey questionnaire had three blank lines at the end upon which a respondent could suggest software selection activities that they feel should be included in the selection process. Sixty-two of the 375 survey respondents wrote in 115 suggested activities. Of these suggested activities 112 clearly fit as subsets within 16 of the 20 primary software selection activities identified from the literature review. Thirty-one percent of the suggested activities directly related to Activity O "examine vendor reliability." The three remaining suggested activities are: (a) attend seminars rating desired software, (b) system security administration, and (c) examine competitor's software use.

The activity "attend seminars rating desired software" could be considered a subset of Activity K "review vendors and products" but it was not specifically mentioned in the literature review and therefore might be considered a new variation.

The activity “system security administration” might be considered as a subset of Activity P “consider system interface issues” but as the Internet expands this activity could emerge more as a stand-alone ongoing operational activity. The activity “examine competitor’s software use” might be considered a subset of Activity H “consider future system expansion” but, depending on circumstances, it could also be treated as a stand-alone strategic business planning activity.

While these activities suggested by the respondents are useful and supportive of the literature review and findings that follow, what was more revealing were the four activities that were not commented on by the respondents. The four activities not addressed in the open suggestion area of the questionnaire were: Activity Q “prepare new system budget,” Activity F “develop scoring instrument,” Activity A “hire independent consultant,” and Activity J “buy a software selection program.” Activity Q is a necessary component of each software selection process and as such is fairly straightforward, whereas Activities F, A, and J are the lowest rated activities on the importance scale in the survey.

#### Data Analysis

The software tool SPSS (Version 11.0) was used to process and evaluate the data. The sample responses fell into three categories: (a) CPAs, (b) controllers, and (c) controllers who have CPA certification. The researcher used a two by three factorial design (Stevens, 1999), as shown in Table 6.

Table 6

*Two-by-Three Factorial Experimental Design*

Groups	Software selection experience	
	Yes	No
CPAs	112	26
Controllers	94	29
Controllers/CPA	96	18

The method to be used to analyze the data was a two-way ANOVA. This method was chosen because it enabled study of the three natural groups of users of accounting software in the small business community across whether or not they had software selection experience.

*Reliability*

The reliability coefficient (Cronbach's alpha) of the 20 dependent variables (20 software selection activities) addressed by the questionnaire ( $N = 375$ ) was obtained (0.885). The Cronbach's alpha for the 20 dependent variables was above 0.80 and therefore the internal consistency reliability was considered good (Worthen, Borg, & White, 1993). Cronbach's coefficient alpha was employed because the scores were from a single measurement instrument with rating scales that was used once.

*Validity*

Content validity was checked in this survey instrument by utilization of a "panel of experts" in the form of ten current textbooks on Accounting Information Systems written by accounting professionals holding Ph.D.s, a senior level class of 65 students in

accounting, two working company controllers (one of whom had CPA certification), and a professor in accounting to formulate a usable list of 20 questions relating to the accounting software selection process. The textbooks were well accepted in the field as attested by the fact that they had run into several editions (see Figure 1 on page 21).

Face validity was assured by directing the literature review to uncover the most often discussed and taught software selection activities that related to the software selection process. The instrument was then directed towards the accounting professionals in the field who are responsible for selecting and using accounting software in small businesses.

Criterion-related validity was addressed in as much as the measurement instrument was administered to a group of professionals who were systematically chosen to be representative of working accounting professionals in the small business community. There were no external criteria that could be used to construct a validity coefficient for this one time survey.

Construct validity for this measure was established by virtue of the arguments presented above for content validity, face validity, criterion-related validity, and the observation that the measuring instrument addressed the construct envisioned in this study. The construct of this study was "importance in conducting an accounting software selection process in small business by accounting professionals." The study did produce a hierarchy of software selection activities (see Table 11 on page 64) that conceivably could be used as a guide by a small business accounting professional to conduct a more efficient software selection process.



### *Descriptive Statistics*

The descriptive statistics (means, standard deviations, and variances) of the 20 activities are shown in Table 7. The dependent variable data was obtained from a 5-point interval scale (Likert). For the overall study, the means of the software selection activities vary from a low of 1.69 for Activity A to a high of 4.39 for Activity I, indicating that the respondents had distinct opinions on the level of importance of the different activities in the accounting software selection process. This same phenomenon extended to each of the six respondent groups of the study. The six survey respondent groups uniformly ranked Activity J “use smart selection software” and Activity A “hire independent consultant” as the least important of all the software selection activities identified from the literature review. Activity F “develop scoring instrument” was ranked the third least important activity by all three software selection experienced groups in the study; however it was ranked the fourth least important activity by the three non software selection experienced groups.

None of the three non-experienced study groups agreed on which activity was the third least important software selection activity. Software selection experience appears to have an impact on how important a respondent rates a selection activity. The variances for Activities H, J, M, O, and I were relatively small (from 0.53 to 0.76), indicating that the respondents are closer to the mean on those variables. However the variances for Activities A, B, C, D, F, and L were larger (from 1.49 to 1.80) than H, I, J, M, and O which indicates a greater degree of difference of opinion between the respondents on the importance of those activities.

Table 7

*Descriptive Statistics (means grouped by job title then by software selection experience)*

Software selection activities	Means of all CPA groups		Means of all controller groups		Means of all controller/CPA groups		Grand means	SD	Variance
	CPAs w/ experience	CPAs w/o experience	Controllers w/ experience	Controllers w/o experience	Cont./CPAs w/experience	Cont./CPA w/o experience			
A: Hire a consultant	2.06	2.08	2.12	2.34	2.22	2.67	2.17	1.22	1.49
B: Compile vendor list	3.06	2.50	3.63	3.10	3.58	3.44	3.32	1.23	1.51
C: Use actual data	3.38	3.27	3.50	2.83	3.72	3.61	3.46	1.22	1.49
D: Call vendor customer lists	2.78	2.69	3.69	3.14	3.82	3.00	3.31	1.32	1.74
E: Evaluate present system	3.96	4.08	4.32	4.21	4.16	4.22	4.14	0.93	0.86
F: Get a scoring instrument	2.52	2.54	3.13	2.90	3.25	3.11	2.92	1.27	1.61
G: Training time and cost	3.95	3.58	4.24	3.79	4.20	4.11	4.06	1.02	1.04
H: Future system expansion	4.14	3.69	4.59	4.24	4.48	4.22	4.32	0.87	0.76
I: Determine system capacity	4.24	4.08	4.55	4.41	4.50	4.33	4.39	0.84	0.71
J: Buy a selection program	1.55	1.35	1.76	1.76	1.77	2.22	1.69	0.87	0.76
K: Review vendors/product	3.71	3.19	4.01	3.62	3.89	3.72	3.79	0.99	0.98
L: Send an RFQ out	2.59	2.73	3.70	3.48	3.57	3.50	3.24	1.34	1.80
M: Program ease of use	4.43	4.15	4.47	4.24	4.30	4.06	4.35	0.73	0.53
N: Use own staff	3.71	3.62	4.07	3.90	4.05	3.61	3.89	1.02	1.04
O: Vendor reliability	4.20	4.08	4.48	4.34	4.35	4.17	4.31	0.80	0.64
P: System interface issues	3.94	3.65	4.53	4.07	4.47	4.28	4.23	0.95	0.90
Q: Prepare system budget	3.08	2.92	3.76	3.31	3.64	3.83	3.43	1.16	1.35
R: Implementation plan	3.46	3.62	4.38	3.90	4.49	4.44	4.05	1.11	1.23
S: Supervise implementation plan	3.62	3.54	4.41	4.10	4.50	4.39	4.11	1.04	1.08
T: Written documentation	3.79	3.81	4.33	3.97	4.38	4.50	4.13	1.04	1.08

### *Inferential Statistics*

To test for the correlations of the measures a Pearson correlation matrix was obtained for the 20 dependent variables in the study. The results of the analysis (see Table 8) are that 175 of the 190 correlations were statistically significant and were greater than or equal to 0.10. With the exception of Activities A and J, virtually all of the other software selection activities as presented in Table 8 were, significantly, positively correlated to each other, as would be expected in a process with highly integrated activities. Activity A, “hire independent consultant,” and Activity F, “develop scoring instrument,” are activities relatively independent of the software selection process and, as previously noted, are two of the three activities rated of least importance by the respondents. Activity J “buy a software selection program” has consistent low correlations with all the other activities and is the activity ranked of lowest importance by all the respondent study groups.

With the exception of the correlation of Activity R with Activity S, no correlation exceeded .70 for this sample. Because these correlations are less than .75, there is less reason to question whether or not the correlated variables are different variables (Sekaran, 2000). Along with the exception noted above, Activity R “develop implementation plan” and Activity S “supervise implementation” are two activities related to the same implementation plan and, therefore, a higher than usual correlation between them would be expected.

### *Research Questions*

The researcher tested for statistical significance using a two-way ANOVA to

Table 8

*Pearson Correlations Among the 20 Questionnaire Scales (N = 375)*

Variable	Activity																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
A: Hire a consultant																				
B: Compile vendor list	.14**																			
C: Use actual data	.16**	.30**																		
D: Call vendor customer lists	.10	.52**	.35**																	
E: Evaluate present system	.00	.25**	.24**	.28**																
F: Get a scoring instrument	.16**	.45**	.27**	.35**	.41**															
G: Training time and cost	.07	.32**	.20**	.30**	.36**	.31**														
H: Future system expansion	.15**	.28**	.21**	.33**	.37**	.37**	.53**													
I: Determine system capacity	.13*	.27**	.22**	.30**	.33**	.31**	.39**	.70**												
J: Buy a selection program	.19**	.12*	.13*	.09	.02	.25**	.04	.13*	.14**											
K: Review vendors/product	.00	.45**	.18**	.36**	.31**	.29**	.35**	.32**	.24**	.03										
L: Send an RFQ out	.02	.42**	.22**	.36**	.31**	.41**	.32**	.31**	.25**	.21**	.41**									
M: Program ease of use	-.06	.15**	.15**	.25**	.26**	.10*	.36**	.36**	.37**	.03	.32**	.25**								
N: Use own staff	-.14**	.19**	.17**	.23**	.16**	.21**	.22**	.29**	.22**	.11*	.16**	.26**	.26**							
O: Vendor reliability	.06	.26**	.28**	.31**	.39**	.18**	.37**	.35**	.35**	-.02	.35**	.30**	.37**	.18**						
P: System interface issues	.02	.25**	.20**	.30**	.26**	.30**	.35**	.36**	.35*	.09	.27**	.30**	.15**	.19**	.37**					
Q: Prepare system budget	.19**	.40**	.18**	.32**	.27**	.42**	.45**	.39**	.35**	.17**	.37**	.47**	.18**	.20**	.27**	.42**				
R: Implementation plan	.19**	.41**	.27**	.42**	.37**	.51**	.38**	.50**	.44**	.19**	.32**	.47**	.17**	.18**	.30**	.47**	.60**			
S: Supervise implementation plan	.20**	.35**	.26**	.36**	.40**	.43**	.38**	.52**	.44**	.18**	.30**	.38**	.13*	.13*	.34**	.47**	.47**	.79**		
T: Written documentation	.11*	.29**	.29**	.37**	.40**	.37**	.44**	.44**	.37**	.17**	.23**	.35**	.28**	.16**	.44**	.38**	.40**	.52**	.59**	

\*  $p < .05$

\*\*  $p < .01$

analyze each of the 20 software selection activities to determine if the respondents' answers could have been due to chance and to examine for two-way interaction between job groups across software selection experience. A multiple comparison analysis (Post hoc analysis) was conducted on the ANOVA results for the three job categories. This analysis was conducted using the Scheffe procedure. The data that was analyzed consisted of the respondents' assessments of the importance of each of the 20 potential activities in the software selection process as represented in the questionnaire. These data came from the survey responses as relative importance on a 5-point Likert scale (1 being least important and 5 being most important).

1. Software selection experience: Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that experience? The null Hypothesis being tested for Question 1 was that the column means of the 2x3 design shown in Table 6 (page 52) were equal (e.g., the means for the three job categories are respectively equal for software selection experience or not for all 20 software selection activities. The significance testing results can be viewed in Table 9.

Using an alpha level of 0.05, Table 9 shows that the null hypotheses for research Question 1 was not substantiated for the Activities B, C, D, G, H, K, M, and P. Therefore, there are statistically significant differences for these activities in the means of the responses between the respondents who have prior software selection experience and those who do not.

Table 9

*The Statistical Significance Results for Research Questions*

Software selection activity	Statistical significance at .05 level		
	SWSELEXP (research question 1)	Job (research question 2)	Interaction (research question 3)
A. Hire a consultant		0.071*	
B. Compile vendor list	0.003	0.000	
C. Use actual data for demos	0.035	0.097*	
D. Call vendor customer lists	0.011	0.001	0.078*
E. Evaluate present systems			
F. Develop a scoring instrument		0.002	
G. Consider training time and cost	0.01	0.022	
H. Consider future system expansion	0.001	0.002	
I. Determine system capacity		0.066*	
J. Buy a software selection program		0.000	0.023
K. Review vendors and products	0.002	0.033	
L. Send out a request for quote		0.000	
M. Consider program ease of use	0.009		
N. Use own experienced staff			
O. Examine vendor reliability			
P. Consider system interface issues	0.005	0.000	
Q. Prepare new system budget		0.000	
R. Develop implementation plan		0.000	
S. Supervise implementation		0.000	
T. Get written documentation		0.000	

\* Significant at the 0.1 level

SWSELEXP = software selection experience

2. Job type and training: Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training (a) CPAs, (b) controllers, and (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training? The null

hypothesis being tested for Question 2 was that the row means of the two by three design shown in Table 6 (page 52) were equal, that is, the means for the two software selection categories are respectively equal for the three job groups for all 20 software selection activities. Using an alpha level of 0.05 it can be viewed from Table 9 (page 59) that the null hypotheses for research Question 2 was not substantiated for the Activities B, D, F, G, H, J, K, L, P, Q, R, S, and T. Therefore, there are significant differences for these activities in the means of the responses between the respondents who are in the job groups: (a) all CPAs, (b) all controllers without CPA certification, and (c) all controllers with CPA certification.

Because the analysis indicated significance by type of job or training for some of the activities and there were more than two job types then a multiple comparison analysis (Post hoc: Scheffe procedure) was conducted to determine in which job combinations the differences existed and for which activities (see Table 10).

Using an alpha level of 0.05, it can be viewed in Table 10 that only the job pairs CPA and controller, and CPA and controller with CPA certification show significance on any of the activities. Therefore, the null hypotheses for research Question 2 is not substantiated for the Activities B, D, F, G, H, I, L, P, Q, R, S, and T as pertaining to these job pairs, in as much as there are significant differences for these activities in the means of the responses between the respondents for the respective job categories.

3. Interaction between software selection experience and job type and training: For the 20 software selection activities, is there any interaction between software selection experience and the type of job (CPA or controller) or training (CPA

Table 10

*Post Hoc Analysis: Pairwise Group Comparisons Using the Scheffe Procedure (Follow-up of the Statistical Results for Research Question 2—Job Types and Training)*

Software selection activity	Statistical significance at .05 level		
	CPA and controller	CPA and controller/CPA	Controller and controller/CPA
A. Hire a consultant			
B. Compile vendor list	0.001	0.000	
C. Use actual data for demos		0.086*	0.073*
D. Call vendor customer lists	0.000	0.000	
E. Evaluate present systems			
F. Develop a scoring instrument	0.002	0.000	
G. Consider training time and cost		0.057*	
H. Consider future system expansion	0.000	0.002	
I. Determine system capacity	0.011	0.044	
J. Buy a software selection program	0.076*	0.011	
K. Review vendors and products	0.044	0.143**	
L. Send out a request for quote	0.000	0.000	
M. Consider program ease of use			
N. Use own experienced staff			
O. Examine vendor reliability			
P. Consider system interface issues	0.000	0.000	
Q. Prepare new system budget	0.000	0.000	
R. Develop implementation plan	0.000	0.000	
S. Supervise implementation	0.000	0.000	
T. Get written documentation	0.002	0.000	

\* Significant at the 0.1 level

\*\* Significant at the 0.15 level

certification for controllers) of the respondents? A two-way ANOVA was employed to analyze each of the 20 software selection activities. The alpha level of 0.05 was selected for this analysis to determine significance and from Table 9 (page 59) it can be viewed that only Activity J “use smart selection software” had a significant value. In addition, Activity J was consistently rated at the lowest importance level (grand mean =



1.69) by all six groups in the study. The interaction profile for Activity J can be viewed in Figure 5. From Activity J's interaction profile, one can see that CPAs with software selection experience attached more importance to this activity than those CPAs who had no software selection experience. Also, the controllers attached the same level of importance to the activity regardless of software selection experience. However, controllers with CPA certification and no software selection experience placed more importance on this activity than their non-software selection experienced counterparts.

While some of the 20 software selection activities have statistical significance across software selection experience and/or job type and training, others have not. Most notable among those activities not showing significance are Activity E "evaluate present systems" and Activity O "examine vendor reliability." From the literature

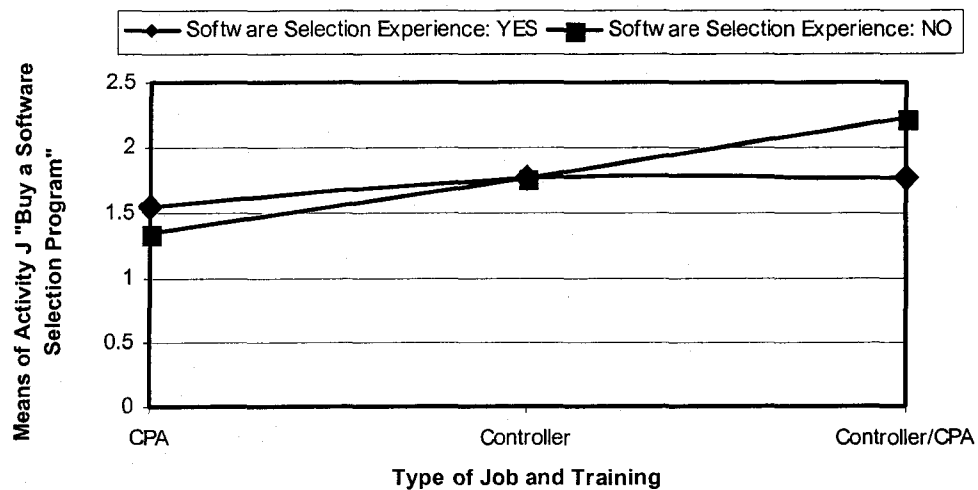


Figure 5. Research question 3: Interaction profile between software selection experience and job type and training.

search these two activities are noted as fundamental activities in the software selection process.

The researcher planned the study around the three job types of accounting professionals that are responsible for selecting and using accounting software in small businesses, across software selection experience. It was anticipated that the respondents of the six resulting study groups would provide data that would be mutually reinforcing of a usable hierarchy of software selection activities. The structure of the research questions was designed to extract the data necessary to enable such a comparison. The usual statistical approach followed in the data analysis was informative and provided answers to the research questions as well as a foundation to the research. It provided some evidence related to the problem statement. However, a conceptual approach as explained in the following discussion and accompanying tables was found to be more productive in addressing the problem statement.

#### *Problem Statement*

Small businesses could more effectively select the accounting software that is best for their firm if they knew which activities in the software selection process were considered most important. The software selection activities represented by the 20 questions in the questionnaire were rank ordered by the grand mean of the full survey as seen in Tables 11-13 (left most column on all three tables). These software selection activities were then organized by quarters as follows. Activities with a grand mean between 1.0 and 1.99 were assigned to the first quarter; activities with a grand mean between 2.0 and 2.99 were assigned to the second quarter, activities with a grand mean

Table 11

*Comparison of the Full Survey with the Telephone Follow-Up and the Textbook Authors*

Activities	Survey (n = 375)	Telephone (n = 19)	Authors of 10 textbooks
Fourth Quarter: 75% - 100%			
I: Determine system capacity	4.39	4.27	90%
M: Consider program ease of use	4.35	4.37	80%
H: Consider future system expansion	4.32	4.33	90%
O: Examine vendor reliability	4.31	4.58	90%
P: Consider system interface issues	4.23	4.26	100%
E: Evaluate present systems	4.14	4.21	100%
T: Get written documentation	4.13	4.33	100%
S: Supervise implementation	4.11	4.33	100%
G: Consider training time and cost	4.06	4.11	100%
R: Develop Implementation plan	4.05	4.22	100%
Third Quarter: 50% - 75%			
N: Use own experienced staff	3.89	4.00	90%
K: Review vendors and products	3.79	3.74	100%
C: Use actual data for demos	3.46	3.57	50%
Q: Prepare new system budget	3.43	3.85	80%
B: Compile vendor list	3.32	3.19	90%
D: Call vendor customer lists	3.31	3.17	60%
L: Send out request for quote	3.24	3.46	60%
Second Quarter: 25% - 50%			
F: Develop scoring instrument	2.92	3.03	70%
A: Hire a consultant	2.17	2.64	40%
First Quarter: 0 - 25%			
J: Buy a software selection program	1.69	1.86	10%

*Note.* The means shown are the grand means of the activities of the respective respondent groupings.

Table 12

*Comparison of the Full Survey with the two Software Selection Groups of the Study*

Activities	Survey (n = 375)	SWSELEXP (n = 302)	NOSWSELEX P (n = 73)	Authors of 10 textbooks
<b>Fourth Quarter: 75% - 100%</b>				
I: Determine system capacity	4.39	4.42	4.27	90%
M: Consider program ease of use	4.35	4.40	4.16	80%
H: Consider future system expansion	4.32	4.39	4.04	90%
O: Examine vendor reliability	4.31	4.33	4.21	90%
P: Consider system interface issues	4.23	4.29	3.97	100%
E: Evaluate present systems	4.14	4.13	4.16	100%
T: Get written documentation	4.13	4.15	3.97	100%
S: Supervise implementation	4.11	4.15	3.97	100%
G: Consider training time and cost	4.06	4.12	3.79	100%
R: Develop Implementation plan	4.05	4.07	3.93	100%
<b>Third Quarter: 50% - 75%</b>				
N: Use own experienced staff	3.89	3.93	3.73	90%
K: Review vendors and products	3.79	3.86	3.49	100%
C: Use actual data for demos	3.46	3.53	3.18	50%
Q: Prepare new system budget	3.43	3.47	3.30	80%
B: Compile vendor list	3.32	3.40	2.97	90%
D: Call vendor customer lists	3.31	3.39	2.95	60%
L: Send out request for quote	3.24	3.25	3.22	60%
<b>Second Quarter: 25% - 50%</b>				
F: Develop scoring instrument	2.92	2.94	2.82	70%
A: Hire a consultant	2.17	2.13	2.33	40%
<b>First Quarter: 0 - 25%</b>				
J: Buy a software selection program	1.69	1.69	1.73	10%

*Note.* The means shown are the grand means or column means of the activities of the respective group.

SWSELEXP = Respondent has software selection experience.

NOSWSELEXP = Respondent does not have software selection experience.

Table 13

*Comparison of the Full Survey with the Job Types and Training*

Activities	Survey (n = 375)	All CPAs (n = 138)	Controllers (n = 123)	Controllers/CPA (n = 114)	Authors of 10 textbooks
Fourth Quarter: 75% - 100%					
I: Determine system capacity	4.39	4.21	4.52	4.47	90%
M: Consider program ease of use	4.35	4.38	4.41	4.26	80%
H: Consider future system expansion	4.32	4.06	4.50	4.44	90%
O: Examine vendor reliability	4.31	4.17	4.45	4.32	90%
P: Consider system interface issues	4.23	3.88	4.42	4.44	100%
E: Evaluate present systems	4.14	3.98	4.29	4.17	100%
T: Get written documentation	4.13	3.80	4.24	4.39	100%
S: Supervise implementation	4.11	3.61	4.34	4.48	100%
G: Consider training time and cost	4.06	3.88	4.14	4.18	100%
R: Develop Implementation plan	4.05	3.49	4.27	4.48	100%
Third Quarter: 50% - 75%					
N: Use own experienced staff	3.89	3.70	4.03	3.98	90%
K: Review vendors and products	3.79	3.62	3.92	3.86	100%
C: Use actual data for demos	3.46	3.36	3.34	3.70	50%
Q: Prepare new system budget	3.43	3.05	3.65	3.67	80%
B: Compile vendor list	3.32	2.96	3.49	3.56	90%
D: Call vendor customer lists	3.31	2.76	3.56	3.69	60%
L: Send out request for quote	3.24	2.62	3.65	3.56	60%
Second Quarter: 25% - 50%					
F: Develop scoring instrument	2.92	2.52	3.07	3.23	70%
A: Hire a consultant	2.17	2.07	2.17	2.29	40%
First Quarter: 0 - 25%					
J: Buy a software selection program	1.69	1.51	1.76	1.84	10%

*Note.* The means shown are the grand means or row means of the activities of the respective group.

between 3.0 and 3.99 were assigned to the third quarter, and activities with a grand mean between 4.0 and 5.0 were assigned to the fourth quarter. A comparison of the activities organized by quarters was prepared and included data from the whole study, the telephone follow-up, and the textbook authors in Table 11.

For Tables 11-13, the 20 activity means of each group were compared to their respective activity in the full survey on the same row irrespective of their ordering by study group grand mean within their original study group. This placement allowed the means of each activity of each study group to be easily compared to the respective mean in its ordered grand mean hierarchy in the full survey. In Table 11 in the telephone column, Activities F and N had means that might place them in the next higher quarter. This was done because the respondents rated the activities level of importance and the means for an activity in one of the subgroups of the study might be numerically out of the range of the quarter it is assigned to but still be in the same order of importance as those same activities in the full survey by that group. This practice was consistent throughout all similar tables in the study.

In the last column to the right of Tables 11-13, the textbook author method for rating the software selection activities was a simple count of how many of the authors' textbooks recommended the respective activity expressed as a percent. Although this was a different method from the 5-point Likert scale used to rate the importance of each activity in the survey, it was a comparison that provided additional confirmation.

Observe the agreement between all of the survey respondent groups on Activities A, F, and J as the least important of the software selection activities. The textbook authors, all of whom were accounting Ph.D. degree holders, also agreed with the survey that Activities A, and J were the least important of the software selection activities. However, they rated Activity F "develop a scoring instrument" higher than the survey respondents did. Perhaps the textbook authors, all Ph.D. holders with a

strong academic and research oriented background, might tend to be more quantitative and analytical in their approach and therefore consider the development of a scoring instrument a more important activity in the software selection process.

In Tables 11-13, cut-off lines were used to group the software selection activities into three general categories. If a controller of a small business or a CPA person serving a small business were examining the 20 software selection activities with the idea of formulating a plan for the selection of a new accounting software system, they would want to know, (a) which activities are must dos, (b) which activities are highly recommended, and (c) which activities can be dropped. With this in mind, it can be observed in Tables 11-13 that the activities grouped in the Fourth Quarter could be considered as “must do” activities in the software selection process, while activities grouped in the Third Quarter could be considered as “highly recommended” and might be subject to need according to the users’ situation, and activities grouped in the Second and First Quarters could be considered “optional” and of “minimal” impact on the success of a software selection plan.

Table 12 compares the ranking of the software selection activities by the software selection experience groups to that of the full survey. Using the same grouping criteria from Table 11 for positioning the activities in their respective quarters, one can observe that the grouping of the activities in Table 12 is consistent across the software selection experience groups with that of the full survey without exception.

Table 13 compares the job type groups with the full survey. Using the same grouping criteria from Table 11 for positioning the activities in their respective quarters,

it can be viewed that the grouping of the activities in Table 13 (by quarters) was uniformly consistent across the three job types or training groups with the full survey with only two exceptions and, therefore, fit within the cutoff guidelines outlined on page 63. The exceptions were Activity S “supervise implementation” and Activity R “develop implementation plan” as rated by the CPA group. As a group, the CPA respondents attached somewhat lesser importance to these two activities than did the controllers; regardless of whether they had CPA certification or not.

In the course of conducting the study, data were collected that also allowed the researcher to compare with the full survey the responses of other groups of respondents than those groups that were the direct focus of the research. Those groups were, (a) respondents with little work experience (1–17 years) vs. respondents with considerable work experience (29–55 years), (b) respondents from very small companies (1–80 employees) vs. respondents from larger companies (200–500 employees), and (c) respondents from companies of different industry segments (Manufacturing, Commerce, Service). The means of these respondents’ ratings of importance of the 20 software selection activities were organized in the same fashion as in Tables 11–13 and can be seen in Appendix I. With the lone exception of Activity G for the group of respondents with work experience (29–55 years) all of the groups rated the importance of the software selection activities in the same quarters as the full survey. The respondents with more work experience rated Activity G “Consider training time and cost” lower than the lesser-experienced respondents and the full survey.

Regrouping the Pearson correlations for the software selection activities from



Table 8 in the same manner as in Tables 11–13, by the means of the respondent's ratings of importance and in quarters, one can observe in Table 14 that the correlations tend to be higher for the higher (i.e., fourth) quarters than the lower quarters. The average correlation for the fourth quarter was .392. The average correlation for the third quarter was .296. The average correlation for the second quarter was .335 (there is only one activity in this quarter and is considered an outlier). And, the average correlation for the first quarter was .102. The general agreement between the average correlations of the activities by quarter and the importance of activities as ranked by quarter from the survey suggests further evidence that the survey has produced a hierarchy of software selection activities that could be used to optimize the software selection process.

#### Summary of the Findings

The findings in Chapter IV were sectioned into five areas: (a) purpose of the study, (b) research questions, (c) population and sample, (d) data collection, and (e) data analysis. The purpose of the study was to determine which of the potential 20 activities in the accounting software selection process are most important for small businesses to use in selecting their accounting software by examining what level of importance small business accounting professionals attach to each of the 20 activities.

The research question area indicated that for Question 1, the alternate hypotheses was substantiated for software selection Activities B, C, D, G, H, K, M, and P; for Question 2 the alternate hypotheses was substantiated for software selection Activities B, D, F, G, H, I, L, P, Q, R, S, and T; and for Question 3 the alternate

Table 14

*Pearson Correlations Rank Ordered by Activity's Level of Importance and Grouped by Quarters*

	4 <sup>th</sup> Quarter											3 <sup>rd</sup> Quarter							2 <sup>nd</sup> Quarter	1 <sup>st</sup> Quarter		means
	I	M	H	O	P	E	T	S	G	R	N	K	C	Q	B	D	L	F	A	J		
<i>4<sup>th</sup> Quarter</i>																						
I: Determine system capacity			.70**		.33**			.39**				.22**	.27**	.30**			.31**	.13*			4.39	
M: Program ease of use	.37**		.36**		.26**			.36**			.32**	.15**	.15**	.25**	.25**		.10*	-.06	.03		4.35	
H: Future system expansion					.37**			.53**				.21**	.28**	.33**			.37**	.15**			4.32	
O: Vendor reliability	.35**	.37**	.35**		.39**			.37**		.18**	.35**	.28**	.26**	.31**	.30**		.18**	.06	-.02		4.31	
P: System interface issues	.35**	.15**	.36**	.37**	.26**			.35**		.19**	.27**	.20**	.25**	.30**	.30**		.30**	.02	.09		4.23	
E: Evaluate present system												.24**	.25**	.28**				.00			4.14	
T: Written documentation	.37**	.28**	.44**	.44**	.38**	.40**		.59**	.44**	.52**	.16**	.23**	.29**	.40**	.29**	.37**	.35**	.37**	.11*	.17**	4.13	
S: Supervise imple. plan	.44**	.13*	.52**	.34**	.47**	.40**			.38**	.79**	.13*	.30**	.26**	.47**	.35**	.36**	.38**	.43**	.20**	.18**	4.11	
G: Training time/cost						.36**							.20**		.32**	.30**		.31**	.07		4.06	
R: Implementation plan	.44**	.17**	.50**	.30**	.47**	.37**			.38**		.18**	.32**	.27**	.60**	.41**	.42**	.47**	.51**	.19**	.19**	4.05	
<i>3<sup>rd</sup> Quarter</i>																						
N: Use own staff	.22**	.26**	.29**		.16**				.22**			.16**	.17**	.19**	.23**	.26**	.21**	-.14**	.11*		3.89	
K: Review vendors/product	.24**		.32**		.31**				.35**				.18**	.45**	.36**		.29**	.00	.03		3.79	
C: Use Actual data														.30**				.16**			3.46	
Q: Prepare system budget	.35**	.18**	.39**	.27**	.42**	.27**			.45**		.20**	.37**	.18**	.40**	.32**	.47**	.42**	.19**	.17**		3.43	
B: Compile vendor list																			.14**		3.32	
D: Call vendor cust. lists													.35**	.52**				.10			3.31	
L: Send an RFQ out	.25**		.31**		.31**				.32**			.41**	.22**	.42**	.36**		.41**	.02	.21**		3.24	
<i>2<sup>nd</sup> Quarter</i>																						
F: Get a scoring instrument					.41**								.27**	.45**	.35**			.16**			2.92	
<i>1<sup>st</sup> Quarter</i>																						
A: Hire a consultant																					2.17	
J: Buy a selection program	.14**		.13*		.02				.04				.13*	.12*	.09		.25**	.19**			1.69	
Importance ranked by means	4.39	4.35	4.32	4.31	4.23	4.14	4.13	4.11	4.06	4.05	3.89	3.79	3.46	3.43	3.32	3.31	3.24	2.92	2.17	1.69		

\*  $p < .05$

\*\*  $p < .01$

4<sup>th</sup> Quarter average = .39

3<sup>rd</sup> Quarter average = .30

2<sup>nd</sup> Quarter average = .34

1<sup>st</sup> Quarter average = .10

hypotheses was substantiated only for software selection Activity J.

The population and sample area identified the population as the controller individual at small businesses and the CPA individual at CPA firms in the cities of Denver, Colorado; Albuquerque, New Mexico; Salt Lake City, Utah; and Cheyenne, Wyoming. This resulted in 2,144 population elements, of which 1,200 were included in the survey, 334 CPAs and 866 controllers.

The data collection method area stated that a 20-question survey with additional background questions was mailed out to a representative sample of accounting professionals. Each question addressed a potential software selection activity derived from the literature review. The survey response rate was 31%, the respondent job type groups were approximately equal, but the two software selection experience groups were 81% percent "yes" and 19% no. The telephone follow-up resulted in software selection experience groups of 47% "yes" and 53% no.

The data analysis area addressed issues of reliability, the descriptive statistics, the inferential statistics, the research questions, and the problem statement. To determine whether or not the data resulting from the survey was due to chance, a two-way ANOVA was employed in a 2x3 factorial design. The means for all the 20 survey questions for each of the groups in the study were organized into tables to answer the research questions. The reliability coefficient, Cronbach's alpha, was above 0.80, or good. The descriptive statistics (means, standard deviations, and variances) indicated that the respondent's rating of importance of the software selection activities on a 5-point Likert scale varied from a low of 1.69 (mean of activity A) to a high of 4.39

(mean of activity I). The variances for some activities indicated that the respondents were closer to the mean on those activities but for other activities they had a greater degree of difference of opinion on their importance. A Pearson correlation matrix was obtained for the 20 dependent variables of the study. The expected correlations were less than 0.75 with one exception. The data analysis relating to the research questions, using an alpha level of 0.05, shows significance on some of the software selection activities but not on others. However, the research questions provided supporting evidence in addressing the problem statement.

Finally, the problem statement was addressed. The benchmark for selecting the most “important” software selection activities was determined by ranking the 20 questions by their grand means and then by quarters. The grouping of the data by quarters assisted in making comparisons between the study groups and in the interpretation of the results. The 20 software selection activities (in quarters) were then examined for differences and consensus between the six study groups, the telephone follow-up, and the completed survey. Further, the frequency data from the textbook authors in the literature review were compared with the study. From Tables 11, 12, and 13 it could be observed that the software selection activities were generally consistent across all of the study groups with the full survey, resulting in three activities below the 50% line (indicating that they are of least importance) and the other activities in two distinct groups of differing importance to the software selection process. The general agreement between the average correlations of the activities by quarters as seen in Table 14, (p. 71) and the importance of activities as ranked by quarter from the several study

groups of the survey suggests additional evidence that the survey has produced a hierarchy of software selection activities that could be used to optimize the software selection process. The list of software selection activities resulting from the consensus of this analysis could be used as a guide to formulate a software selection plan for a small business.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The four areas of Chapter V include (a) summary of the study, (b) summary of the findings, (c) conclusions, and (d) recommendations.

#### Summary of the Study

The purpose of this study was the identification of the hierarchy of software selection activities that would be most important in the software selection process in order to insure that the optimum software would be selected for a small business. This would be accomplished by determining what level of importance small business accounting professionals (CPAs and controllers) attached to each of the 20 activities in the accounting software selection process that were identified from the literature review.

#### *Literature Review*

Evaluation of the related research was conducted in six topical areas, which are: (a) methodology and scope, (b) types of sources, (c) discussion of reviews, (d) integrated overview, (e) profile of authors, and (f) software selection activities. First, the review methodology and scope area noted the search criteria used and the types of databases examined. Second, the types of sources reviewed area discussed the process of choosing the journal articles and textbooks used in the study. There were 18 journal articles and 10 textbooks that were finally used in the study. Third, the discussion of reviews area provided support for the use of a survey questionnaire in studying software

selection. Fourth, the integrated overview area provided 20 potential activities that could be considered for inclusion in any small to mid-sized business accounting software selection plan. These activities are: “hire a consultant,” “compile a vendor list,” “use your actual cases,” “call vendor customer lists,” “evaluate present systems,” “develop scoring instrument,” “consider training time and cost,” “consider future system expansion,” “determine system capacity,” “use smart selection software,” “review vendors and products,” “prepare and send a Request for Quote (RFQ),” “consider program ease of use,” “use your experienced staff,” “examine vendor reliability,” “consider system interface issues,” “prepare new system budget,” “develop implementation plan,” “supervise implementation,” and “get written documentation.”

Fifth, the profile of author’s area presents information on the article and textbook authors. Twenty-four of the authors had Ph.D. degrees, 23 of the Ph.D. authors were affiliated with universities, and 22 of the Ph.D. authors wrote the ten textbooks used in the study. Finally, the software selection activities area presented evidence supporting the selection of the final 20 software selection activities used in the study. From these activities a “software selection questionnaire” (see Appendix A) was developed for conducting the proposed survey described in the methodology.

This researcher used the above list of software selection activities resulting from the literature review to survey controllers of small businesses, and the members of CPA firms supporting them, and compare the responses of the resulting six groups of respondents in order to determine the best activities to employ in the process of accounting software selection.

### *Research Questions*

*Question 1.* Software selection experience: Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that experience?

*Question 2.* Job type and training: Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training (a) CPAs, (b) controllers, and (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training?

*Question 3.* Interaction between software selection experience and job type or training: For the 20 software selection activities, was there any interaction between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents? A two-way ANOVA was employed to analyze each of the 20 software selection activities for the research questions.

### *Population and Sample*

In this study, companies with 500 or fewer employees (small businesses) were chosen for the survey. Two thirds of the sample population were made up of individuals from the 1,298 small businesses having 500 or fewer employees that resided in the largest city of each of four western states of the United States identified as “federal administrative area 9.” These cities and states are Salt Lake City, Utah; Denver,



Colorado; Albuquerque, New Mexico; and Cheyenne, Wyoming. The remaining third of the sample population consisted of 846 individuals from CPA firms that served the same business areas, Salt Lake City, Denver, Albuquerque, and Cheyenne.

The questionnaires were sent out in two mailings of 500 each. These mailings were followed up by another mail-out to all those respective batches of nonresponders. A third mailing of 200 questionnaires was made to controllers only in order to increase the number of controllers participating in the survey. The final response rate of usable questionnaires for the whole survey was 31%. In all, there were 375 useable questionnaires that resulted from the survey.

#### *Data Collection*

Each potential participant was mailed a cover letter (see Appendix D) and a questionnaire (see Appendix A). The questionnaire contains specific questions about the recipient's background, a question on each of the 20 accounting software selection activities chosen from the literature review, and a 5-point Likert scale (Sekaran, 2000) for each of the 20 questions to measure the relative importance of the selection steps in the selection process.

Study groups represent the survey respondents for the two-way ANOVA in Table 4 (page 46). From Table 4 it can be determined that the three job type study groups were approximately equal but 81% of the survey respondents had prior software selection experience.

A telephone survey of 10% percent of the mailing nonresponders was conducted to determine if the nonresponders would have answered differently from the responders.

The response rate of the telephone survey was 28%. Telephone survey respondent data is represented by study groups in Table 5 (page 47) for comparison to the full survey study group data as shown in Table 4. From Table 5 (page 47) we find that 53% of the telephone survey respondents have no software selection experience as opposed to the 19% on the full survey.

The second page of the survey questionnaire had three blank lines at the end upon which a respondent could suggest software selection activities that they feel should be included in the selection process. Sixty-two of the 375 survey respondents wrote in 115 suggested activities. Of these suggested activities 112 clearly fit as subsets within 16 of the 20 primary software selection activities identified from the literature review. Thirty-one percent of the suggested activities directly related to Activity O “examine vendor reliability.” While these activities suggested by the respondents are useful and supportive of the literature review and findings, what is more revealing was the four activities that were not commented on by the respondents. The four activities not addressed in the open suggestion area of the questionnaire were: Activity Q “prepare new system budget,” Activity F “develop scoring instrument,” Activity A “hire independent consultant,” and Activity J “buy a software selection program.” Activity Q is a necessary component of each software selection process and as such is fairly straightforward. Whereas, Activities F, A, and J were the lowest rated activities on the importance scale in the survey.

The Characteristics of the survey sample are presented in the Figures 2 through 4 found on pages 48-49. In Figure 2 it can be observed that the major industry segments

are fairly evenly represented in the sample. In Figure 3 it can be concluded that two thirds of the companies represented by the surveys controller respondents are from companies with less than 200 employees. In Figure 4 it is indicated that three quarters of the survey respondents have between 10 to 30 years of work experience. However, the CPAs, with a mean of 25.8 years of work experience, as a group are more experienced than the controllers, with a mean of 21.1 years of work experience (see Appendix H).

### Summary of the Findings

The software tool SPSS (Version 11.0) was used to process and evaluate the data from the survey. The sample responses fell into three categories: (a) CPAs, (b) Controllers, and (c) Controllers who have CPA certification. The researcher used a two by three factorial design (Stevens, 1999), as shown in Table 6 (page 52). The method used to analyze the data was a two-way ANOVA.

#### *Reliability*

The reliability coefficient (Cronbach's alpha) of the 20 dependent variables (20 software selection activities) addressed by the questionnaire was obtained (0.885). The Cronbach's alpha for the 20 dependent variables was above 0.80 and, therefore, considered good.

#### *Descriptive Statistics*

The descriptive statistics (means, standard deviations, and variances) of the 20

activities are found in Table 7, page 55. The dependent variables were obtained from a 5-point interval scale (Likert). The six survey respondent groups uniformly ranked Activities J “use smart selection software” and A “hire independent consultant” as the least important of all the software selection activities identified in the literature review. Activity F “develop scoring instrument” was ranked the third least important activity by all three software selection experienced groups in the study but was ranked the fourth least important activity by the three nonsoftware selection experienced groups. Software selection experience appears to have an impact on how important a respondent rates a selection activity.

### *Inferential Statistics*

To test for the correlations of the measures a Pearson correlation matrix was obtained for the 20 dependent variables in the study (see Table 8, page 57). The results of the analysis (Table 8) are that 175 of the 190 correlations were statistically significant and were greater than or equal to 0.10. With the exception of Activities A and J virtually all of the other software selection activities as presented in Table 8 are, significantly, positively correlated to each other, as would be expected in a process with highly integrated activities. Activity A, “hire independent consultant,” and Activity F, “develop scoring instrument,” are activities relatively independent of the software selection process and, as previously noted, are two of the three activities rated of least importance by the respondents. Activity J “buy a software selection program” has consistent low correlations with all the other activities and is the activity ranked of lowest importance by all the respondent study groups.

### *Research Questions*

The researcher tested for significance using a two-way ANOVA to analyze each of the 20 software selection activities to determine if the respondent's answers could have been due to chance and to examine for two-way interaction between job groups across software selection experience. A multiple comparison analysis (Post hoc analysis: Scheffe procedure) was conducted on the ANOVA results for the three job categories.

1. *Software selection experience.* Do accounting professionals involved in the choosing and using of accounting software, with prior software selection experience, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that experience? The significance testing results can be viewed in Table 9 (page 59). Using an alpha level of 0.05 we see from Table 9 that the null hypotheses for research Question 1 is not substantiated for the Activities B, C, D, G, H, K, M, and P. Therefore, there are significant differences for these activities in the means of the responses between the respondents who have prior software selection experience and those who do not.

2. *Job type and training.* Do accounting professionals involved in the choosing and using of accounting software, with differing job titles or training (a) CPAs, (b) controllers, and, (c) controllers with CPA certification, rate the importance of the 20 software selection activities identified in the literature review differently than fellow accounting professionals who do not have that same job title or training? Using an alpha

level of 0.05 it can be viewed from Table 9 that the null hypotheses for research Question 2 is not substantiated for the Activities B, D, F, G, H, J, K, L, P, Q, R, S, and T. Therefore, there are significant differences for these activities in the means of the responses between the respondents who are in the job groups: (a) All CPAs, (b) All controllers without CPA certification, and, (c) all controllers with CPA certification.

Because the analysis indicated significance by type of job for some of the activities and there were more than two job types then a multiple comparison (Post hoc: Scheffe procedure) analysis was conducted to determine in which job combinations the differences lay and for which activities (see Table 10, page 61). Using an alpha level of 0.05, from Table 10 we see that only the job pairs CPA and controller, and CPA and controller with CPA certification show significance on any of the activities. Therefore this implies that the null hypotheses for research Question 2 is not substantiated for the Activities B, D, F, G, H, I, L, P, Q, R, S, and T as pertains to these job pairs.

### *3. Interaction between software selection experience and job type or training.*

For the 20 software selection activities, was there any interaction between software selection experience and the type of job (CPA or controller) or training (CPA certification for controllers) of the respondents? A two-way ANOVA was employed to analyze each of the 20 software selection activities.

The alpha level of 0.05 was selected for this analysis to determine significance and from Table 9 only Activity J “use smart selection software” shows significance. In addition, Activity J was consistently rated at the lowest importance level (grand mean = 1.69) by all six groups in the study.

While some of the 20 software selection activities had statistical significance across software selection experience and/or job type and training others did not. Most notable among those activities not showing significance were Activity E “evaluate present systems” and Activity O “examine vendor reliability.” From the literature search these two activities were noted as fundamental activities in the accounting software selection process.

The data analysis was informative and provided answers to the research questions as well as a foundation to the research. It provided evidence related to the problem statement in addition to the statistical analysis the researcher performed. It also provided information that even further organizes the software selection activities and clarified the understanding about the problem statement.

#### *Problem Statement*

The problem statement is: “Small businesses could more effectively select the accounting software that is best for their firm if they knew which activities in the software selection process were most important.” The software selection activities represented by the 20 questions in the questionnaire were rank ordered by the grand mean of the six groups in the 2x3 factorial design. These software selection activities were then organized by quarters, as shown in Tables 11, 12, and 13. In these three tables, a comparison of the 20 software selection activities organized by quarters was made between the whole study, the telephone follow-up, the textbook authors, the three software selection groups by job type, and the two software selection groups by software selection experience Yes/No.

For Tables 11-13 the 20 activity means of each group were compared to their respective activity in the full survey on the same row irrespective of their ordering by study group grand mean within their original study group. This placement allowed the means of each activity of each study group to be easily compared to the respective mean in its ordered grand mean hierarchy in the full survey. In Table 11 in the telephone column Activities F and N had means that might place them in the next higher quarter. This was done because the respondents rated the activities level of importance and the means for an activity in one of the subgroups of the study might be the quarter it is assigned to but still be in the same order of importance as those same activities in the full survey. This practice was consistent throughout Tables 11-13 in the study.

In the last column to the right of Tables 11-13 the textbook author method for rating the software selection activities was a simple count of how many of the authors' textbooks addressed the respective activity expressed as a percent. Although this was a different method from the five point Likert scale used to rate the importance of each activity in the survey, it was a comparison that provided additional confirmation.

Observe the agreement between all of the survey respondent groups on Activities A, F, and J as the least important of the software selection activities. The textbook authors, all of whom were accounting Ph.D. degree holders, also agreed with the survey that Activities A, and J were the least important of the software selection activities. However, they rated Activity F "develop a scoring instrument" higher than the survey respondents did. Perhaps the textbook authors, all Ph.D. holders with a strong academic and research oriented background, might tend to be more quantitative



and analytical in their approach and therefore consider the development of a scoring instrument a more important activity in the software selection process.

In Tables 11-13 cut-off lines were used to group the software selection activities into three general categories. If a controller of a small business or CPA serving a small business were examining these 20 software selection activities with the idea of formulating a plan for the selection of a new accounting software system they would want to know which activities are must do's, which are highly recommended and would be determined by one's situation, and, which activities can be dropped with impunity to the selection process. With this in mind it is suggested that the activities grouped in the fourth quarter be considered as must do activities in the software selection process, activities grouped in the third quarter be considered as highly recommended and might be subject to need according to the users situation, and, activities grouped in the second and first quarters be considered optional in a software selection plan.

The researcher found that by organizing the software selection activities in Tables 11-13 by quarters the ranking of the 20 software selection activities were generally consistent across all six of the software selection groups and the telephone follow-up with the full survey and therefore fit within the cutoff guidelines as established. The exceptions were Activity S "supervise implementation" and Activity R "develop implementation plan" as rated by the CPA group. The CPAs as a group attached somewhat lesser importance to these two activities than did the controllers (regardless of whether they have CPA certification or not).

In summery, from Tables 11, 12, 13, and Appendix I it was shown that the

software selection activities were generally consistent across all of the study groups by quarter with the full survey, resulting in three activities below the 50% line (indicating that they are of least importance) and the other activities in two distinct groups of differing importance to the software selection process. The hierarchy of software selection activities resulting from the consensus of this analysis could be used as a guide to formulate a software selection plan for a small business.

## Conclusions

### *Population and Sample*

1. It can be concluded that utilizing practicing CPAs and small business controllers from a defined, four-state area resulted in effective types of participants being chosen for this study. The general agreement between the different groups of respondents in the study in their assessing importance of the software selection activities in the quarters as illustrated in Tables 11-13 bear this out.

2. It can be concluded that allocating the number of subjects selected for the study by population of the cities, as shown in Table 3 (p. 43), was an imprecise method for allocating the number of elements for the mailings by city. This resulted in the proportion of recipients selected from among the different cities being unequal. For example, the ratio for selection of mailing elements for one city might be 1:5 but be 1:9 for another city.

### *Data Collection*

1. It can be concluded that the background question on certification (CPA,

CMA, and CIA) with respect to controllers was broader in type of certification requested than needed. There were no respondents having CIA certification, one respondent with CMA certification, and the rest of the controllers with certification were CPAs.

2. It can be concluded that the “low and high” scale on the survey instrument misled some respondents. The addition of the words “Low” and “High” to each of the 20 questions with a Likert scale of 1-5 were misleading to 7.3% of the responders.

3. It can be concluded that the effect of nonresponder bias on the survey results was minimal. On the one hand, the no software selection experience group from the full survey was 19% of the survey but the same group from the telephone follow-up was 53%. However, the grouping of activities, by quarter, was highly correlated across the same groups for the survey and the telephone followup (see Table 11).

4. It can be concluded that the use of the largest city of each of four states and the systematic sampling of their telephone and Dun and Bradstreet lists resulted in a relatively balanced respondent mix by industry (see Figure 2, page 48).

5. It can be concluded that more CPAs responded to the survey (42% responding) than controllers (27% responding) resulting in the researcher having to do an additional mailing to 200 controllers in an attempt to bring the two groups more into balance.

#### *Data Analysis*

1. It can be concluded that the choice of a 5-point Likert scale was adequate for obtaining the differing respondent opinions on the 20 questions. For example, the means

of the activity questions varied from a low of Activity A, with a mean of 1.69, to a high of Activity I, with a mean of 4.39. This also provided a wide enough range of scores to facilitate the organizing of the activities into quarters.

### *Research Questions*

1. It can be concluded that the answer to the problem statement lies not solely in the path of analysis of statistical significance across software selection experience but is eventually obtained by comparing the means of the various groups in the study across the 20 activities. There are significant differences in the responses for activities B, C, D, G, H, K, M, and P between the respondents who have software selection experience and those who do not. While the differences in the responses on the other 12 activities may be due to chance this does not invalidate the fact that the responders have rendered an opinion on the level of importance that they attach to each of the activities in the software selection process. The variability of the data (see descriptive statistics page 55) shows that some of the respondents are closer to the mean on some activities than on others and that these activities do not uniformly match those that show statistical significance.

2. It can be concluded that the answer to the problem statement lies not solely in the path of analysis of statistical significance across job type and training but is obtained by comparing the means of the various groups in the study across the 20 activities. There are significant differences in the responses for activities B, D, F, G, H, I, L, P, Q, R, S, and T between the respondents who have different job types and training. While the differences in the responses on the other eight activities may be due to chance this

does not invalidate the fact that the responders have rendered an opinion on the level of importance that they attach to each of the activities in the software selection process. The variability of the data (see descriptive statistics, page 55) shows that some of the respondents are closer to the mean on some activities than on others and that these activities do not uniformly match those that show statistical significance.

3. It can be concluded that interaction effects will have a minimal bearing on the analysis of the data for this study. This assumption is based on the fact that there is significance for interaction effects between software selection experience and job type and training only for Activity J (see Figure 5 on page 62 for the interaction profile).

#### *Problem Statement*

1. It can be concluded that the least important software selection activities in the selection process are the three activities that are below the 50% line when grouping the activities by their grand means within quarters as in Tables 11-13 on pages 64-66. These activities are Activity F “develop a scoring instrument,” Activity A “hire a consultant,” and Activity J “buy a software selection program.”

2. It can be concluded from observing Table 12 on page 65 that software selection experience has minimal bearing on which general level (by quarters) of importance that a survey respondent attached to the software selection activities.

3. It can be concluded that job type and training has little bearing on which general level (by quarters) the respondents attach to the software selection activities, except for Activity R “develop implementation plan” and Activity S “supervise implementation” (see Table 13 on page 66 and the next conclusion).

4. It can be concluded that CPAs attach lesser importance to activities R and S than do the controllers (Implementation related activities). This occurs perhaps because the controllers involvement with the new software is long lived while the CPAs are only peripherally involved, usually only in the selection process.

5. It can be concluded that the survey produced a hierarchy of software selection activities that could be used to guide a small business in formulating and utilizing a plan of action to select new accounting software in a more efficient manner. If a controller of a small business or a CPA person serving a small business were examining the 20 software selection activities with the idea of formulating a plan for the selection of a new accounting software system, they would want to know, (a) which activities are must dos, (b) which activities are highly recommended, and (c) which activities can be dropped. With this in mind, it can be seen in Tables 11-13 that activities grouped in the Fourth Quarter could be considered as "must do" activities in the software selection process, while activities grouped in the Third Quarter could be considered as "highly recommended" and subject to need according to the users situation; activities grouped in the Second and First Quarters could be considered "optional" and of "minimal" impact on the success of a software selection plan.

6. It can be concluded from observing Tables I-1 through I-3 in Appendix I that the number of years of work experience, the size of the small businesses within the survey guidelines, and what industry segment a small business is in has minimal bearing on which general level (by quarters) of importance that a survey respondent attached to the software selection activities. Thus showing that respondents in these groupings also

agree with the full survey's resulting hierarchy of software selection activities.

### Recommendations

1. Recommend that the allocation of the number of participants desired by city for the mailings be by the actual number of population elements per city in their respective yellow page and Dun and Bradstreet lists instead of by the population of the respective cities.
2. Recommend that for future research on software selection issues that one allocate a proportionally higher % of controllers to receive the questionnaires than CPAs in order to maintain the desired proportions of participants in the sample.
3. Recommend that the words "Low/High" be left off of the individual question scales of future survey questionnaires. In this survey they were misleading, and redundant, as they were already explained in the instructions.
4. Recommend that further research be conducted to determine what, if any, criteria determine why the respondents place the software selection activities in the quarters they did in this study.
5. Recommend that further research be conducted to compare the results of this survey with accounting professionals in other major geographical areas of the U.S.
6. Recommend that further research be conducted to compare the results of this survey of small businesses with accounting professionals from large businesses in this same geographical area and other major geographical areas of the U.S.

7. Recommend that further research be conducted to determine what accounting software is used by small businesses in the U.S.



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APPENDICES

Appendix A  
Questionnaire

### Questionnaire

Do you have CPA / CMA / CIA / other \_\_\_\_\_ certification? (circle one)

Title: \_\_\_\_\_

Prior software selection experience? Yes/No

Years of work experience [     ].

Have you attended software selection workshops or seminars? Yes / No

What computer hardware are you using? \_\_\_\_\_

What computer software are you using? \_\_\_\_\_

#### How do you select accounting software?

#### What are the most important activities in the process? 20 Questions!

Please circle the number that indicates how important you believe these activities are in selecting new accounting software (Add activities at the end).

	Low importance	1	2	3	4	5	High importance
A) Hire a consultant.	Low	1	2	3	4	5	High
B) Compile vendor List.	Low	1	2	3	4	5	High
C) Use actual data for demos.	Low	1	2	3	4	5	High
D) Call vendor customer lists.	Low	1	2	3	4	5	High
E) Evaluate present systems.	Low	1	2	3	4	5	High
F) Develop a scoring instrument.	Low	1	2	3	4	5	High
G) Consider training time and cost.	Low	1	2	3	4	5	High
H) Consider future system expansion.	Low	1	2	3	4	5	High
I) Determine system capacity.	Low	1	2	3	4	5	High
J) Buy a software selection program.	Low	1	2	3	4	5	High

<b>K) Review vendors &amp; products.</b>	Low	1	2	3	4	5	High
<b>L) Send out a Request for Quote.</b>	Low	1	2	3	4	5	High
<b>M) Consider program ease of use.</b>	Low	1	2	3	4	5	High
<b>N) Use own experienced staff.</b>	Low	1	2	3	4	5	High
<b>O) Examine Vendor reliability.</b>	Low	1	2	3	4	5	High
<b>P) Consider system interface issues.</b>	Low	1	2	3	4	5	High
<b>Q) Prepare new system budget.</b>	Low	1	2	3	4	5	High
<b>R) Develop implementation plan.</b>	Low	1	2	3	4	5	High
<b>S) Supervise implementation.</b>	Low	1	2	3	4	5	High
<b>T) Get written documentation.</b>	Low	1	2	3	4	5	High
<b>U) _____</b>	Low	1	2	3	4	5	High
<b>V) _____</b>	Low	1	2	3	4	5	High
<b>W) _____</b>	Low	1	2	3	4	5	High



Appendix B

Author Information

**Author Info**

(name, degree and/or certification, affiliation, type of publication)

Alderman, C., PhD and CPA., Auburn University, Textbook.  
(Dean & Southtrust Professor of Accounting)

Anderson, D. M., ED.D, Ball State University, Dissertation Abstracts International.

Anderson, J.C., PH.D., The University of Tennessee, Dissertation Abstracts  
International.

Bagranoff, N., DBA and CPA, American University, Strategic Finance.

Bagranoff, N., DBA and CPA, American University, The CPA Journal. (Technical  
refereed publication)

Bagranoff, N., DBA and CPA, Miami University, Textbook. (Professor)  
(Chair, Department of Accounting)

Blaisdell, K., editorial intern, Williams Jewell College, Women in Business.

Bodnar, H., PhD., Duquesne University, Textbook. (Associate professor)

Budiac, M., CPA, consultant, CPA Online.

Cerullo, M., PhD and CPA., Southwest Missouri State Un., Textbook. (Professor)

Charlton, E., M.D., unknown, Family Practice Management.

Chewning, C., unknown, consultant, CPA Online.

Collins, J., CPA, Partner of K2 Enterprises, Journal of Accountancy.

Collins, J., CPA, Partner of K2 Enterprises, Accounting Software News.

Conforti, R., unknown, consultant, Book.

Cushing, B., PhD and CPA, University of Utah, Textbook.  
(The David Eccles Professor of Accounting)

Davis, J., PhD., Clemson University, Textbook. (Professor)

Davis, K., PhD., University of Georgia, Textbook. (DSI Fellow)

- DGG, unknown, consultant, DGG Inc.
- Doyle, E., CA., consultant, CA Magazine (Scotland), (Certified Accountant or CA).
- Frey, D., unknown, consultant, The American City & County.
- Gamblin, L., CPA. , consultant, The National Public Accountant.
- Gelinas, U., PhD, Bentley College, Textbook. (Associate professor)
- Hall, J., PhD., Lehigh University, Textbook. (Associate professor)
- Hopwood, W., PhD, Florida Atlantic University, Textbook. (Professor)
- Kendall, P., unknown, consultant, Book.
- Leitch, R., PhD., University of South Carolina, Textbook. (Professor)
- Moscove, S., PhD., Connecticut State University, Textbook.  
(Professor and Chair, Department of Accounting)
- Myaing, R., unknown, consultant, Government Accountants Journal.
- Needle, S., CPA, President, CTS Guides.
- Oram, A., PhD, Bentley College, Textbook. (Professor)
- Raval, V., DBA and CPA., Creighton University, Textbook. (Professor)  
(Chair, Accounting department)
- Robinson, L., PhD., University of Alabama in Birmingham, Textbook.
- Roe, A., unknown, consultant, Engineering News Record.
- Romney, M., PhD and CPA., Brigham Young University, Textbook (2). (Professor)
- Simkin, M., PhD., University of Nevada-Reno, The CPA Journal and a Textbook.  
(Professor)
- Smith, L., DBA and CPA., Texas A&M University, Textbook.  
(Assistant department head)
- Smith, K., DBA, unknown, Textbook.

Steinbart, P., PhD., Arizona State University, Textbook.  
(Chair, School of accounting and information systems)

Stello, B., unknown, consultant, Family Practice Management.

Stiegel, J. CPA, consultant, The National Public Accountant.

Sutton, S., PhD and CPA, University of Connecticut, Textbook. (Professor).

Wilkinson, J., PhD., Arizona State University (emeritus), Textbook. (Professor)

Winslow, H., editorial intern, Williams Jewell College, Women in Business.

Wong-On-Wing, B., PhD., Washington State University, Textbook. (Associate Professor)

Appendix C  
Population and Sample Profile

Table C-1

*Population and Sample Profile*

State	City	City population	Mailing allocation factor	Planned number of mailing elements	Expected sample responses
Utah	Salt Lake City	171,500	0.1493	149	49
Colorado	Denver	503,000	0.4379	438	142
Wyoming	Cheyenne	53,200	0.0463	46	15
New Mexico	Albuquerque	421,000	0.3665	367	119
Totals		1,148,700	1.0000	1,000	325
Groups					
	CPAs (1/3)			333	108
	Controllers (2/3)			667	217
Totals				1,000	325

Appendix D

Cover Letter for Questionnaire

IRB Approval Nov. 7, 2002

# Utah State UNIVERSITY

BUSINESS INFORMATION SYSTEMS & EDUCATION  
College of Business  
3515 Old Main Hill  
Logan UT 84322-3515

## Selecting Accounting Software for Small Businesses January 21, 2002

### What are the most effective activities in the process of selecting accounting software?

Hello, I'm a doctoral student in Business Information Systems at Utah State University.

The attached questionnaire is an important part of current research on the **process of selecting accounting software for a small business or organization**.  
(A small business is one having 500 or less employees)

If you **participate** in this research by filling out and returning the questionnaire in the stamped self-addressed envelope provided you will be contributing to original research in this field. The intent of this research is to optimize the software selection process. This research began December 27, 2002 and will be completed by January 30, 2003.

You are one of 500 professionals randomly selected to contribute to this research. Please do not put your name on the survey in order to maintain your anonymity. Participation in this one time survey is voluntary and at minimal risk to the participant.

At the top of the questionnaire please fill in the background information requested.

On the attached questionnaire please circle the number indicating how important you believe that activity is in the software selection process.

Low importance    1    2    3    4    5    High importance.

Thank you for participating in this research project. Please return the survey by January 30, 2002. A summary of the research results may be obtained after July 15, 2003 by sending me a separate Email to that effect.

Sincerely,



Dr. Dennis La Bonty  
435-797-2344  
Major professor



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Undergraduate and Graduate Programs: Business Information Systems, Business Education, Marketing Education





Appendix E  
Telephone Follow-Up Script

### Telephone Follow-Up Script

Do you have CPA / CMA / CIA / other \_\_\_\_\_ certification? (circle one)

Title: \_\_\_\_\_

**Years of work experience [    ].**

Do you have prior software selection experience? Yes/No

	Low importance	1	2	3	4	5	High importance	
<b>A) Hire a consultant.</b>	Low	1	2	3	4	5	High	
<b>C) Use actual data for demos.</b>	Low	1	2	3	4	5	High	
<b>E) Evaluate present systems.</b>	Low	1	2	3	4	5	High	
<b>G) Consider training time and cost.</b>	Low	1	2	3	4	5	High	
<b>I) Determine system capacity.</b>	Low	1	2	3	4	5	High	
<b>K) Review vendors &amp; products.</b>	Low	1	2	3	4	5	High	
<b>M) Consider program ease of use.</b>	Low	1	2	3	4	5	High	
<b>O) Examine Vendor reliability.</b>	Low	1	2	3	4	5	High	
<b>Q) Prepare new system budget.</b>	Low	1	2	3	4	5	High	
<b>S) Supervise implementation.</b>	Low	1	2	3	4	5	High	

Appendix F  
Overview of Mailing Progress

Table F-1

*Overview of Mailing Progress*

Group	Pop.	Mailing 1			Mailing 2			Follow-up to 1			Follow-up to 2			Mailing 3			All mailings		
		Sent	Rcv'd	%	Sent	Rcv'd	%	Sent	Rcv'd	%	Sent	Rcv'd	%	Sent	Rcv'd	%	Sent	Rcv'd	%
<b>Cheyenne</b>																			
CPAs	25	8	2	25	8	3	38	6	2	33	5	0	0				16	7	44
Controllers	29	15	2	13	15	1	7	13	0	0	14	2	14				30	5	17
<b>Salt Lake City</b>																			
CPAs	307	25	8	32	25	10	40	17	3	18	15	7	47				50	28	56
Controllers	432	50	14	28	50	13	26	36	5	14	37	3	8	100	18	18	200	53	27
<b>Denver</b>																			
CPAs	267	73	24	33	73	17	23	49	7	14	56	11	20				146	59	40
Controllers	594	146	26	18	146	25	17	120	18	15	121	17	14	100	25	25	392	111	28
<b>Albuquerque</b>																			
CPAs	247	61	14	23	61	18	30	47	6	13	43	8	19				122	46	38
Controllers	243	122	19	16	122	23	19	103	12	12	99	12	12				244	66	27
<b>Combined totals</b>																			
	2,144	500	109	22	500	110	22	391	53	14	390	60	15	200	43	22	1,200	375	31
<b>Individual group totals</b>																			
CPAs	846	167	48	29	167	48	29	119	18	15	119	26	22	0	0	0	334	140	42
Controllers	1,298	333	61	18	333	62	19	272	35	13	271	34	13	200	43	22	866	235	27

Appendix G  
Survey Telephone Follow-Up

Table G-1

*Survey Telephone Followup*

Group	Nonresponders	Allocation factors *	Number Called	Survey telephone follow-up		Totals	Percent
				Called 4/16	Follow-up Calls		
<b>Cheyenne</b>							
CPAs	9	0.0135	1	0	0	0	0
Controllers	25	0.0374	3	2	0	2	80
<b>Salt Lake City</b>							
CPAs	22	0.0329	2	2	0	2	91
Controllers	65	0.0973	7	1	2	3	46
<b>Denver</b>							
CPAs	87	0.1302	9	3	0	3	34
Controllers	206	0.3084	21	4	1	5	24
<b>Albuquerque</b>							
CPAs	76	0.1138	8	0	0	0	0
Controllers	178	0.2665	18	4	0	4	22
Combined totals	668	1.0000	67	16	3	19	28
<b>Individual totals</b>							
CPAs	194		19	5	0	5	26
Controllers	474		48	11	3	14	29

\* Proportion of each nonresponder category to the total of nonresponders (668), used to calculate the number of nonresponders in each category to be called in the telephone follow-up.

Appendix H  
Survey Respondent Work Experience

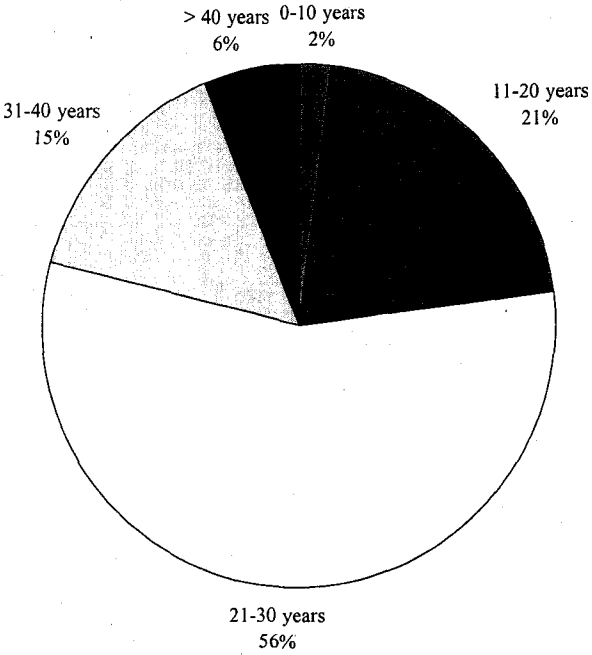


Figure H-1. Number of years of work experience of all CPAs (mean = 25.8 years).

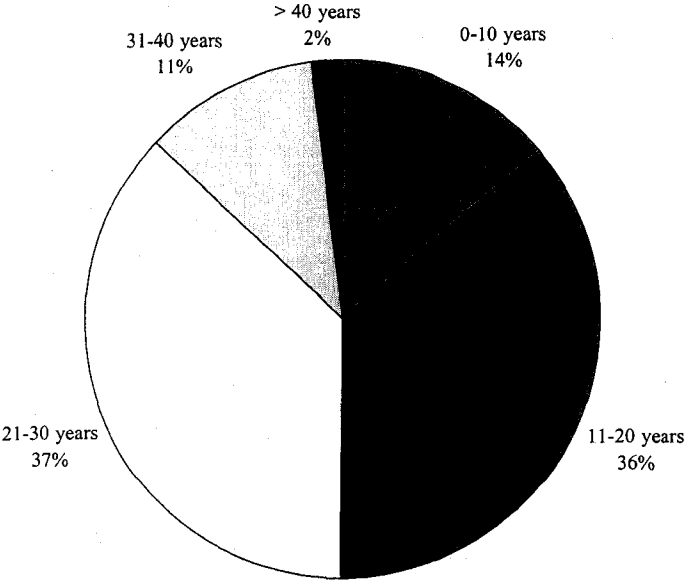


Figure H-2. Number of years of work experience of all controllers (mean = 21.1 years).



Appendix I

Comparison of Survey with Other Groups

Table I-1

*Comparison of the Survey with Two Groups of Respondents by Number of Years Work Experience and the Textbook Authors*

Activities		Survey (N=375)	1-17 years (n=95)	29-55 years (n=95)	Authors of 10 textbooks
Fourth Quarter: 75% - 100%					
I: Determine system capacity	I	4.39	4.39	4.47	90%
M: Consider program ease of use	M	4.35	4.35	4.44	80%
H: Consider future system expansion	H	4.32	4.37	4.26	90%
O: Examine vendor reliability	O	4.31	4.29	4.29	90%
P: Consider system interface issues	P	4.23	4.37	4.06	100%
E: Evaluate present systems	E	4.14	4.17	4.01	100%
T: Get written documentation	T	4.13	4.06	4.18	100%
S: Supervise implementation	S	4.11	4.22	3.97	100%
G: Consider training time and cost	G	4.06	4.19	3.78	100%
R: Develop implementation plan	R	4.05	4.20	3.98	100%
Third Quarter: 50% - 75%					
N: Use own experienced staff	N	3.89	3.86	3.87	90%
K: Review vendors and products	K	3.79	3.94	3.67	100%
C: Use actual data for demos	C	3.46	3.43	3.40	50%
Q: Prepare new system budget	Q	3.43	3.64	3.34	80%
B: Compile Vendor list	B	3.32	3.40	3.07	90%
D: Call vendor customer lists	D	3.31	3.15	3.25	60%
L: Send out Request for Quote	L	3.24	3.43	3.06	90%
Second Quarter: 25% - 50%					
F: Develop scoring instrument	F	2.92	3.13	2.63	70%
A: Hire a consultant	A	2.17	2.23	2.18	40%
First Quarter: 0% - 25%					
J: Buy a software selection program	J	1.69	1.69	1.75	10%

*Note.* The means shown are the grand means or column means of the respective respondent group, etc.

Table I-2

*Comparison of the Survey with Two Groups of Respondents by Number of Employees in Their Company and the Textbook Authors*

Activities		Survey (N=375)	1-80 employees (n=75)	200-500 employees (n=75)	Authors of 10 textbooks
Fourth Quarter: 75% - 100%					
I: Determine system capacity	I	4.39	4.37	4.64	90%
M: Consider program ease of use	M	4.35	4.36	4.24	80%
H: Consider future system expansion	H	4.32	4.45	4.55	90%
O: Examine vendor reliability	O	4.31	4.40	4.44	90%
P: Consider system interface issues	P	4.23	4.39	4.41	100%
E: Evaluate present systems	E	4.14	4.40	4.11	100%
T: Get written documentation	T	4.13	4.21	4.48	100%
S: Supervise implementation	S	4.11	4.32	4.53	100%
G: Consider training time and cost	G	4.06	4.20	4.09	100%
R: Develop implementation plan	R	4.05	4.27	4.47	100%
Third Quarter: 50% - 75%					
N: Use own experienced staff	N	3.89	4.03	3.99	90%
K: Review vendors and products	K	3.79	3.92	3.93	100%
C: Use actual data for demos	C	3.46	3.59	3.57	50%
Q: Prepare new system budget	Q	3.43	3.63	3.71	80%
B: Compile Vendor list	B	3.32	3.47	3.52	90%
D: Call vendor customer lists	D	3.31	3.41	3.91	60%
L: Send out Request for Quote	L	3.24	3.65	3.51	90%
Second Quarter: 25% - 50%					
F: Develop scoring instrument	F	2.92	3.09	3.20	70%
A: Hire a consultant	A	2.17	2.20	2.41	40%
First Quarter: 0% - 25%					
J: Buy a software selection program	J	1.69	1.75	1.81	10%

*Note.* The means shown are the grand means or column means of the respective respondent group, etc.

Table I-3

*Comparison of the Full Survey with Three Groups of Respondents by the Industry Their Company Is In and the Textbook Authors*

Activities		Survey (N=375)	Manufacturing (n = 67)	Commerce (n =83)	Service (n=86)	Authors of 10 textbooks
Fourth Quarter: 75% - 100%						
I: Determine system capacity	I	4.39	4.54	4.34	4.62	90%
M: Consider program ease of use	M	4.35	4.40	4.11	4.51	80%
H: Consider future system expansion	H	4.32	4.49	4.33	4.59	90%
O: Examine vendor reliability	O	4.31	4.45	4.23	4.49	90%
P: Consider system interface issues	P	4.23	4.45	4.28	4.57	100%
E: Evaluate present systems	E	4.14	4.31	4.20	4.20	100%
T: Get written documentation	T	4.13	4.28	4.20	4.45	100%
S: Supervise implementation	S	4.11	4.43	4.30	4.49	100%
G: Consider training time and cost	G	4.06	4.21	3.98	4.29	100%
R: Develop implementation plan	R	4.05	4.37	4.19	4.53	100%
Third Quarter: 50% - 75%						
N: Use own experienced staff	N	3.89	4.04	3.95	4.03	90%
K: Review vendors and products	K	3.79	3.94	3.64	4.09	100%
C: Use actual data for demos	C	3.46	3.45	3.52	3.56	50%
Q: Prepare new system budget	Q	3.43	3.70	3.41	3.86	80%
B: Compile Vendor list	B	3.32	3.49	3.35	3.73	90%
D: Call vendor customer lists	D	3.31	3.75	3.33	3.81	60%
L: Send out Request for Quote	L	3.24	3.52	3.35	3.91	90%
Second Quarter: 25% - 50%						
F: Develop scoring instrument	F	2.92	3.13	2.93	3.38	70%
A: Hire a consultant	A	2.17	2.18	2.19	2.30	40%
First Quarter: 0% - 25%						
J: Buy a software selection program	J	1.69	1.78	1.78	1.83	10%

*Note.* The means shown are the grand means or column means of the respective respondent group, etc.

## VITA

BRYAN D. SISSON

**Address:**

Apt 2, 444 West 100 South  
(435) 750-6994  
Logan, Utah 84321

**Education:**

- 1998-2003 Ph.D. Education and Business Information Systems, Utah State University. Major Professor: Dennis LaBonty  
Dissertation: *Selecting Accounting Software for Small Businesses*
- 1978 M.B.A. (Emphasis in finance) Golden Gate University
- 1977 B.S. Management, Golden Gate University

**Expertise and Experience:**

These are the skills and experience that I will use to enhance our students learning experience.

*Management Operations:* Experienced as a manager; relating to all levels of administration from boards to the working level employee. Skilled in gaining support for the achievement of board/management objectives. Developed policies, systems and implementation procedures for organizations & departments to successfully accomplish their missions. Utilized Budgetary and Management by Objectives tools to direct department heads/supervisors. Adept at working in autonomous environments with written policies and program/problem oriented direction. Skilled in communicating verbally and in writing in the following environments: Military, Construction, Manufacturing, Software developers, Accounting departments, Utah Cities and Counties, Consulting with owners of businesses, Designing Cost Systems and Trouble Shooting organizational problems.

*Manufacturing:* Skilled in inventory valuation and the collection and analysis of data to generate financial statements and management reports. Experienced in conducting variance analysis in a variety of manufacturing situations. Particularly familiar with the analysis and interpretation of material usage, scrap and waste variances and labor rate and usage variances.

*Marketing Analysis:* Developed sales force performance-monitoring systems. Conducted studies and presented reports on customer profiles and competitive environments. Created statistical projection and revenue modeling systems for forecasting and budgeting. Instituted comprehensive sales reporting systems.

*Teaching at the college level:* Taught the theory and operation of computer systems, computer languages, and computer mathematics for over three years.

*Personnel Management:* Eight years of managing/performing personnel functions. This was done along with performing as the firm's Controller and in the following environments: Start-ups, shutdowns, layoffs and expansions. Have successfully defended my firm against the wage and hour board and unemployment claims. Reviewed, updated, wrote and implemented personnel procedures and manuals both in business and federal government contractual environments. Selected and implemented employee health and pension plans.

*Management Information Systems:* Skilled in organizational analysis to determine the reporting and management information structure needed for optimum operation and control of an organization. Experienced in the design, installation and operation of accounting and cost systems. Familiar with the selection of software and hardware to support these systems and networks. Proficient in using Windows, WordPerfect, and Excel on IBM PC's. Experienced in operating software on AS400 Computers. Created the overall system design for the existing computer network at San Juan Health Care Services.

*Budgeting and Financial Analysis:* Solid expertise and experience in the preparation and use of realistic budgets and forecasts in Utah County Health Care and the Software and Electronic Manufacturing industries. Have conducted analyses and studies on a wide variety of problems. A list of these problems and topics include but are not limited to the following: General Operations, Overhead Absorption, Variance Analysis, Product Cost Profiles & Breakeven Points, Make vs. Buy Decisions, Product and Business Modeling, Profit Planning, Asset Based Costing, Feasibility Studies and Economic Analysis of Capital Expenditures.

*Cost Systems and Analysis:* Worked with Standard Cost, Job Cost and Process cost systems. Developed Product Cost Profiles for manufacturing and sales pricing functions. Familiar with Electronic & Mechanical manufacturing, Wholesale distribution and Trucking companies, U.S Government contracting, Electrical/Mechanical contractors and Software development and sales.

**Personal:**

U.S. Navy from August 1967 to October 1977. Aviation Electronics Technician First Class (E-6). Married, eight children. Served as a scoutmaster.

**Employment History:**

**LW Miller Transportation (Logan, Utah)**

*Accounting Manager (From October 1997 to May 2003).* Responsible for general ledger and management reporting for five trucking divisions. Conducted an analysis of the accounting information systems software.

**City of Blanding, Utah**

*Treasurer (From August 1996 to July 1997)* Left to obtain a PhD at USU. Responsible for general accounting, payroll, accounts payable, oversight of the software and computer system and the utilities business office. Supervise billing clerk. Prepare the annual budget and represent the city in all fiscal matters.

**San Juan Health Care Services (Monticello, Utah)**

*Facility/Finance Director (From January 1994 to June 1995).* Responsible for the following departments: General Ledger/Payroll, Accounts Payable, Business Office, Medical Records, Materials Management, Plant Operations, Dietary, Housekeeping, Both off-site Medical centers. Supervised 31 personnel with 9 direct reports. (Left for consulting opportunity).

**UNIQUEST, Inc. (Jacksonville, Florida)**

*Corporate Controller (From April 1993 to December 1993).* A solutions oriented software company Responsible for the General Accounting, Audit Management and SEC Reporting Functions. Supervised 8 people with 3 direct reports. (Company downsized).

**Balfour, Recognition Products Group (Boston, MA)**

*Director of Marketing Analysis (April 1991 to October 1991).* A Manufacturer of fine Jewelry and Recognition Products Responsible for market research/reporting, product costing, and budgeting and forecasting. (My division was shut down).

**Electronic and Support Services, Inc. (an LTV Company in Dallas, TX)**

*Business operations Manager (Controller) (From February 1983 to July 1984).* Responsible for all accounting, financial planning, cost/pricing, purchasing, personnel and warehousing functions. Supervised 9 people with four direct reports. (The company moved away and I stayed to start a consulting firm).

**Amprix Electronics (a Division of AXIA in Dallas, TX)**

*Controller (From June 1982 to January 1983).* Responsible for all accounting, personnel and budget functions. Supervised seven people with three direct reports. (Company went out of business).

**B.D.S. Financial Services**

*Owner and Controller of a consulting firm (from February 1984 to July 1991 and July 1995 to July 1996)*

**Major Consulting Assignments:****Adidas, U.S.A. (Hugesco, Inc.)**

The Southwest distributor of Adidas Shoes and Sportswear. Assignment: Controller/CFO for major company transition.

**Kentron International (Formerly owned by LTV)**

Assignment: Consulting Troubleshooter.

**The Genra Group (Formerly owned by Xerox)**

Assignment: Consulting Troubleshooter.

**Honeywell EOD**

DOD Manufacturing and Service Company. Assignment: Consulting/Cost System Analysis and Design.

**Digital Switch**

A major new company in the Telecommunications industry. Assignment: Consulting Troubleshooter.

**The Associates**

A Gulf and Western Company. Assignment: Contract Analyst.

**White Companies**

A Manufacturer of pickup truck accessories. Assignment: Controller/CFO for company transition.



**Woodsmiths**

A manufacturer of custom spiral stairways for prestigious unique homes in the million dollar plus market. Assignment: Consulting/Cost System Analysis and Design

**Others**

Financial Analyst and Consultant to more than 20 other small Businesses in the Boston, Massachusetts and the Dallas, Texas areas.