ATHABASCA UNIVERSITY

STRATEGIC MANAGEMENT ACCOUNTING USE IN CANADA: AN EXPLORATORY STUDY OF KEY TECHNIQUES AND FACTORS

BY PAMELA QUON

A DISSERTATION

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF BUSINESS ADMINISTRATION

FACULTY OF BUSINESS

ATHABASCA, ALBERTA

JULY, 2020

Athabasca University
FACULTY OF GRADUATE STUDIES

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STRATEGIC MANAGEMENT ACCOUNTING USE IN CANADA:
AN EXPLORATORY STUDY OF KEY TECHNIQUES AND FACTORS

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In partial fulfillment of the requirements for the degree of

Doctor of Business Administration

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Dedication

I am dedicating this dissertation to my late parents, Wai Heung Quon and Tim Quon. My parents have always encouraged me to pursue higher education and viewed this as a road that would lead to great achievements. To my in-laws, late Lynn Gee and Frank Gee, your strong commitment to family and community has inspired me to improve myself through education as a way to bring positive change to society.

To my husband, Edmond, who has supported my educational goals right from the very beginning and motivated me to continue when I faced challenges. To my children, Kirsten, and Kamren, you keep me grounded, as you are a constant reminder of the importance of family.

Lastly to all my relatives and friends, it is possible to achieve great things while having a work life balance. Perseverance is the key to finishing a project of this magnitude.

Acknowledgements

Thank you to my co-supervisors Dr. Mihail Cocosila and Dr. Eric Wang for the enormous time spent on guiding and mentoring me. Thank you to committee member, Dr. Susan Moisey who provided a non-business perspective to my work. I want to acknowledge external examiner, Dr. Bixia Xu for a very insightful review report. I am grateful to Dr. Irene Herremans for reviewing my work and providing suggestions.

Many of my colleagues need to be acknowledged. Thank you to Dr. Aris Solomon for the hours of thoughtful discussions on my research, Dr. Ana Azevedo for suggested improvements to the survey instrument, Dr. Tilly Jensen for reviewing my work and providing suggestions, Dr. Fathi Elloumi for suggestions and support, and Dr. Jan Thiessen for editing the manuscript.

Finally, I want to thank Dr. Deborah Hurst, Dr. Kay Devine, Dr. Alex Kondra and Dr. Terry Beckman for their support and encouragement. They have given me the nudges, advice and persuasion that I needed to pursue, continue and finish this great journey.

Abstract

This study investigated strategic management accounting (SMA) and SMA techniques and factors usage in Canada. Understanding SMA use is important, as external and competitor accounting information is needed in order for firms to maintain a competitive advantage in an increasingly global environment. A review of literature has shown that several contingency factors have been found to affect a firm's strategic management accounting usage and performance. Studies done since the early 2000s have provided insight regarding the SMA adoption practices of firms across various industries and different countries. However, there were inconsistent or unsupported findings for some of the contingency factors initially believed to have an influence on SMA practice adoption in various countries. These inconsistencies warrant further investigation of contingency factors such as company size, business strategy, and market orientation as well as additional SMA model development to include contingency factors that have not been previously investigated (e.g., environmental uncertainty, organization culture, organization structure). This research advanced a comprehensive model of SMA usage which incorporated a broad set of contingency factors expected to influence SMA usage and firm performance. This SMA model was validated using structural equation modeling (SEM) techniques with data collected from a sample of Canadian companies. The theoretical contribution of this study is a conceptual framework of SMA adoption capturing the impact of key contingency factors on SMA techniques usage. The study's applied contribution is quantitative evidence of the extent to which SMA techniques have been adopted in Canada so far, and the implications that these techniques may have on firm performance. Overall, this is believed to be the first theory-based empirical investigation of SMA techniques use in Canada

and as such, it opens the door for more complex studies on the outcomes of SMA adoption on firm's performance in various countries.

Keywords: strategic management accounting, SMA, SMA techniques, SMA practices, SMA adoption, SMA usage, structural equation modeling, SEM, contingency factors, contingency variables

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Chapter 1. Introduction

In recent years, the globalization of commerce in a progressively competitive environment has compelled companies to find innovative strategies in order to remain viable. Managers have had to look for more effective ways to gain strategic advantage and improve organizational performance (Baines & Langfield-Smith, 2003). The dramatically changing business environment and social landscape have caused companies to instigate profound changes to redesign themselves (Deloitte, 2017). They have had to consider changes to organizational design, improvements to information systems, implementation of the latest manufacturing systems, and employment of advanced management accounting practices. Thus, management accounting practices and systems, which are considered organizational rules and routines (Burns & Scapens, 2000), and the use of accounting within the management process (Bromwich & Bhimani, 1989, 1994) have evolved over time to serve the internal information needs of organizations.

Given the necessity for management accounting to transform with the times and the changing competitive environment, it is no surprise that, in the last couple of decades, there has been an increasing interest by scholars and practitioners in non-conventional management accounting practices in a developing field known as strategic management accounting (SMA). Simmonds (1981) first introduced the term strategic management accounting, characterizing it as being externally focused, and involving the financial assessment of key competitors (Simmonds, 1982). In addition, SMA involves the use of advanced management accounting techniques that are considered to be the integration of management accounting and marketing to achieve competitive advantage (Roslender & Hart, 2002). While traditional management accounting

practices were focused on the internal organizational environment, historical perspectives, and short-term business objectives, SMA practices, in contrast, were considered to be future oriented, externally directed, and provided a broad perspective (through the inclusion of strategic management and marketing disciplines). In the last decade, it became clearer that SMA was considered a framework of techniques with a "distinct accounting orientation" (Cadez & Guilding, 2008, p.1).

Although the notion of SMA has gained wide acceptance, there is evidence that SMA practices have not been adopted extensively so far (Ahmad, 2014) and developments in the SMA literature seem to have languished as indicated, by the relatively short life cycle of many strategic management tools (Nixon & Burns, 2012). The "empirical evidence on the successful diffusion of strategic management accounting is still not overwhelming" (Shah, Malik & Malik, 2011, p. 1). SMA "suffer[s] from a relative dearth of empirically based research" (Woods, Taylor & Fang, 2012, p. 261). In the last 10 to 15 years, there had only been a few empirical studies on the usage rates of SMA practices (Cadez, 2006; Cinquini & Tenucci, 2010; Lay & Jusoh, 2012; Said, Hui, Othman, & Taylor, 2010). For example, studies by Guilding, Cravens, and Tayles (2000) and Cadez (2006) provided some insight into the adoption of SMA practices, the similarities and differences in the usage rates of SMA practices among different countries (e.g., New Zealand, U.S., and U.K.), and the SMA usage rates across industries. Two case studies (Collier & Gregory, 1995; Ma & Tayles, 2009) provided more in-depth details about how SMA had been adopted in the highly competitive pharmaceutical and hotel industries. These case studies helped to show how human actors shaped the implementation of SMA within their organizations. While the concept of strategic management accounting has gained considerable acceptance, it is still an evolving field and "very little has been achieved in terms of empirical

enquiry designed to further our appreciation of the nature and context of SMA application" (Cadez & Guilding, 2008, p. 856).

Rationale for the Study and Problem Statement

The main motivation for this study stems from the recognition of the unbalance between the strategic importance attached to strategic management accounting and the dire dearth of empirical research in this domain. As well, the inconsistent interpretations of what is considered strategic management accounting (Cadez & Guilding, 2008) necessitate further study of SMA. Given the perceived importance of strategic management accounting (Stein, 2017), and the limited empirical research on strategic management accounting and SMA techniques (Cadez, 2006; Guilding et al., 2000) to support the effectiveness of SMA (Lay & Jusoh, 2012), further exploration is required to provide a better understanding of this emerging field. The transferability of management accounting practices across countries has received substantial consideration in response to the increase in international competition in relation to global business activities (Endenich, Brandau, & Hoffjan, 2011). So far, only a handful of key empirical studies of SMA practices (Guilding et al., 2000; Cadez, 2006; Cinquini & Tennuci, 2010; Lay & Jusoh, 2012) have been conducted in a limited number of countries: New Zealand, U.S., U.K., Slovenia, Australia, Italy, and Malaysia. Further insights can be achieved by examining the SMA practices of other countries. To date, no empirical studies on SMA techniques usage in Canada could be found in the available literature; this is considered a knowledge gap because Canada's particular circumstances can provide additional insight for SMA research.

Canada, a developed member of the Group of Twenty (G20) countries, has many primary competitive strengths such as (a) location close to a large trading partner (U.S.); (b) natural resources; (c) a diverse economy; (d) high-quality public education; (e) and institutional and

political stability (Competition Policy Review Panel, 2008). However, Canada also has some competitive weaknesses such as a modest population density over a large geographic area, which creates high infrastructure costs, as well as jurisdictional fragmentation and regulatory burden, and the impact of the level and system of taxation on the cost of capital (Competition Policy Review Panel, 2008). Given some of Canada's competitive challenges in a global competitive environment, it would be fitting to study and to determine the level of SMA usage by Canadian firms in their efforts to gain competitive advantage and achieve superior financial performance. Since the Canadian business culture is similar to that in the U.K. and U.S., and since Canada has strong trade relations with the U.S., U.K., New Zealand, Australia, Italy and Malaysia where SMA practices are already used, as shown above, it can be assumed that Canada has similar, if not larger, SMA adoption rates as these countries. The Canadian accounting profession, Chartered Professional Accountants Canada (CPA), has been very progressive and strategic; it has 217,000 members who have a range of skills and competencies that allow them to adapt to the changing business environment. CPAs have the ability to "leverage their expertise . . . [and] . . . to navigate through disruptive change by anticipating the unexpected, making sense of complexity and analyzing data to make business decisions that drive success" (CPA Canada, 2020). As well, Canada has been very receptive to change; it was open to overseeing the 2011 adoption of the International Financial Reporting Standards (IFRS)—a global financial reporting standard for publicly traded companies while other countries such as the U.S., with the largest capital market and Canada's closest trading partner, have not fully adopted IFRS (Bogopolsky, 2015). CPA Canada's demonstrated commitment and leadership in providing the highest standards of accounting and the latest best business practices to the accounting industry provides a strong case for studying SMA practices of Canadian companies to determine the diffusion and

effectiveness of SMA. Thus, the purpose of the study was to provide empirical evidence on the degree of adoption of SMA practices in Canada. Understanding the factors affecting the level of adoption of SMA techniques will help determine the extent that Canadian firms are involved in strategic management accounting practices and the effect that these practices have on organizational performance.

Given the few empirical studies on strategic management accounting practices and techniques (Cadez, 2006; Cinquini & Tenucci, 2010; Guilding et al., 2000), further studies of what constitutes strategic management accounting and the factors that influence the adoption of SMA practices are required. There is also a practical interest in assessing how SMA practices have affected organizational performance. Studying SMA in other settings will help to provide additional understanding of how SMA practices are the same or different in other environments. Previous studies of SMA techniques have focused on countries in the eastern hemisphere (e.g., Cadez & Guilding, 2008; Cinquini & Tenucci; 2010; Guilding, 1999; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010). Further SMA studies of companies in the Americas will provide a western perspective. Thus, an empirical study of SMA techniques usage and contingency factors, the first of its kind in Canada (based on the researcher's knowledge at this date), will provide further insights into SMA usage and its impact on organization performance.

Research Questions

The main purpose of this study was to determine how a firm's adoption of SMA is affected by its contingent variables, and how the application of strategic management accounting techniques affects its performance. For the purpose of the study, contingent variables (factors) were defined as those factors that affect structural attributes (e.g., SMA techniques; Drazin & Van de Ven, 1985). As will be explained later in this work, the following contingent variables are

believed to be related to SMA techniques usage and to have an impact on firm performance: (a) the size of firm, (b) the environmental uncertainty in which a firm operates, (c) the competitive intensity of the environment in which a firm operates, (d) the market orientation of the firm, (e) the strategic orientation of the firm, (f) the organization culture, (g) the organization structure of the firm, (h) firm performance, and (i) accountant involvement in strategic decision making. The above selection of contingent variables has been based on previous SMA contingency research (e.g., Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Guilding, 1999; Cravens & Guilding, 2001; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010), and includes contingent variables from non-SMA contingency studies that were deemed important in previous contingency studies (Calantone, Cavusgil, & Zhao, 2002; Jaworski & Kohli, 1993; Soobaroyen & Poorundersing, 2008; Uzkurt, Kumar, Kimzan, & Sert, 2012).

This study will add to the growing body of SMA literature several ways. The first research question, being the most important and primary question, pertains to SMA techniques usage and their relationship with contingency factors. The next two questions focus on SMA techniques usage and organizational performance. Accordingly, the following three questions will serve as a guide to the current research:

- Research question one: What is the influence of the key contingency factors on the adoption of strategic management accounting techniques?
- Research question two: How does the use of strategic management accounting techniques affect organizational performance?
- Research question three: To what extent are Canadian companies involved in strategic management accounting practices?

Theoretical Framework for the Study

The study incorporated contingency theory for its theoretical framework. Contingency theory was constructed during the 1960s, and originated from the work spearheaded by Burns and Stalker (1961). By the mid-1970s, the use of contingency theory became popular for the behavioral aspects of management accounting literature (Otley, 1980) The contingency theory of organizations is a main theoretical lens that has been used to view organizations, producing many insights, and has had substantial empirical support (Donaldson, 2001). A tenet of contingency theory is that there is no best way to organize a company and the optimal course of action is contingent on the internal and external situation. An organization's performance is dependent on the fit between the firm's structure and other contingency variables such as size, external environment, strategy, national culture, and technology, both traditional and contemporary (Chenhall, 2003).

Management accounting practices are considered an assortment of techniques that assist the management role. The techniques used in management accounting serve the information requirements of internal stakeholders; thus, the adoption and use of these practices are influenced by management rather than by external users and groups. Adopted management accounting practices are perceived to be useful if they add value to the provision of management accounting information. To obtain an understanding of why certain management accounting practices are adopted, the focus of the study was on the factors believed to influence the organization's adoption of particular strategic management accounting practices. As management accounting practices are considered components of the organizational structure, contingency-based research facilitated the investigation of the fit between particular strategic management accounting practices and specific contingency variables associated with organizations.

Various forms of contingency fit are found in the strategy as well as the management accounting systems literature (Gerdin & Greve, 2004); the selected framework for this study followed the Cartesian contingency method (Donaldson, 1996). Advocates of the Cartesian approach assume that the fit between structure and context occurs along a continuum that allows numerous minor movements by organizations from one position of fit to another (Donaldson, 2001). In addition, the Cartesian approach takes a reductionist view, whereby it is assumed that the effect of different dimensions on performance is regarded as "a sum of the parts" and each element of performance can be examined independently (Gerdin & Greve, 2004, p. 320). Although early contingency studies focused on how single contingency variables affected single structural attributes and how the combination of contingency variables and structural variables explained performance, it was suggested that the understanding of context-structure-performance relationships could be advanced by examining the effects of multiple contextual (contingency) elements on fit (Drazin & Van de Ven, 1985). Thus, for the purposes of the study of contingency factors believed to be related to SMA techniques usage, the Cartesian framework was considered most appropriate as it views organizational structure and contingency relationships as multidimensional with the organization moving from one position of fit to another along a continuum (Donaldson, 1996).

Limitations of this Study

Limitations are those factors that may affect the study and are not controllable by the researcher (Mauch & Birch, 1998), whereas delimitations are those characteristics that limit the scope and define the boundaries of the study and are controllable (Simon, 2011). This research may be limited by the following:

- The list of SMA techniques may not be exhaustive and inclusion of techniques is subject to interpretation. There is ambiguous interpretation of what constitutes SMA due to a limited consensus in the literature regarding the meaning of strategy, as well as what constitutes SMA techniques (Cadez & Guilding, 2008). There is also no agreed conceptual framework for what constitutes SMA. Therefore, generating a list of SMA techniques involved some subjectivity (Cadez, 2006). Furthermore, the concept of SMA is in "continuous evolution" (Cinquini & Tenucci, 2010, p. 251) making it difficult to pinpoint a widely accepted definition.
- The list of contingency factors may be incomplete. Many of the factors in this study have been included in prior SMA studies (Cadez, 2006; Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010); however, many of these previous studies only explored one or a few factors. The aim of the current study is to include several contingency factors believed to have a relationship with SMA in order to provide a more comprehensive analysis of the multi-dimensional relationships that may exist among the various contingency and structural variables. The list of contingency factors has been mainly drawn from SMA literature, but some of the contingency factors such as environmental uncertainty, organization culture, and organization structure have been derived from non-SMA contingency literature. These additional contingency variables have been shown to be important in other contingency contexts (Calantone et al., 2008; Jaworski & Kohli, 1993; Uzkurt et al., 2012) and warrant investigation to determine their relationship to SMA.

- The study adopted a quantitative approach and a survey was administered. As with any non-experimental methodology, the correlation of variables does not imply that a causal relationship exists (Van der Stede, 2014).
- The cross section or sample used was one of convenience derived from the Canadian Company Capabilities, CCC; Industry Canada, 2017) and CanWest Interactive's Infomart (2018) databases. The accuracy, reliability, and currency of the information from these databases could not be verified. The sampled companies may not be representative of the population of Canadian companies.

Summary

This research extended the limited empirical research on strategic management accounting and SMA techniques. Contingency theory was used as a theoretical framework to guide the study. An examination of the major contingency factors believed to influence SMA usage was performed. As well, the effect of SMA use on organizational performance was determined. This study will further enrich the SMA concept and will complement prior SMA theories and studies.

This concludes the first chapter, which provided an overview of the rationale for study and problem statement, and outlines the research questions, theoretical framework, limitations of study, and definition of terms. The remainder of this dissertation includes five more chapters. Chapter Two reviews the literature related to historical overview, case-based studies on SMA, survey-based studies on SMA, critique of SMA, summary of SMA techniques and broad SMA categories, and concludes with a summary of contingency-based research and knowledge gaps. Chapter Three outlines the development of the research model, including the SMA techniques

selected, and SMA categories. Chapter Four presents and discusses the general research procedures and methodology of the study, as well as specific procedures, research population and sample, instrumentation, pilot study, data collection, treatment of data, analysis, and model testing. Chapter Five presents the research findings and discusses how the findings relate to hypotheses, while Chapter Six concludes by summarizing the study's theoretical and applied contributions, limitations, and recommendations for future research. Following the reference list, there are several appendices, including

- definitions of SMA techniques in a glossary (Appendix A);
- sample size calculations (Appendix B);
- strategic management accounting survey completed by participants (Appendix C);
- contact letter to participants (Appendix D);
- constructs and associated survey questions (Appendix E); and
- research ethics application and approval (Appendix F).

Chapter 2. Review of the Literature

Historical Overview of the Theory on SMA

As early as the 1980s, it was argued that traditional management accounting practices were insufficient in meeting the needs of management decision making (Kaplan, 1984). Conventional management accounting practices focused on the internal organizational environment and short-term business objectives such as the control and performance evaluation of organizational operations, neglecting the external environment and long-term organizational goals (Cadez, 2006; Drury & Tayles, 1995). In response to these shortcomings, strategic management accounting was introduced by Simmonds (1981) with the belief that SMA could help resolve the issues related to ineffective conventional management accounting techniques in the (then) current competitive and manufacturing environment (Bromwich, 1990; Johnson & Kaplan, 1987).

By the late 1980s, SMA was recognized as an exciting development; however, there was (and still is) little agreement as to what SMA comprised (Cadez, 2006; Guilding et al., 2000; Roslender & Hart, 2003). Moreover, while many practitioners held a positive view of SMA, there had been limited implementation of SMA techniques (Cadez, 2006; Roslender & Hart, 2003). The reasons for the low adoption rate of SMA techniques are varied. It has been suggested that accountants may not have the necessary advanced management accounting skills to perform sophisticated techniques, and so require further training to enable cross-functional participation (Cooper, 1996a, 1996b; Hughes & Pierce, 2006). The review of literature presented below clarifies the reasons for the continuing low adoption rates of SMA techniques and help determine future directions for research and practice in strategic management accounting.

This review provides an overview of the literature on strategic management accounting, and sheds light on the developments within SMA, an inadequately defined field (Cadez, 2006), and the perceived role of accountants in SMA. The meaning and definition of SMA, the conceptual frameworks, perspectives, and research by various scholars are presented. This literature review includes the following topics: (a) historical overview of the theory on SMA, (b) empirical studies on SMA, (c) critique of SMA, (d) summary of contingency-based research and knowledge gaps, and (e) summary of literature review.

Origin of SMA. In the last two decades of the 20th century, there has been a growing interest in strategic management accounting. The internationalization of businesses and the competitive environment prompted the theoretical support (Bromwich, 1990) and practical requirement (Collier, 2015) for accountants to be more involved in *strategic management accounting*. Management accounting systems traditionally have been internally focused, using historical data and financial accounting information for decision-making purposes (Simmonds, 1982). To be apprised of the competitive environment, management accounting information must be external and forward looking (Dixon & Smith, 1993). Despite this increasing interest in SMA, the definition of what it entails in terms of techniques, and more specifically, what is meant by strategy, is still not clear.

Prior to exploring the research of *strategic management accounting* techniques, a discussion of what is considered to be SMA must take place. What is meant by strategy and what is the meaning of SMA? What should be considered in the domain of SMA?

Definition of strategy and strategic management accounting. To distinguish strategic management accounting from that of fundamental or basic management accounting, it is important to determine the meaning of strategy. There is no single definition for strategy. In the

business world, the word strategy can be thought of as a planned series of actions that are future oriented and focused on the external environment. Chandler's (1962) classic definition describes strategy as "the determination of the basic long-term goals and the objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals" (p. 13).

Mintzberg (1978, p. 935) defined *strategy* as a "deliberate conscious set of guidelines that determines decisions into the future" and later proposed multiple definitions for *strategy* in his theory of the five Ps for *strategy* as plan, ploy, pattern, position, and perspective (Mintzberg, 1987). Porter (1996) argued that the heart of a strategy lies in selecting a distinctive and valuable position entrenched in systems of activities that are difficult to match by competitors. Govindarajan and Shank (1992) have signified that strategy is the process by which managers, using a time frame of three to five years, evaluate external opportunities as well as internal strengths and resources in order to determine goals and actions plans. Succinctly stated, a strategy is the intentional planned series of actions that provide an organization with a competitive advantage.

Given the breadth of interpretations for *strategy,* it is no surprise that there is no single accepted meaning for *strategic management accounting*. SMA is an emerging field with indistinct boundaries, and the existing SMA literature is disparate and disjointed (Coad, 1996). Simmonds (1981) first coined the term strategic management accounting, defining SMA as the "provision and analysis of management accounting data about a business and its competitors for use in development and monitoring the business strategy" (p. 26). Shank (1989) characterized SMA or strategic cost management (SCM), the term that was more commonly used in North America, as being externally focused, catering to strategic positioning and strategic choices.

According to Lord (1996), the following are important elements of SMA: (a) collection of competitor information, (b) exploitation of cost reduction opportunities, and (c) matching of accounting emphasis with strategic position.

Dixon and Smith (1993) proposed SMA be comprised of four stages: (a) strategic business unit identification, (b) strategic cost analysis, (c) strategic market analysis, and (d) strategy evaluation. SMA has been posited as a valuable approach to strategy formulation and implementation (Ma & Tayles, 2009), an approach to account for strategic positioning, integrating management accounting and marketing management within a strategic framework (Roslender & Hart, 2003). Similarly, Bromwich (1990) described SMA as “the provision and analysis of financial information on the firm’s product markets and competitors' costs and cost structures and the monitoring of the enterprise's strategies and those of its competitors in these markets over a number of periods” (p. 28).

Other general characteristics of SMA include being externally focused, having a long-term, forward-looking orientation, and providing both financial and non-financial information for decision-making purposes (Cadez, 2006).

While there are variations in literature regarding the meaning of SMA (Bromwich, 1990; Cadez, 2006; Coad, 1996; Cravens & Guilding, 2001; Roslender & Hart, 2003; Simmonds, 1981; Ward, 1992a), there are some main characteristics of SMA that authors of earlier works tend to agree on, including

1. future orientation—focus on long-term goals and objectives;
2. external orientation—focus on the external environment; and
3. broad perspective orientation—inclusion of perspectives from strategic management and marketing disciplines.

The above features set SMA apart from traditional management accounting, which is characterized by an internal and historical focus on an organization's financial information. Unlike some of the fashionable terms like big data, business analytics, and business intelligence, which refer to an organization's use of software to analyze extremely large internal datasets for past performances, SMA focuses on the analysis of the external environment and future-oriented objectives to gain a competitive advantage.

In summary, SMA was first conceived by Simmonds (1981) and subsequently refined by various scholars to be an advanced accounting system consisting of a broad-based set of processes that collects and analyzes both financial and non-financial data related to an organization's external and competitive environment, in order to inform business decisions over several periods

Theories and perspectives on SMA. As early as the 1980s, there was a shift away from conventional management accounting practices that were considered insufficient in meeting the changing business requirements for accounting information (Kaplan, 1984; Bromwich & Bhimani, 1989). Some main criticisms of traditional management accounting practices were its (a) inability to meet the needs of the current technological and competitive environment; (b) provision of misleading cost information for decision-making purposes; (c) secondary status in relation to financial accounting and reporting requirements for companies; and (d) main focus on internal activities, with little consideration of the external environment (Drury, 1992 as cited in Cadez, 2006). Kaplan (1984) argued that management accounting could not exist as a separate discipline developing separate procedures to be applied across the board without regard for the strategic objectives of a company.

In the years that followed Simmonds' (1981) introduction of strategic management accounting, there was mainly theoretical support for SMA. Initial scholarly discussions were centered on the merits of using SMA for pricing (Simmonds, 1982). Bromwich and Bhimani (1989) in their work *Management Accounting: Evolution not Revolution* and their follow-up report *Management Accounting: Pathways to Progress* (Bromwich & Bhimani, 1994) explored the potential for SMA, citing it as a worthwhile area for development. They recognized the changing business landscape and emphasized the need for accountants to cooperate with managers in organizations in providing relevant information for strategies and the costs of those strategies, noting that if accountants could not provide the relevant information, then others would do so.

Bromwich (1990) was a strong proponent, drawing on economic theories to support the case for SMA. In his 1990 article, "The Case for Strategic Management Accounting: The Role of Accounting Information for Strategy in Competitive Markets," he drew on two premises to argue the case for management accountants to be more involved in helping enterprises meet global challenges in product markets. His first premise was based on the economic perspective of products having underlying attributes or characteristics that were favourable to consumers. Thus, he proposed first that management accountants needed to have a hand in valuing the product attributes, as those attributes were central to the formulation of business strategies relating to market demand and product offerings. Bromwich's second basis of argument used the contestable market theory, which focused on firms maintaining a sustainable market price in a competitive market place. Bromwich reasoned that management accountants were required to ensure that cost structures were sustainable, which meant that management accounting should report on both internal costs and the costs of external rival companies.

In the late 1980s, Shank (1989) contended that management accountants would be able to fully accept the concept of *strategic cost management* when they were able to cast away some elements of the old management accounting paradigm in favour of the new one. Shank (1989) argued that the winds of change were taking place and that management accounting would shift in the following ways: (a) from a purely internal focus to a strong external focus; (b) from cost analysis that was predominantly scorekeeping, attention directing, and problem solving to cost analysis that catered to strategic positioning; and (c) from having costs viewed as primarily a function of output volume to costs seen as a function of strategic choices.

Strategic management accounting began to be viewed as the integration of management accounting and marketing (Roslender & Hart, 2002). These authors acknowledged that SMA was largely an unrecognized approach with prospects for further substantial advancement and wanted to bring it to the attention of a larger audience. They discussed the conceptualization of *strategic management accounting* as an interdisciplinary field informed by management accounting as well as marketing concepts and issues. Roslender and Hart (2002) contended that the exploration of management accounting and marketing interface contributed most to the development of the *strategic management accounting* concept. They extended the work of Bromwich (1990) on attribute costing and strategic cost analysis, which focused solely on costs, to include brand management accounting that included the external analysis of "the more intangible attractions of products, their experiential dimensions . . . [and] . . . their ability to fulfill the emotional needs of customers" (Roslender & Hart, 2002, p. 268). Thus, the more subjective aspects from consumers' viewpoint of products were being explored.

SMA conceptual frameworks. There is limited consensus as what constitutes a conceptual framework for SMA (Cadez, 2006; Hoffjan & Wömpener, 2006; Tomkins & Carr,

1996). Many researchers have contributed perspectives and theories on what constitutes SMA (Simmonds, 1981; Jones, 1988; Bromwich, 1990; Roslender & Hart, 2003) on a fragmented and unsystematic basis. Currently, there is no generic comprehensive SMA framework, however, Banker and Johnston (2007) contended that Shank (1989) and Shank and Govindarajan (1989, 1993) have contributed the most to the way that cost drivers relate to customer value, costs, revenues, and profitability. It is noteworthy that Shank and Govindarajan (1993) had been cited at least 1207 times by May 20, 2020 (Google Scholar, n.d.). Another scholar, Ward (1992b) also provided a SMA framework that showed how management accounting techniques could be integrated into the strategic decision-making process. A review of Shank and Govindarajan's (1989, 1993) *strategic cost management* (SCM) framework and Ward's SMA framework is provided below.

Strategic cost management framework. The strategic cost management (SCM) framework developed by Shank and Govindarajan (1989, 1993) drew from Porter's competitive strategy, Porter's (1980) five forces framework, and Porter's (1985) concept of a value chain. Their SCM framework blended three key themes: (a) value chain analysis, (b) strategic positioning analysis, and (c) cost driver analysis. These themes are described below.

- The value chain analysis required a broad external focus to the firm; this external focus was termed the value chain by Porter (1985). The value chain for a firm has been defined as the "linked set of value-creating activities all the way from basic raw material sources for component suppliers through to the ultimate end-use product" (Shank, 1989, p. 50).
- The strategic positioning analysis theme for SCM relates to the perceived uses of management accounting information.

- The third theme for SCM, the cost driver analysis, involves the complex interplay of the set of cost drivers which are interrelated in various ways.

The strength of the SCM framework is that it explicitly utilizes both internal and external cost information to formulate and carry out tactics to implement strategies. SCM evaluates a company's cost structure, and product and/or service offering, by concurrently analyzing its cost drivers, strategic position, and value chain in order to provide better information to make important strategic decisions. A drawback of the SCM model is that the accounting inputs under the value chain analysis could result in different decisions than those resulting from the use of traditional management accounting techniques (Lord, 1996).

Very little empirical evidence has been published in the use of the value chain analysis and it has only been near the start of the 21st century that value chain analysis (VCA) has been found to be used in practice for at least internal purposes (Chenhall & Langfield-Smith, 1998; Guilding et al., 2000). However, it is not clear whether the external perspective proposed by Shank and Govindarajan (1992, 1993) was widely used in practice (Dekker, 2003). Calls for collaborative uses of techniques such as VCA have not been completely convincing, since most research has reported unilateral (i.e., biased) evidence from the perspective of the focal company and not the supplier firms (Caglio & Ditillo, 2008). In summary, the SCM framework proposed by Shank and Govindarajan (1989, 1993) has provided a good foundation for later SMA researchers, such as Guilding et al. (2000), Cadez (2006), and Cinquini and Tenucci (2010). The SCM framework (Shank & Govindarajan, 1989, 1993) provided explicit procedures for strategic analysis of a firm's costs and profits, and focused on analysis that was future oriented and focused on the external competitive environment.

Strategic management accounting. Ward (1992b) linked strategy and management accounting by identifying the role of management accounting within the context of strategic management. He suggested that the management accounting system must be closely associated to the strategic objectives of a business. The main components of Ward's SMA framework consisted of competitor accounting, customer account profitability, and product profitability analysis.

A key role of SMA is to emphasize the need for change in competitive strategy, achieved through key indicators that provide advance warning of a company's change in position against competitors (Ward, 1992b). Ward (1992b) highlighted the areas of concern for competitor analysis using a modified format of Porter's (1980) model on forces driving industry competition. The modified model included these five factors: (a) new entrants (e.g., identifying some new form of competitive advantage); (b) existing competitive pressure; (c) customers (e.g., threat of backward integration); (d) suppliers (e.g., threat of forward integration); and (e) alternative products (e.g., new ways of satisfying customer needs). Ward argued that one of the greatest distinguishing features of SMA is the degree to which comparative financial information is provided on competitors' businesses. He proposed that competitive advantage can only be created by comparison to competitors and thus the comparison should be depicted as precisely and clearly as possible. For instance, changes in cost levels should be assessed against the comparable changes to a competitor's costs over the same time period. Ward provided a good example of how many U.S. and European-based manufacturing companies erroneously assumed that Japanese manufacturers were temporarily setting selling prices below their true costs to dominate and drive out local competition, when in fact they had a sustainable cost advantage.

Customer account profitability (CAP) analysis is an area in which Ward (1992b) indicated improvements could be made to provide better financial results. CAP analysis is necessary, as it can provide a better understanding of the profitability derived from various customer groups. The distinguishing characteristics among groups of customers or channels of distribution can provide information as to differences in effective selling prices or varying levels of customer service.

There is a need to have a clear understanding of the marketplace and how the external business environment is changing. Product profitability analysis can help determine the financial impact of specific marketing strategy decisions. The financial techniques show the net contribution made by each of the products and whether these contributions are acceptable given the strategic positioning of the products (Ward, 1992b). One issue that would result from the lack of financial analysis might be the cross-subsidization of products—highly profitable products subsidizing the less profitable or cost intensive items. While cross-subsidization may be a deliberate long-term strategy, it needs to be monitored carefully as any change in relative competitive pricing could make an existing cross-subsidizing strategy unacceptable in the future (Ward, 1992b). Thus, product profitability analysis can highlight substantial competitive advantages in a specific area and build upon it to maximize value to a business (Ward, 1992b).

Ward's (1992b) framework for SMA focused on competitor analysis that looked at key accounting issues related to competitive strategies concerned with answers to the questions of which products should be offered to which set of customers. He emphasized SMA concepts in focused areas of competitive analysis: competitor accounting, customer account profitability, and product profitability analysis. Ward's (1992b) scholarly work has

been cited at least 356 times according to Google Scholar as of May 20, 2020. Many of the SMA researchers who cited Ward have produced key empirical SMA literature (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Collier & Gregory, 1995).

Contingency theory and management accounting. The contingency theory of management accounting suggests that there is no ideal configuration for a management accounting system (MAS) and that particular contingencies or circumstances dictate the best choice in each specific circumstance (Reid & Smith, 2000). It has been argued that "MASs evolve partly in response to the firm-specific and environmental contingencies confronted by individual firms" (Abdel-Kader & Luther, 2008, p. 3).

The modern contingency theory of management accounting has the limited purpose of explaining how particular conditions (that is, contingencies) shape the form of management accounting systems. This is in contrast to the earlier forms of contingency theory that had broader aims of explaining the form of the organization itself (Reid & Smith, 2000). It was Gordon and Miller (1976) who provided the transitional work of linking the narrower concept of contemporary contingency theory of management accounting with the broader concept of the past; they showed how MASs can have both an effect on, and be affected by, organizational and external contingencies.

As previously stated, the contingencies for management accounting can be divided into two general groups, namely external and internal factors. Haldma and Lääts (2002) produced a contingency framework for management accounting that showed external and internal factors influencing the management accounting practices, and the effectiveness of performance measurement and evaluation. Thus, Haldma and Lääts (2002, p. 384) depicted the link between

internal factors and the management accounting practices to organizational performance, as depicted in Figure 2.1 below.

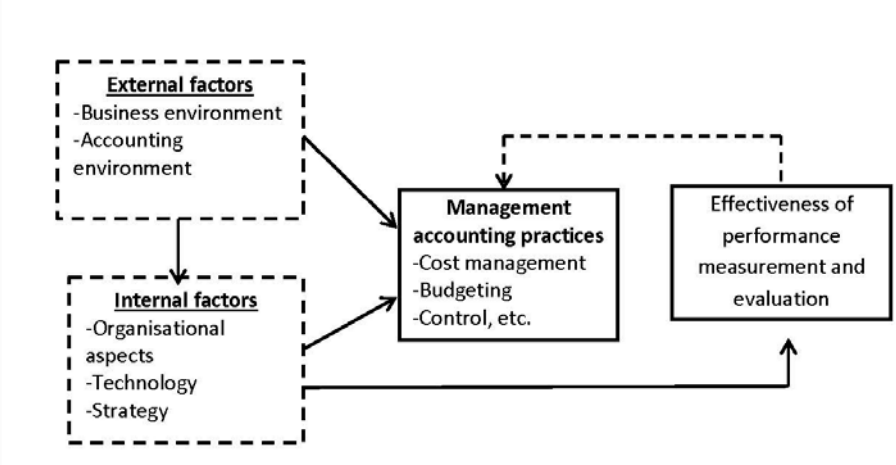

Figure 2.1. Contingency framework of management accounting. Adapted from "Contingencies Influencing the Management Accounting Practices of Estonian Manufacturing Companies," by T. Haldma and K. Lääts, 2002, *Management Accounting Research, 13*, p. 384.

Employing a contingency framework for empirical studies of SMA allows researchers to determine the influence of internal and external factors on SMA practices and the effect on firm performance. Contingency studies on SMA techniques and/or practices have included factors such as company strategy, market orientation, competition intensity, company size, industry, and organizational learning (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010). These studies are discussed in greater detail in the subsection that deals with contingency-based studies.

SMA techniques. Strategic management accounting is viewed as being comprised of several SMA techniques. These techniques have been commented upon by various scholars (Guilding et al., 2000; Cravens & Guilding, 2001; Roslender & Hart, 2003; Cadez & Guilding, 2008). To date, there is no generally accepted list of SMA techniques (Guilding et al., 2000;

Cravens & Guilding, 2001; Cadez & Guilding, 2008; Cinquini & Tenucci, 2010). However, based on the latest SMA techniques studies, the 16 most popular SMA techniques have been identified (Cadez & Guilding, 2008; Lay & Jusoh, 2012). The following is a listing of the techniques. A brief description of the 16 SMA techniques follows after the listing.

SMA Techniques List

1. attribute costing
2. benchmarking
3. brand valuation
4. competitive position monitoring
5. competitor cost assessment
6. competitor performance appraisal
7. customer profitability analysis
8. integrated performance measurement
9. life cycle costing
10. lifetime customer profitability analysis
11. quality costing
12. strategic costing
13. strategic pricing
14. target costing
15. valuation of customers as assets
16. value chain costing

Regarding attribute costing, Bromwich (1990) commented on the economic perspective of goods as being desired for their underlying attributes or characteristics that they provide to consumers. He stated that attributes are a key in the creation of strategies related to matters such as product diversification and market fit. Bromwich believed that accountants would play an important role in strategic decisions by treating attributes as cost objects and monitoring the performance of these attributes over time. He further suggested that the cost and the market characteristics of the attributes were linked and could not be evaluated separately. Thus, attention should not be limited to cost information only but must also include strategic information.

Benchmarking is the process of recognizing products, services, and processes with the highest standards of superiority, and then making the enhancement necessary to reach those standards (Elmuti & Kathawala, 1997). Benchmarking is how an organization can improve its existing processes to the level necessary to attain strategic benefits with respect to performance, relative to competitors (Cravens & Guilding, 2001). The ideal level of standard is usually determined from external sources.

Brand valuation (budgeting and monitoring) involves the recognition of a marketing asset which has long-term benefits and life expectancy. In companies, a brand can be a main source of competitive advantage and thus it would be prudent to collect information that is important for managing the brand. Brand valuation assigns a financial value to the brand that helps to estimate the effect management decisions may have, such as the effectiveness of brand expenditures with respect to the enhanced or diminished value of the brand (Cravens & Guilding, 1999).

Competitive position monitoring encompasses assessing market share, sales, volume, and unit costs in relation to major competitors (Simmonds, 1981). Simmonds explains how, in certain situations, an organization's competitive position can be enhanced. For example, he suggested that a better competitive position could be attained by increasing marketing expenditures. In addition, the portrayal of an organization's improved competitive position may be more favourable than the conventional reporting of reduced profit levels.

Competitor cost assessment differs from competitive position monitoring in that it focuses on the competitors' cost structures. Competitor cost assessment has been supported by various scholars as an accounting method to gain a better understanding of competitors' strategic decision-making situation (Bromwich, 1990; Jones, 1988; Simmonds, 1981). Understanding a competitor's costs coupled with other information can help a firm better predict a competitor's actions and reactions (Hesford, 2008).

Competitor performance appraisal is based on the interpretation of the competitor's published financial statements. This external focus involves the scrutiny of competitor firms' recent published financial results from the perspective of their apparent corporate strategies (Moon & Bates, 1993). Analyzing published financial statements involves the interpretation of accounts and ratio analysis. Understanding the types of assets owned and liabilities owed by an

organization in a particular sector can provide valuable information in the external profiling of the competitor organization.

Customer profitability analysis was the customer focused accounting practice most widely referred to during the late 1980s to late 1990s. Customer profitability analysis (CPA) has been discussed by various proponents such as Bellis-Jones (1989), Cooper and Kaplan (1991), and Noone and Griffin (1999). This practice involves tracing sales and costs to a particular customer or customer segment or group, then computing the profit earned from the individual customer or customer segment. Guilding and McManus (2002) identified customer segment profitability analysis as a separate technique from customer profitability analysis, but it made more sense to SMA scholars to simplify and combine CPA and customer segment profitability analysis into one technique (Cadez, 2006; Lay & Jusoh, 2012).

Integrated performance measurement normally emphasizes customer needs and incorporates non-financial measures (Cravens & Guilding, 2001). This approach involves employing measurement systems that obtain cost and other non-financial performance information for operational use to support strategic management (Nanni, Dixon & Vollmann, 1992). The balanced scorecard (BSC) introduced by Kaplan and Norton (1996) is a tool that can be considered an integrated performance measure. The BCS considers four perspectives—financial, customer, internal business, and learning and growth—which, when combined, provide a balanced picture of an organization's current operating performance and its link to strategy. To create superior value for customers, all business functions must be coordinated, including information and resource sharing among functions and functional integration in strategy, so that continuous effort can be directed to creating exceptional value for its customers (Narver & Slater, 1990).

Life cycle costing has a long-term focus as it takes into account all the costs of the product or service from its infancy to its maturity and eventual decline. It encompasses all initial research and development costs to final customer servicing and support (Shields & Young, 1991; Foster & Gupta, 1994). Life cycle analysis enables organizations to better respond to customer needs and is believed to enhance competitive advantage (Dunk, 2004).

Lifetime customer profitability analysis takes a long-term view of an organization's customers. It extends the basic CPA to include the projected future profits (future revenues less future expenses) that can accumulate over the lifespan of a business connection with a customer. Initially it had been suggested that the insurance industry might find this practice useful (Foster & Gupta, 1994).

Quality costing, according to the traditional model of quality costs, consists of prevention, appraisal, and failure costs (Tayles et al., 1996; Dunk, 2002). The prevention and appraisal costs are considered conformance costs because these types of costs are incurred to diminish product defects. In contrast, internal failure and external failure costs are classified as non-conformance costs. Internal failure costs are incurred to detect defective units prior to shipment to customers and external failure costs are incurred to detect defective units after shipment to customers (Dunk, 2002). The following are examples of the different types of costs (Horngren et al., 2010):

- prevention costs (e.g., design and process engineering, preventative equipment maintenance);
- appraisal costs (e.g., inspection and product testing);
- internal failure costs (e.g., spoilage, rework, machine repairs); and
- external failure costs (e.g., customer support, warranty repairs, liability claims).

Strategic costing is also known as strategic cost management (SCM). Strategic costing is outward focused due to its concern with strategy and achieving a competitive advantage through cost management (Grundy, 1996). According to Shank and Govindarajan (1993), strategic cost management results from the blending of three themes: value chain analysis, strategic positioning analysis, and cost driver analysis. Managing costs effectively requires a broad focus, one that is external to an organization. Shank and Govindarajan contended that strategic cost analysis was the means by which management accounting would embrace the newly enriched decision analysis paradigm of strategic accounting.

Strategic pricing moves away from the cost-based focus of traditional accounting by incorporating competitive and strategic factors by pricing based on market demand (Jones, 1988; Simmonds, 1981, 1982). This technique considers competitors' reactions to price changes, market growth, consumers' price elasticities, economies of scale, and productivity improvements (Simmonds, 1982; Cravens & Guilding, 2001).

Target costing involves producing or providing a product or service at an acceptable profit level (Morgan, 1993; Brausch, 1994). Therefore, the target cost is the price that the customer is willing to pay for a product or service less the profit that an organization must achieve. Target costing is externally focused taking into consideration the price that a customer is willing to pay for a product, and thus working towards lowering costs based on customer demand (Brausch, 1994). There is also a longer-term profitability assessment as opposed to a short-term focus as the target cost may not be achievable immediately, but may be accomplished over a longer time frame (Brausch, 1994).

Valuation of customers as assets, including customer groups, calls for calculating the value of customers to an organization. This could be determined by computing the present value of all future profit applicable to a customer or customer group (Guilding & McManus, 2002).

Value chain costing related to the value chain model developed by Porter (1985), that perceives the sequence of activities from initial product design to distribution to consumers as links in a chain. Porter's value chain model was supplemented by Shank and Govindarajan (1992) to include the accounting implications (value chain costing) associated with adopting the value chain viewpoint.

Empirical Studies on SMA

This section provides a brief overview of the qualitative and quantitative SMA empirical research that has been published in various business and accounting scholarly journals. The quantitative research is further broken into two categories, namely non-contingency-based and contingency-based studies.

Qualitative research. A few field studies offer rich insights into SMA practices within organizational settings. Although these case studies lack external validity, they offer in-depth, detailed, varied, and extensive data (Neuman, 2003). The interviewees in the following case studies provided their perceptions and the researchers were able to study the behaviours of the actors who shaped the respective organizations.

Ma and Tayles (2009). These authors examined the concerns around accounting practitioners moving away from purely financial matters to focus on broader business issues. Their research was based on a case study of a large pharmaceutical firm in the UK. Their investigation was informed by institutional and neo-institutional theories (Powell, 1985; Greenwood & Hinings, 1993, 1996). An institutional perspective assumes that firms function

"within a social framework of norms, values, and taken-for-granted assumptions about what constitutes appropriate or acceptable economic behavior" (Oliver, 1997, p. 699) whereas a neo-institutional perspective emphasizes "the regulative, the normative and the cognitive" (Greenwood & Hinings, 1996, p. 1031) whereby individuals act based on conceptions rather than under rules or obligations.

Ma and Tayles (2009) included interviews and meetings to review the company's activities over a number of years. They found that the management accountants took on an increasing strategic role to inform strategic decision making. Ma and Tayles (2009) contributed to the literature on management accounting change in three ways:

- The research shed light on how the adoption of SMA practices is affected by the organizational environment and actions.
- The neo-institutional framework helped to bridge the gap between the old and new institutional frameworks that was identified by previous research (Dillard, Rigsby & Goodman, 2004).
- The case study design facilitated the examination of management accounting change as a series of organizational behaviours and interpretations of the meaning of these behaviours in their organizational setting.

The findings from Ma and Tayles (2009) showed that the external environment influenced the behaviour of the organization's human actors. Meditech, the case company, responded to external conditions that called for a change to management accounting practices in order to support commercial operations. One of the central components of the neo-institutional perspective is the element of conformity (Fernández-Alles & Valle-Cabrera, 2006). The case study showed that the company could not continue with traditional practices and, in order to

compete in the market place, they had to make changes to their management accounting systems. Ma and Tayles (2009) showed that there was mimetic behaviour as the case company adopted the SMA practices because of the successful SMA experiences of major rival companies.

***Collier and Gregory (1995*).** This case study examined the U.K. hotel sector, an industry characterized by intensive competition. The field study research involved a mix of holding companies of hotel groups and included both public and private companies. Interviews were conducted with accountants, chief accountants, or finance directors. The interviewees identified two key strategic management accounting areas: (a) provisioning of information to assist in the development of strategic plans; and (b) the monitoring of the market, competitor price structures, and competitor costs. The finance functions in the hotel groups became increasingly involved in strategic management accounting in the areas of planning, analysis of market conditions, and competitor analysis. The findings indicated that in the hotel industry, SMA was becoming an essential component of the services provided by the finance function to decision makers (Collier & Gregory, 1995).

Quantitative research. A comprehensive literature review revealed only a few quantitative empirical studies directed toward SMA practices to date. For the purposes of the current study, the quantitative research is classified into two categories: non-contingency-based and contingency-based research. Contingency-based research takes into consideration the contingency factors that may be related to SMA usage and the impact of that use on firm performance. The non-contingency-based studies do not consider contingency factors or firm performance, although a few of the non-contingency-based studies focused on SMA techniques usage rates and perceived usefulness of SMA techniques.

Non-contingency-based studies. Two non-contingency survey-based SMA studies were considered particularly meaningful for the current research. Guilding et al. (2000) conducted an international comparison of SMA practices and Cadez (2006) investigated cross-industry SMA practices. A brief overview of the two studies is provided below.

International comparison of SMA practices. SMA techniques have not been widely adopted due to the under-defined nature of the field (Guilding et al., 2000). Guilding, Cravens and Tayles (2000) were among the first to study strategic management accounting (SMA) practices. The main objectives of their research were to

(1) identify the variety of strategic management accounting practices;

(2) compare the SMA practices across three countries: New Zealand, the U.K., the U.S.;

(3) determine practitioners' perceptions of the usefulness of SMA practices; and

(4) assess the extent of the understanding of the term strategic management accounting.

Guilding et al. (2000) created an initial list of 12 practices that were considered to be SMA techniques; no such list existed prior to that time. The practices or techniques in their list are described below.

Table 2.1

SMA Techniques with Descriptions

SMA technique	Description
Attribute costing	This technique views product attributes as cost objects and matches product attributes to consumers' tastes.
Brand valuation budgeting	Brand value budgeting involves the use of brand value as a basis for management to make decisions on allocation of resources to support brand position.
Brand value monitoring	This technique involves the financial valuation of a brand by assessing brand strength elements such as market, stability, leadership, and trend, combined with historical brand profits.
Competitor cost assessment	This is a systematic approach to competitor cost analysis that usually involves appraising competitors' manufacturing facilities, economies of scale, governmental relationships, and technology product design.
Competitive position monitoring	This holistic approach to competitor assessment includes appraising major competitors' sales, market share, volume, and unit sales.
Competitor appraisal based on published financial statements	This technique involves an analysis of data such as competitor's trends in sales, profit levels, and asset and liability movements.
Life cycle costing	This technique views product costs as long-term by appraising the costs of the different stages of a product's life (i.e., design, introduction, growth, maturity, and decline).
Quality costing	This technique involves analyzing costs of quality that include prevention, appraisal, and failure costs.
Strategic costing	This approach to cost analysis considers strategic issues.
Strategic pricing	This competitive oriented analysis of pricing includes competitor price reaction, price elasticity, projected market growth and economies of scale.
Target costing	This involves designing a product with a target cost and striving to maintain that product cost in order to achieve a target profit.
Value chain costing	This costing approach (Shank and Govindarajan, 1992) builds on Porter's (1985) concept of analysis of the value-adding activities of an organization. The value chain analysis focuses on the activities inside and external to an organization and determines the value the activities have on the organization's products or services.

The methodology of the study involved (Guilding et al., 2000) designing a questionnaire with the 12 SMA practices itemized, in order to gather usage rates from the largest companies from three countries: New Zealand, U.K., and the U.S. The total number of respondents was 314 out of the total sample size of 1,292. The variable measurement SMA usage was determined with

the following question: “To what extent does your organization use the following practice?” The 12 SMA techniques were itemized along with a Likert scale ranging from (1) *not at all* to (7) *to a great extent*. The perceived merit of SMA was measured in a similar manner as SMA usage, with the question: “To what extent do you consider the following practices could be helpful to your organization?” The data analysis was two-tiered; the first level was based on the entire data set collected and the second level was confined to companies of similar size. An exploratory factor analysis of usage rates was performed to uncover the underlying structure of the variables. At a sub-sample level, a comparison of usage rate means by country for each of the 12 techniques was conducted.

Guilding et al. (2000) produced four key findings. First, SMA evidenced wide ranging degrees of application with competitor accounting and strategic pricing being the most popular practices. Second, although usage rates for most of the practices were low, Guilding et al. (2000) argued that it would be inappropriate to dismiss the potential of these practices as the perceived merit (practices deemed to be useful to the organization) scores were significantly greater than the usage rate scores. Third, there was relatively consistent cross-country application of SMA practices with only significant differences for 3 (strategic pricing, value chain costing, and life cycle costing) of the 12 practices. Finally, there was limited understanding of the term *strategic management accounting*, a finding consistent with Tomkins and Carr’s (1996) claim that SMA was poorly defined at that time.

Guilding et al.’s (2000) study of three countries also provided insights to the similarities and differences in usage rates of SMA practices among countries. The most popular SMA practices among the three countries were competitor position monitoring, competitor performance appraisal based on published financial statements, competitor cost assessment, and

strategic pricing. While strategic pricing was a popular practice in all three countries, there was also a significant difference in its usage among the three countries with the U.S. having a relatively lower usage mean compared to New Zealand and the U.K. Value chain costing and life cycle costing had significant differences in cross-country usages with the U.K. companies reporting lower usage means than that of New Zealand and the U.S.

Guilding et al.'s (2000) criteria for selecting the 12 SMA practices involved some level of subjectivity, as the selection process was based on the authors' own interpretation of the meanings for strategy and strategic management accounting. The researchers acknowledged that their set of SMA practices was incomplete but nevertheless, they felt that a considerable contribution had been made to the literature, as their study was the first of its kind. The selection criteria for the SMA practices were based on the review of literature, which provided support to the validity of the SMA practices, but it did not eliminate the possibility of some practices overlapping (Guilding et al., 2000).

Guilding et al.'s (2000) exploratory work included the original distillation of a list of SMA techniques that laid the initial groundwork for later SMA research such as Guilding and McManus (2002), Cadez (2006), and Cinquini and Tenucci (2010). These later studies incorporated all or most of the original list of techniques.

Cross-industry comparison of SMA practices. Cadez's (2006) research compared cross-industry *strategic management accounting* practices. Cadez produced a list of 17 SMA techniques, 16 of which were identified in previous SMA studies:

1. a total of 11 SMA techniques, the result of taking all 12 items from Guilding et al. (2000), with Cadez (2006) combining brand value budgeting and brand value monitoring into a single technique, labelled brand valuation;

2. two SMA techniques from Cravens and Guilding (2001), namely benchmarking, and integrated performance measure;
3. three techniques from Guilding and McManus (2002), namely customer profitability analysis, lifetime customer profitability analysis, and the valuation of customers or customer groups as assets; and
4. one technique, capital budgeting, newly included by Cadez.

The main objectives of Cadez's (2006) research were to evaluate the application of SMA techniques and compare the application SMA techniques across several industries in Slovenia.

A questionnaire asking about the application of the 17 SMA techniques was mailed to 388 companies in Slovenia in a variety of industry sectors including (a) agriculture, (b) mining, (c) manufacturing, (d) public services and utilities, (e) construction, (f) wholesale and retail trade, (g) accommodation and food services, (h) transportations and logistics services,(i) financial intermediation, (j) real estate and other commercial services, and (k) other services. Usable responses were received from 193 companies resulting in a 49.7% response rate. Cadez's (2006) research was designed to reach a broad sample across the various industries, with general survey questions minimally appropriate for all the companies surveyed, but not specific enough to accommodate the uniqueness of each industry grouping.

The data presented in Cadez's (2006) study included (a) descriptive statistics on usage levels of SMA techniques across all industries, (b) a classification of Slovenian industries, (c) mean scores of variables within industry groups, (d) division of sample manufacturing companies into industry subgroups, and (e) mean scores of variables within manufacturing industry subgroups. It was found that the most widely used SMA techniques were competitor-focused and capital budgeting techniques and the least used were the customer-focused

techniques. In order of ranking, the (a) manufacturing, (b) accommodation, food and other services, and (c) transportation and logistics services industries demonstrated the highest SMA usage rates, while the lowest SMA techniques usage rates were seen for the public services and utilities groups. In reviewing the results by industry, there were many industry groups with fewer than 10 firms. Given that at the time of the study SMA was an under-defined subject area and was still evolving, it was difficult to overcome some of the research problems that were experienced (Cadez, 2006). An attempt to standardize some of the SMA terminology was limiting (Cravens & Guilding, 2001), and a definitive list of generally accepted SMA techniques did not exist then (Cadez, 2006) or even at time of this writing.

Cadez's (2006) research provided additional insights into SMA practices by studying the SMA techniques application along with his creative grouping of industries. Cadez identified the highest usage rates of SMA techniques within specific industries. The findings for the manufacturing industry were reliable and valid, and indicated the highest usage rates of SMA techniques, specifically costing-related techniques. The manufacturing grouping consisted of a homogeneous group and a further breakdown into subgroupings was analyzed. This indicated that usage rates were significantly distinct for competitive performance appraisal, quality costing, and value chain costing.

Overall, the distinct insights gained from Cadez's (2006) research were in three areas: (a) lifetime customer profitability analysis, (b) valuation of customers as assets, and (c) SMA usage rates across industries. Cadez (2006) indicated that the low usage rate for customer accounting was a typical example of the general criticism of the short-term focus of accounting practice. According to Guilding and McManus (2002), the worth assigned to accounting for customers as assets indicated the difficulty of integrating accounting's opinion with marketing management's

perception of what constitutes an asset. In other words, the accounting practice of placing the lowest importance to accounting for customers as assets sharply contrasts with marketing management's perception of customers as assets that provide long-term value to a company. Cadez (2006) argued that the overall relative usage rates may be explained by the intensity of market competition across industries.

All in all, the studies of SMA techniques by Guilding et al. (2000) and Cadez (2006) provided valuable insights into the usage rates of SMA techniques.

Contingency-based studies. Studies based on contingency approaches provide a more comprehensive view than the previously discussed non-contingency-based SMA studies by including the associated contingency factors and firm performance. The following contingency studies on SMA techniques were included in this literature review: Guilding (1999), Cravens and Guilding (2001), Guilding and McManus (2002), Cadez and Guilding (2008), Cinquini and Tenucci (2010), Said et al. (2010) and Lay and Jusoh (2012). The key contingency studies are briefly reviewed below.

Competitor-Focused accounting practices. Guilding (1999) was the first to conduct an empirical study on competitor-focused accounting (CFA) adoption rates and related contingent factors. The objectives of his study were to assess CFA adoption rates, to determine practitioners' perceptions of the usefulness of CFA, and to analyze the contingent factors associated with CFA. Guilding (1999) synthesized CFA practices from the literature to create a list of five CFA practices:

- competitor cost assessment;
- competitive position monitoring;
- competitor appraisal based on published financial statements;

- strategic costing; and
- strategic pricing.

Competitor cost assessment was the most widely mentioned CFA practice (Guilding, 1999) with many proponents supporting this practice (e.g., Bromwich, 1990; Porter, 1980; Simmonds, 1981). While Guilding (1999) defined competitor cost assessment as the regular provisioning of an estimate of a competitor's unit cost, Jones (1988) was more descriptive in describing competitor cost assessment as a methodology that results in estimates of the costs of competitors' products and insights into competitors' strategies and practices.

Competitive position monitoring involves appraising a firm's relative position against its competitors. Simmonds (1982) suggested that management accounting measures should extend beyond the internally focused measures in order to improve the assessment of competitor strategy. Thus, competitive position monitoring broadens the competitor cost assessment practice by including externally oriented information in the assessment and monitoring of trends in competitors' sales, market share, volume, unit costs and return on sales (Guilding, 1999).

Competitor appraisal based on published financial statements was described by Moon and Bates (1993) as a way to appraise a competitor's performance. They proposed a framework for the interpretation of financial statements that focused on key sources of competitive advantage and demonstrated how the application of an assessment of a competitor's financial statements in the context of their corporate strategies.

Guilding (1999) found that CFA usage was higher than what would have been reasonably anticipated. Three of the five CFA practices were above the mid-point of the scale for usage. The most widely used CFA practice was competitive position monitoring, and was also perceived to be the most useful. Competitor cost assessment and strategic costing ranked the lowest for usage,

measuring below the midpoint of the scale for usage; this was noteworthy because when compared to the other CFA practices, these two practices were discussed more in accounting literature.

With respect to the finding in relation to the contingency framework, the same study found that there was a significant relationship that existed between CFA and competitive strategy, strategic mission, and company size. Those firms employing a prospector competitive strategy made greater use of, and perceived greater helpfulness in, CFA practices. The study also found that those firms that pursued a so-called build strategic mission had a greater propensity to use strategic pricing and strategic costing, and they also perceived greater helpfulness in four out of the five CFA practices. It was also found that company size was positively related to greater use of CFA and there was greater perceived helpfulness in CFA. There was little evidence of a systematic relationship between industry type and CFA usage.

Application of SMA techniques. Cravens and Guilding (2001) noted that management accounting research was predominantly oriented towards operations and short-term decision making. This shortcoming provided motivation for their study, which was focused on the application of SMA techniques that were externally-oriented or long-term focused. The objective of their research was to concentrate on

- the adoption rates of strategic oriented management accounting practices;
- the practitioner's perceptions of the usefulness of strategic-oriented management accounting practices;
- exploring underlying factors in strategic-oriented management accounting practices;
- exploring associations between usage of strategic oriented management accounting practices and dimensions of competitive strategy; and

- exploring associations between use of strategic oriented management accounting practices and perceived organizational performance.

Cravens and Guilding (2001) identified 15 techniques that they considered to be SMA techniques: (a) activity-based costing, (b) attribute costing, (c) benchmarking, (d) brand valuation, (e) budgeting and monitoring, (f) competitor cost assessment, (g) competitive position monitoring, (h) competitor performance appraisal, (i) integrated performance measurement, (j) life cycle costing, (k) quality costing, (l) strategic costing, (m) strategic pricing, (n) target costing, and (o) value chain costing. Twelve of these SMA techniques were operationalized in a prior study (Guilding et al., 2000), the three additional techniques identified for this study were activity-based costing, benchmarking, and integrated performance measurement.

Data were obtained using a mailed questionnaire survey from a sample of 937 of the largest U.S. firms. The questionnaire was mailed out by name to a senior officer such as chief accountant, controller, chief financial officer, or treasurer. A Likert scale ranging from (1) *not at all* to (7) *to a great extent* was used to measure the degree to which the various SMA practices were used. Competitive strategy consisted of eight sub-dimensions based on Porter (1985). These sub-dimensions were (a) research and development, (b) product quality, (c) product technology, (d) product range, (e) service quality, (f) price level, (g) advertising expense level, and (h) market coverage. Eight measures of organization performance were selected that consisted of two distinct benchmarks of achievement. The first benchmark used the question “Compared to your major competitor, how well has your company performed in the following areas during the past 24 months?” Immediately after this question, the four dimensions of performance (second benchmark) were listed: (a) sales volume, (b) market share, (c) profitability, and (d) customer

satisfaction (Narver & Slater, 1990). The responses were recorded using a Likert scale ranging from (1) *much worse* to (5) *much better*.

Their study (Cravens & Guilding, 2001) provided insights into the relative usage rates of SMA practices and perceived usefulness of SMA practices. Six of the fifteen practices had mean usage scores above the midpoint of the scale: (a) competitive position monitoring, (b) benchmarking, (c) competitor performance appraisal, (d) strategic pricing, (e) competitor cost assessment, and (f) integrated performance measurement. The perceived usefulness of the SMA practices was similar in ranking; however, mean scores were higher. The analysis identified four underlying themes of the SMA constructs: (a) costing, (b) competitor accounting, (c) strategic accounting, and (d) brand value accounting. Competitor accounting was the predominant theme in the most widely used SMA practices.

The findings (Cravens & Guilding, 2001) contributed to contingency research by showing that competitor-focused accounting adoption was related to strategic mission using Govindarajan and Gupta's (1985) build/harvest measure, and competitive strategy using Miles and Snow's (1978) prospector/defender typology. Finally, there were some associations between SMA usage rates to dimensions of competitive strategy and firm performance. Those firms that used SMA practices to a relatively great extent followed competitive strategies of research and development (R & D) leadership or broad market coverage.

Customer accounting. Guilding and McManus (2002) conducted a survey to determine the frequency and perceived merit of customer accounting practices. Five dimensions of customer accounting were identified: (a) customer profitability analysis, (b) customer segment profitability analysis, (c) lifetime customer profitability analysis, (d) valuation of customers or customer groups, and (e) customer accounting (holistic notion). The objectives of their study

were to determine the incidence of customer accounting (CA), to assess practitioners' perception of CA as a managerial tool and to test hypotheses concerning contingent factors related to the use and perceived merit of CA.

Guilding and McManus (2002) proposed the following customer accounting dimensions:

- Customer profitability analysis (CPA) involves the tracking of costs and sales associated with individual customers as well as determining the profits related to specific customers.
- Customer segment profitability analysis is similar to CPA except that it focuses on customer segments or groups instead of individual customers. Customer segment profitability analysis had been commented on by Ward (1992a, 1992b) who argued that the analysis of a segment of customers may be more practical than measuring on an individual customer-level basis, given the small margins earned for individual customers such as in the banking industry (Hartfeil, 1996; Hudson, 1994). Acknowledging different customer groups with varying behaviours and desires will help a firm identify what services should be provided to various levels of customer groups, increasing the firm's profit potential (Zeithaml, Rust, & Lemon, 2001).
- Lifetime customer profitability analysis involved drawing out the basic CPA to include the future profitability expected to accumulate over the lifetime of the customer's business relationship.
- Valuation of customers or customer groups as assets refers to the computation of the value of customers to a firm. The valuation of customers as assets could be done by calculating the present value of all future profit streams applicable to an individual customer or a group of customers. At the time of the Guilding and McManus' (2002) study, the valuation of customers as assets was still a fairly new concept (Guilding,

Kennedy, & McManus, 2001). Since then, various scholars have discussed benefits and approaches to valuation of customers as assets (Forbes, 2007; Wen, Chen & Qianpin, 2012; Gupta & Lehmann, 2003).

- Customer accounting (holistic) was operationalized by Guilding and McManus (2002) in order to recognize the exploratory nature of prior literature. This broad construct included all accounting practices that were directed toward appraising profit, sales, and the present value of earnings related to a customer or a segment of customers.

The two contingent factors considered for Guilding and McManus (2002) study were competition intensity and market orientation. Findings from their research indicated that CA usage was greater than what would be reasonably expected, with three of the five CA practices having mean usage scores above the midpoint of the scale. There was evidence of a positive association between market orientation and CA and a weak positive association between competition intensity and CA.

SMA techniques and SMA model. Cadez and Guilding (2008) considered SMA to be comprised of a coherent subset of management accounting practices. The study was drawn on the view of Guilding et al. (2000) that SMA was comprised of techniques that are environmental (outward looking) and/or long term (forward looking). Incorporating these two dimensions of SMA, Cadez and Guilding (2008) drew from previous work to identify 16 SMA techniques of which 11 SMA techniques were from Guilding et al. (2000), 2 techniques were from Cravens and Guilding (2001), and 3 techniques were from Guilding and McManus (2002). The investigation also considered the effect of four contingency factors: (a) business strategy, (b) deliberate strategy formulation orientation, (c) market orientation, and (d) company size.

Cadez and Guilding (2008) proposed a contingency model of SMA (Figure 2.2) that was tested using structural equation modelling. At the core of the model was the use of SMA techniques and management accountant participation in the strategic decision-making process.

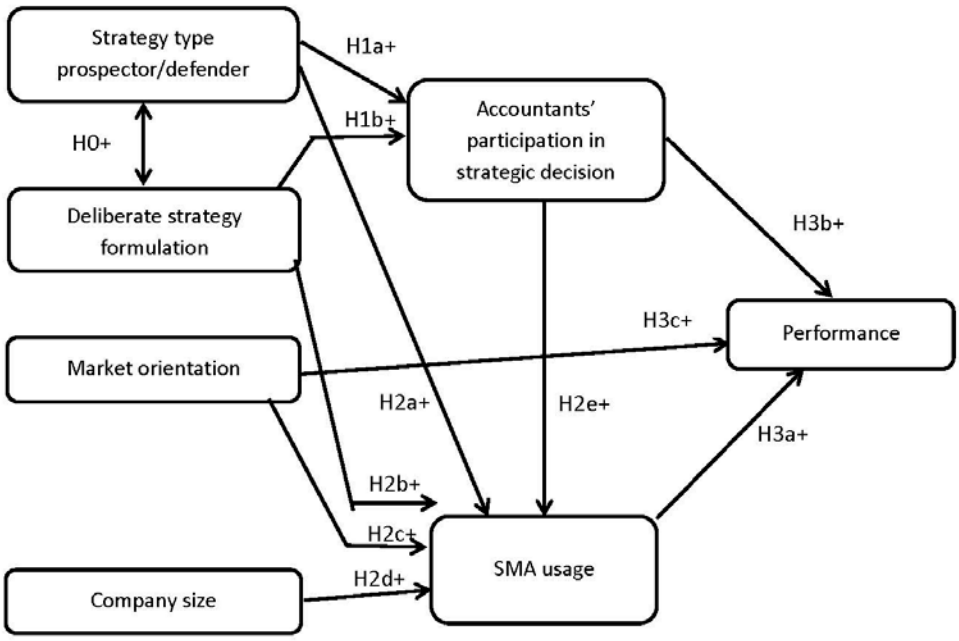

Figure 2.2. Contingency model of strategic management. H0 to H3c are hypotheses between constructs. Adapted from contingency model of strategic management accounting (main effects model) in "An Exploratory Investigation of an Integrated Contingency Model of Strategic Management Accounting," by S. Cadez and C. Guilding, 2008, *Accounting, Organizations and Society, 33,* p. 842.

The Cadez and Guilding (2008) study involved two distinct approaches to data collection: the use of a survey to collect quantitative data and interviews to collect qualitative data. The quantitative data collection was performed in a similar fashion as prior SMA survey studies (Guilding, 1999; Cravens & Guilding, 2001; Guilding & McManus, 2002). The qualitative data collection involved two phases. The first phase asked interviewees to express their opinions on

what factors might affect SMA adoption. In the second phase, the interviewees were presented with the structural equation model findings and asked to comment on the validity of the findings.

Cadez and Guilding (2008) found that SMA usage was positively related to a prospector strategy, deliberate strategy formulation, company size, and accountants' strategic decision-making participation. Firm performance was positively affected by SMA usage. The qualitative interview data findings give sufficient validity to the conclusions drawn from the quantitative analysis. They concluded that there was no universally appropriate SMA system. To date, Cadez and Guilding's (2008) study is believed to be one of the most extensive empirical contingency research studies on SMA incorporating both quantitative and qualitative data collection (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010).

SMA techniques and strategic variables. Cinquini and Tenucci (2010) extended the role of business strategy in SMA and were the first to employ a framework that included all three of the main strategic variables used in accounting literature, namely pattern, mission, and position.

Strategic pattern was derived from Miles and Snow (1978) using prospector versus defender typologies. The prospector strategic typology refers to organizations that are the leaders in product and market development, in contrast to defender organizations that are involved in little or no product or market development. The strategic mission dimension came from Gupta and Govindarajan's (1984) typologies of build versus harvest. A build strategy refers to the desire to increase market share whereas a harvest strategy is indifferent towards increasing market share.

The third variable, strategic positioning, was based on Porter's (1980, 1985) differentiation versus cost leadership generic strategies. A differentiation strategy refers to providing products or services that are different in some way from competitors in order compete

successfully. A cost leadership strategy involves offering the lowest possible prices to consumers in a target market segment.

Eleven SMA techniques were included in Cinquini and Tenucci's (2010) study: (a) ABC/M, (b) life cycle costing, (c) quality costing, (d) target costing, (e) value chain costing, (f) customer accounting, (g) competitive position monitoring, (h) competitor cost assessment, (i) competitor performance appraisal based on published financial statements, (j) benchmarking, (k) and integrated performance measurement/BSC (balanced scorecard). The list of SMA techniques identified (Cinquini & Tenucci, 2010) was virtually the same list of SMA techniques (Cadez, 2006; Cadez & Guilding, 2008) with a few SMA techniques combined or slightly refined from that of Cadez (2006) and Cadez and Guilding (2008). However, Cinquini and Tenucci took their study one step further by grouping SMA techniques into the following themes or categories:

- costing, including ABC/M, life cycle costing, quality costing, target costing, and value chain costing;
- customer, namely customer accounting;
- competitor, including competitive position monitoring, competitor cost assessment, and competitor performance appraisal based on published financial statements; and
- performance, including benchmarking and integrated performance measurement/BSC.

The study was comprised of an initial sample of 328 of the largest Italian manufacturing companies. After adjustments for non-participants, the final sample size was 215. Data were collected using an Internet survey questionnaire. The same approach as other studies (Cadez & Guilding, 2008; Cravens & Guilding, 2001; Guilding et al., 2000) was used to measure the degree to which the SMA techniques were used (SMA usage).

Cinquini and Tenucci (2010) found that customer accounting, competitive position monitoring, and competitor performance appraisal were the most widely used SMA techniques in their Italian data sample. Companies with a defender and/or cost leader strategy were found to be more willing to use the SMA techniques that addressed cost information (i.e., ABC/M, life cycle costing, target costing, and value chain costing).

SMA techniques and organizational learning. Prior studies of SMA techniques considered mainly manufacturing and for-profit organizations in their investigations. In contrast, Said, Hui, Othman, and Taylor's (2010) study focused on the public sector referred to as the local government authorities (LGAs). Their study included two dimensions of organizational performance: financial performance and service quality performance. They collected data from 109 LGAs in Malaysia. They found a positive relationship between SMA information use and organizational performance, and concluded that organizational learning mediated the relationship between SMA usage and organizational performance.

SMA techniques and business strategy. Lay and Jusoh (2012) studied business strategy and the strategic role of accountants. They found that SMA usage was higher in firms following a differentiation strategy. SMA usage also mediated the relationship between differentiation strategy and firm performance, and was found to be positively associated with firm performance. In addition, there was a positive relationship between business strategy and the strategic role of the accountant, as well as the strategic role of accountant and SMA usage. Thus, accountants were shown to have an indirect impact on firm performance through the mediation of SMA usage.

Lay and Jusoh (2012) did not find support for the strategic role of accountant and firm performance, a finding similar to that of Cadez and Guilding (2008). Thus, Chenhall's (2008)

assertion that management accountants have yet to be considered to perform in a strategic role in many organizations may be valid. Yet, the accountants' direct involvement in management decision making may tend to make them more likely candidates for creating strategic accounting systems (Brouthers & Roozen, 1999).

Critiques of SMA

SMA has been presented as being more relevant than traditional management accounting. As a new sub-discipline of management accounting, SMA uses "strategic thinking . . . [and] . . . other qualitative aspects of management" (Shah et al., 2011, p.1). However, a few scholars were skeptical of SMA being associated with the accounting discipline or of the diffusion of SMA practices (Lord, 1996; Dixon, 1998; Langfield-Smith, 2008).

Lord (1996) was critical of SMA as a sub-discipline of management accounting, and argued that many of the elements and techniques that have been identified as part of SMA were in many cases already being used by firms. As previous literature has indicated that the SMA concepts and techniques draw upon both the management accounting and marketing management (Roslender & Hart, 2003), it should come as no revelation that other functional areas, particularly the marketing unit within a firm, could be engaged in SMA practices. Lord's (1996) findings disagreed with Simmonds' (1981) suggestion that management accountants are the ideal people to collect and analyze external data. Lord's finding that no special accounting training is required cannot be generalized, as her study involved a single company with a single product, and it was debated by others. For example, in more complex environments such as with multinational firms offering a myriad of products in several markets, specialized training of staff engaged in SMA techniques would definitely be

important. This view is supported by Cooper (1996b) who argued that individuals must be trained in the appropriate use of management accounting techniques.

Dixon (1998) argued that SMA can enable an organization to be more responsive to its environment because effort can be directed towards anticipating and adapting to change. However, he proposed that the information demands placed upon organizational resources by SMA would outweigh the benefits, particularly when the information is subjective, lacking in validity, and not a priority in achieving competitive advantage. His comments were based on a single case study of a small packaging company with 120 employees. It had been shown (Dixon, 1998) that company size had a bearing on the successful implementation of management accounting techniques. The company's small to medium size, and the fact that it was operating in a mature market, may help to explain why implementation of SMA was seen as an extra demand where costs outweigh benefits. Dixon's (1998) reference regarding SMA data being subjective, lacking in validity, and not a priority for gaining competitive advantage cannot be generalized from a single case study operating in a mature industry.

Langfield-Smith's (2008) review of literature has indicated that although it had been more than 25 years since Simmonds (1981) first introduced SMA, the practice had not been widely adopted and that the term SMA was not yet widely used. Her review provided a broad assessment of SMA. In some respects, she regarded SMA as a success because of the way that it had spread to other management disciplines. However, some of the techniques that were considered part of management accounting were considered by other disciplines to be their own (Langfield-Smith, 2008). Was SMA a "figment of the academic's imagination" (Lord, 1996, p. 364)? Langfield-Smith (2008) contended that SMA developments were not managed or owned by the accounting function, and that a key issue was to consider whether

management accountants had any specific or special skills that would benefit SMA management and implementation. The most important issue identified by Langfield-Smith (2008) was that the future role and identity of the management accountant as a professional was in question, but not management accounting as a discipline area, which may be undertaken by many functional areas in firms.

Langfield-Smith's (2008) comment that some of the SMA techniques were regarded by other disciplines as their own was valid. In addition, she had posed a challenge as to whether it mattered that SMA developments were owned and managed by the accounting function. Literature supports the conversion of work related to SMA and SCM to be developed into an intelligible body of knowledge (Shank & Govindarajan, 1993; Bromwich, 1990; Simmonds, 1981). Her final question regarding the future role and identity of management accountants was provocative and warranted further discussion.

Cooper (1996b) contended that management accountants must develop skills such as the use of appropriate management accounting techniques, and suggested that the automation of management accounting systems has reduced the need for management accountants to be involved in the preparation and use of management accounting information. Therefore, it is important that "management accountants adopt a more active role in the management process" (Cooper, 1996b, p. 36) and that the majority of the management accounting function become decentralized to the users of accounting information. As such, the role of the management accountant would become that of a specialist playing a support role for cost management (Cooper, 1996b).

Over the past decade, the changes proposed by Cooper (1996b) have taken place in many organizations as their management accounting processes have increasingly become

automated; management accountants have taken on a business partner role (Byrne & Pierce, 2007; Cardos et al., 2010). This transition brings to focus Langfield-Smith's (2008) question: What specific or special skills do management accountants bring to the table that would benefit SMA implementations and the ultimate benefits that SMA can bring about to a company?

Clarke and Tagoe (2002) have proposed that management accountants can play a critical and decisive role in establishing a SMA system. Although the SMA information may be owned by the different functions that collect the information within the organization (Dixon & Smith, 1993) and may not be as widely disseminated and linked together in the manner envisaged by SMA, there is an opportunity for the management accountant to coordinate the development of a strategic information structure. Clarke & Tagoe (2002) proposed that a strategic information structure involves (a) identifying type of information, the collectors and the users, (b) implementing the processes used to collect the information, and (c) amalgamating the collection, analysis, and dissemination of information. Clarke and Tagoe cautioned that although this role may make some management accountants feel uncomfortable or ill prepared, it is an area for accounting educators to determine the current skills of accounting practitioners and to identify the gaps in education and training.

A more recent study by MacDonald and Richardson (2011) showed that, on average, accounting education (i.e., introduction of new management accounting concepts) lagged behind practice, and the length of the lag has increased since the early 1980s. In addition, Hoffjan and Wömpener (2006) found that strategic and cost orientation has not been effectively integrated into 20 prominent German and English language management accounting textbooks, a finding that also points to the lag between accounting curriculum and practice. Thus, it is not surprising

that SMA or SMA techniques have not been adopted widely (Langfield-Smith, 2008). The challenge for accounting academics would be to shorten the lag between accounting education and practice.

Summary of Contingency-based Research Findings and Knowledge Gaps

Organizations are diverse, each facing different situations or contingent variables and thus requiring different ways of managing. Does the application of management accounting with a more strategic approach (SMA techniques) enhance firm performance? It has been found that SMA techniques mediate the relationship between a firm's prospector strategy and performance (Cadez & Guilding, 2008). It is, therefore, important to determine what factors influence organizations to adopt certain SMA techniques, given their particular situations. Various contingency variables have been investigated to determine their relationship to SMA techniques application (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010). The following contingency factors have been investigated to date: (a) company size, (b) business strategy, (c) market orientation, (d) industry, (e) competition intensity, and (f) organizational learning. Only a few empirical studies have gone a step further by investigating the relationship between SMA usage to firm performance (Cadez & Guilding, 2008; Cravens & Guilding, 2001; Lay & Jusoh, 2012; Said et al., 2010).

Table 2.2 provides a summary of the SMA studies on contingency factors associated with SMA, and the findings on the relationships between contingent factors and SMA usage as well as between firm performance and SMA usage.

Table 2.2

SMA Studies—Contingency Factors and SMA Techniques

Study	Contingent factors	Summary of findings
Guilding (1999) Competitor focused accounting practices	Strategic pattern Strategic mission Company size Industry	There was a positive relationship among factors: strategic pattern, strategic mission, company size and CF accounting practices. There was no evidence of a relationship between CFA and industry.
Cravens & Guilding (2001) SMA techniques	Competitive strategy	There was a positive relationship for competitive strategy sub-dimensions: R&D leader and broad market coverage and SMA. Higher company performance is positively associated with SMA usage.
Guilding & McManus (2002) Customer accounting	Market orientation Competition intensity Company size	There was a positive relationship between market orientation and CA, and a weak relationship between competition intensity and CA. No evidence for company size and CA.
Cadez & Guilding (2008) SMA techniques and SMA model	Strategy type Deliberate strategy formulation Market orientation Company size	SMA usage was positively related with a prospector strategy, deliberate strategy formulation, company size and accountants' strategic decision-making participation. SMA usage positively affected firm performance.
Cinquini & Tenucci (2010) SMA techniques and strategic variables	Strategic variables (pattern, mission, positioning)	Support for SMA (costing) usage positively associated with strategic pattern (defenders). Support for SMA (customer) and mission (build). Support for SMA (costing) and positioning (cost leader).
Said, Hui, Othman & Taylor (2010) SMA techniques and organizational learning	Organizational learning orientation	Organizational learning orientation had a mediating effect on SMA usage and organizational performance.
Lay & Jusoh (2012) SMA techniques and business strategy	Business strategy Strategic role of accountant	SMA usage partially mediates the relationship between differentiation strategy and firm performance. There was a positive relationship between business strategy and strategic role of accountant. No support for positive association between strategic role of accountant and firm performance.

The contingency factors shown by previous work to have a relationship with SMA usage include (a) strategy type (e.g., pattern, mission; Guilding, 1999; Cadez & Guilding, 2008; Cinquini & Tenucci, 2010); (b) competitive strategy (e.g., R&D leader, broad market coverage; (Cravens & Guilding, 2002); (c) deliberate strategy formulation (Cadez & Guilding, 2008); and (d) organizational learning orientation (Said et al., 2010). Higher company performance was also found to be positively associated with SMA usage (Cravens & Guilding, 2001; Said et al., 2010).

Findings for some of the contingency factors were inconsistent or unsupported in the following two areas:

- Guilding (1999) and Cadez and Guilding (2008) found that company size was positively related to SMA usage, while Guilding and McManus (2002) had little evidence for company size and customer accounting. Thus, company size should be further investigated to determine if there is a relationship to SMA.
- There was no evidence of a relationship between industry type and competitor-focused accounting (Guilding, 1999). As competitor-focused accounting in Guilding's (1999) study only included 5 of the 16 SMA techniques, further investigation of industry as a contingency factor is warranted.

Market orientation (customer-focused approach) was shown to have a positive relationship with customer accounting practices (Guilding & McManus, 2002); however, this finding was not consistent with that of Cadez and Guilding (2008) who found that there was no support for market orientation and SMA usage. Given the conflicting findings for market orientation and SMA usage, further investigation is necessary.

To date, the empirical studies have provided a better understanding of the application of SMA and the relationship between the use of SMA and firm performance; however, considerably

more can still be achieved in terms of empirical enquiry (Cadez & Guilding, 2008). Recommendations have been made for future SMA researchers to consider the following as possible contingency factors: (a) type or degree and/or intensity of competition, (b) organization structure, (c) organization culture, (d) management style, (e) environmental uncertainty, and (f) technology (Guilding, 1999; Guilding & McManus, 2002; Cadez & Guilding, 2008).

The empirical studies have helped to enhance the credibility of contingency theory as applied to strategic management accounting. The various conceptual representations of strategic management accounting (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010) have provided greater insight as to what may be considered to be SMA, the factors (contingencies) that influence SMA usage, and the impact that SMA usage has on firm performance. Furthermore, the applied contribution of the empirical research has helped to establish SMA as a collection of strategically focused management accounting techniques. Empirical evidence has been provided of the real-world application of SMA and the degree to which SMA techniques have been adopted.

Summary of Literature Review

Ever since the term strategic management accounting was first proposed (Simmonds, 1981), there has been a growing interest in this sub-field of management accounting. Several scholars have presented their perspectives and proposed conceptual frameworks for SMA (Bromwich & Bhimani, 1989; Bromwich, 1990; Shank, 1989). Empirical studies on SMA practices and techniques have also been conducted (Cadez, 2006; Cinquini & Tenucci, 2010; Guilding et al., 2000; Said et al., 2010); their findings have helped to provide some clarity about the adoption of SMA practices, and the similarities and differences in the usage rates of SMA

practices among different countries and across industries. Case studies (Ma & Tayles, 2009; Collier & Gregory, 1995) provided more in-depth details about how SMA had been adopted in the highly competitive pharmaceutical and hotel industries. These case studies have helped to show strategic implications for the practical application of SMA and to provide a perspective on how human actors influenced the implementation of SMA within their organizations.

In the last few decades, the business environment has become increasingly more global and competitive, creating the need for integrating more strategic information into decision making. Strategic management accounting information is future oriented and externally focused. Management accountants will be expected to have the necessary skills to apply SMA techniques in order to support strategic decision making. Development of SMA is imperative if management accountants are to be able to navigate the transition from their role as preparers of management accounting information into experts in the interpretation and assessment of strategic action. At a time when strategy implementation is recognized as a fundamentally flawed part of organizational management (Pfeffer & Sutton, 2006), the role of management accountants in helping organizations to accomplish measurable strategic goals is critical.

Up until the early 2000s, there was little agreement as to what constituted strategic management accounting (Roslender & Hart, 2003). But recent SMA research has considered SMA to be a collection of strategically focused management accounting techniques. The practical contribution of the studies provides evidence of the degree to which the SMA techniques have been applied across various industries and the effect that the use of SMA techniques has had on firm performance. Contingency-based studies of SMA have shown that contingency variables, such as strategy type and organization learning orientation, have a relationship with SMA usage. These contingency studies have further developed the concept of

SMA by refining the list of SMA techniques and testing the factors believed to influence SMA usage. Contingency theory's principle of no universally appropriate SMA system is partially supported by the various SMA studies. However, a weakness of these studies may be the "piecemeal" approach (Fisher, 1995, p. 24) taken by these enquiries; in other words, that only one to a few contingent factors or SMA techniques was studied at a time. It is believed that the eventual goal of contingency-based management accounting research should be to test a comprehensive model that includes several accounting systems, several contingent variables, and several outcome variables (Fisher, 1995). Thus, to address this criticism and the resulting knowledge gap, the current study focused on developing and testing a more inclusive model of SMA techniques adoption.

While many studies have focused on only one or two contingency factors and a few SMA techniques, the current study considered several contingency factors believed to affect the adoption of several SMA techniques. In addition, this study considered the effect that SMA usage has on firm performance. By testing a comprehensive contingency SMA model with several contingent variables and many SMA techniques, a deeper understanding of the interactions of the various contingent and SMA variables is possible and further enriches the SMA concept.

Chapter 3. Development of the Research Model

The literature review of strategic management accounting (SMA) presented in Chapter 2 has shown that there are several interpretations, perspectives, and concepts on SMA. In the early 2000s, a few case studies and empirical research by a number of scholars on SMA techniques usage provided insight into SMA practices. Contingency models of SMA techniques and factors believed to influence the usage rates of SMA were proposed and studied, contributing to the growing body of SMA-related literature and knowledge. The current study extended the work of previous SMA studies by developing a relational model between contingent factors and the use of SMA, and between the use of SMA and firm performance, all based on the contingency theory of organizations (Donaldson, 2001). The goal of this research was both confirmatory and exploratory in nature. An initial contingency model of SMA (see Figure 3.2) was tested (confirmatory) and then SEM analysis was performed on the data to determine if a more fitting final model (exploratory) should be considered. This chapter includes the selection of SMA techniques, the development of the hypotheses, and discussion of the resulting hypotheses and contingency factors.

The SMA techniques chosen for the research model include the 16 most favoured and comprehensive techniques (Cadez & Guilding, 2008; Lay & Jusoh, 2012). To date, these techniques are the most exhaustive list covering the SMA domain. In particular, the costing techniques (i.e., attribute costing, life cycle costing, quality costing, target costing, and value chain costing) which are all part of the SMA Costing Theme (see Table 3.2) provided complete coverage of SMA costing. See Figure 3.1 for the relationship of all the product costs to the total costs of a company. The three costs, namely attribute costs, quality costs, and target costs, are a subset of product life cycle costs. Value chain costs include product life cycle costs but are also a

subset of total company costs and extend outside of an organization. In other words, value chain analysis assesses activities both internal and external to an organization that add value to products or services. All the SMA techniques chosen for the research model have been discussed in detail in the literature review under subsection SMA techniques.

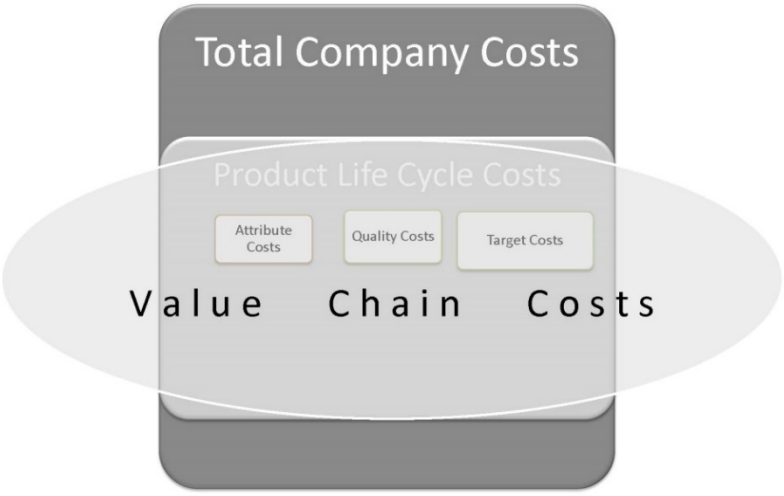

Figure 3.1. SMA product costs.

The following 16 techniques were selected to be part of the research model that guided this study:

1. attribute costing;
2. benchmarking;
3. brand valuation (budgeting and monitoring);
4. competitive position monitoring;
5. competitor cost assessment;
6. competitor performance appraisal;
7. customer profitability analysis;
8. integrated performance measurement;

9. life cycle costing;
10. lifetime customer profitability analysis;
11. quality costing;
12. strategic costing;
13. strategic pricing;
14. target costing;
15. valuation of customers as assets; and
16. value chain costing.

SMA Categories

The 16 SMA techniques were further grouped into themes. Given the large number of techniques, the grouping into themes facilitated the reporting of descriptive statistics and research findings. Slight variations of SMA themes or categories shown in Table 3.1 have been proposed by SMA researchers (Cadez, 2006; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001).

Table 3.1

Strategic Management Accounting Themes Comparison

	SMA studies			
Theme	Cravens & Guilding (2001)	Cadez & Guilding (2008)	Cinquini & Tenucci (2010)	Current study
Costing	X	X	X	X
Competitor (accounting)	X	X	X	X
Strategic accounting	X	X		X
Brand value accounting	X			
Customer (accounting)		X	X	X
Performance			X	X

The list of themes and techniques selected for the current study shown in Table 3.2 blended the three earlier versions of SMA categories from Cravens and Guilding (2001), Cadez (2006), and Cinquini and Tenucci (2010). The groupings in Table 3.1 identify SMA techniques with similar characteristics, and facilitated the comparison and contrasting of themes. Four of the five themes (i.e., costing, competitor accounting, strategic accounting, and customer accounting) were included in at least two of the three relevant studies reviewed, namely Cravens and Guilding (2001), Cadez (2006), and Cinquini and Tenucci (2010). The fifth theme (i.e., performance) was borrowed from Cinquini and Tenucci's (2010) performance category.

Table 3.2

Strategic Management Accounting Themes and Techniques

Theme	Technique
Costing	Attribute costing
	Life cycle costing
	Quality costing
	Target costing
	Value chain costing
Performance	Benchmarking
	Integrated performance measurement
Competitor accounting	Competitor cost assessment
	Competitive position monitoring
	Competitive performance appraisal
Strategic accounting	Strategic costing
	Strategic pricing
	Brand valuation (budgeting and monitoring)
Customer accounting	Customer profitability analysis
	Lifetime customer profitability analysis
	Valuation of customers as assets

Hypotheses Regarding Contingency Factors Related to SMA Performance

This study focused on SMA usage rates and the contingency factors and/or variables believed to influence SMA usage in Canada. To test several hypotheses, a survey was administered to a broad cross-section of Canadian companies. The hypotheses are summarized below and explained in the subsections that follow:

1. Company size is positively associated with SMA usage.
2. Environmental uncertainty is positively associated with SMA usage.
3. Intensity of competition is positively associated with SMA usage.
4. Market orientation is positively associated with SMA (customer accounting) usage.

5a. A company's business strategy pattern (prospector) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance).

5b. A company's business strategy pattern (defender) is positively associated with SMA usage (costing).

5c. A company's strategic mission (build) is positively associated with SMA usage.

5d. A company's strategic position (differentiator) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance).

5e. A company's strategic position (cost leader) is positively associated with SMA usage (costing).

6. Organization culture (innovation and learning) is positively associated with SMA usage.
7. A decentralized organization structure is positively associated with SMA usage.
8. Accountant involvement in strategic decision making is positively associated with SMA usage.

9. SMA usage is positively associated with company performance.

The selection of the contingency factors and/or variables and the resulting hypotheses is discussed further in the next section.

Company size. It has been a continuing finding that company size is positively related to greater management accounting system complexity (Cadez & Guilding, 2008; Guilding, 1999; Merchant, 1981). As organizational size increases, accounting and control processes become more specialized and sophisticated (Chenhall, 2003; Ezzamel, 1990; Hoque & James, 2000). Larger firms have more resources and greater opportunities to innovate than do smaller ones (Sisaye & Birnberg, 2010). Consistent with the above rationale, the following hypothesis has been made.

H_1 Company size is positively associated with SMA usage.

Environmental uncertainty. Various researchers have studied the influence of environmental uncertainty on management accounting methods and administrative processes. Miles and Snow (1978) proposed that the reduction of environmental uncertainty involved formulating and implementing processes that would enable an organization to continue to evolve. Chenhall and Morris (1986) found that perceived environmental uncertainty was linked with having a broad scope (i.e., provided both economic and non-economic information about the external environment) and timely information. In Gul and Chia's (1994) study, it was found that when perceived environmental uncertainty was high, managers required more sophisticated information in terms of scope and aggregation. In addition, an organization's strategy of structuring its functions (centralization vs. decentralization) determines its level of environmental uncertainty (Govindarajan, 1986). Given the link between environmental

uncertainty and accounting and administrative processes, the following hypothesis has been made.

H_2 Environmental uncertainty is positively associated with SMA usage.

Intensity of competition. Decision makers' use of management accounting information becomes more important with increasing competition in the market (Bromwich, 1990). It has been shown that intensity of competition is a determinant of the use of information provided by the management accounting system (Mia & Clarke, 1999). It is also believed that SMA technique usage increases with greater competition (Cadez & Guilding, 2008). Thus, the following hypothesis has been proposed.

H_3 Intensity of competition is positively associated with SMA usage.

Market orientation. Market orientation can be considered to be made up of three components—customer orientation, competitor orientation, and interfunctional coordination—and to have two decision criteria—long-term focus and profitability (Narver & Slater, 1990). A market-oriented firm generates market intelligence that consists of information related to customer needs and preferences, customer service, market research, competitor strategy, and so on. (Jaworski & Kohli, 1993). It is reasonable to assume that SMA usage is greater in market-oriented firms. Thus, the following hypothesis has been proposed.

H_4 Market orientation is positively associated with SMA (customer accounting) usage.

Strategic pattern, mission, and position. The strategic pattern variable was derived from Miles and Snow's (1978) typologies of prospector versus defender. Organizations that are considered prospectors are the leaders in product and market development, whereas defenders are not. In order to pursue a leadership role in product and/or market development, it is assumed that prospectors would have a greater need for information related to products and customers

than would defenders. The following hypothesis links particular categories of SMA usage to the prospector strategic pattern.

*H*5a A company's business strategy pattern (prospector) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance).

In contrast to prospectors, defenders tend to enact an environment for which a stable form of organization is suitable, usually producing a limited set of products with competitive pricing or high-quality products (Miles & Snow, 1978). Thus, the following hypothesis has been proposed.

*H*5b A company's strategic pattern (defender) is positively associated with SMA usage (costing).

The strategic mission variable refers to typologies of build and harvest. According to Gupta and Govindarajan (1984), a build strategy refers to the intent to increase market share, while a harvest strategy refers to the intent to maximize short-term profit and cash flow rather than to increase market share. A build mission would require more future-oriented, external, and customer-related information (Chenhall, 2003).

*H*5c. *A company's strategic mission (build) is positively associated with SMA usage.*

The strategic position variable refers to differentiator and cost leader strategies (Porter, 1980, 1985). A company pursuing a differentiation strategy provides products and services that are unique in its industry by having attributes that distinguish it from its rivals. This would require a company to be able to understand and satisfy customer needs (Chenhall & Langfield-Smith, 1998). A company following a cost-leadership strategy would be a low-cost producer in its industry and would require extensive cost information in order to control costs (Cinquini & Tenucci, 2010). Based on the foregoing, two hypotheses have been proposed.

H_{5d} A company's strategic position (differentiator) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance).

H_{5e} A company's strategic position (cost leader) is positively associated with SMA usage (costing).

Organization culture (innovation and learning). Given that SMA techniques are rather novel (Cadez, 2006), it would seem that those organizations that are more receptive to new ideas would be more willing to adopt SMA techniques. It has been shown that organizational innovation contributes positively to an increase in the level of adoption of management accounting practices (Chia & Koh, 2007) and that "competitive advantage is built on a full understanding of customer needs, competitors' actions, and technological development, an understanding made possible by organizational commitment to learning" (Calantone et al., 2002, p. 522). Accordingly, the following hypothesis has been proposed.

H_6 Organization culture (innovation and learning) is positively associated with SMA usage.

Organization structure. There is a positive relation between decentralization and the level of quality and sophistication of management accounting systems. Sophistication includes the breadth of scope of accounting information, including external information, non-financial information, and future-oriented information (Soobaroyen & Poorundersing, 2008). Given that SMA is future oriented, externally directed, and includes non-financial information from the strategic management and marketing disciplines, it is believed that there would be a positive relationship between decentralization and SMA techniques usage.

H_7 A decentralized organization structure is positively associated with SMA usage.

Accountant involvement in strategic decision making. There has been a call for greater participation by accountants in strategic decision making (Bromwich, 1990). In a strategic situation, management accountants are called upon to assist an organization in understanding a situation and making it more transparent (Tillman & Goddard, 2008). When accountants are involved in providing information for strategic decision-making purposes, it may result in higher SMA usage (Lay & Jusoh, 2012). As well, Cadez and Guilding (2008) have shown that accountants' participation in strategic decision making is positively related to a prospector strategy. Thus, the following hypothesis has been proposed.

H_8 Accountant involvement in strategic decision making is positively associated with

Company performance. Higher company performance is associated with SMA usage (Cadez & Guilding, 2008; Cravens & Guilding, 2001; Said et al., 2010). Many of the previous contingency studies only considered a few contingent factors and their effect on SMA usage and performance. The current study considers multiple contingent factors and their relationship to SMA and organization performance.

H_9 SMA usage is positively associated with company performance.

Contingency Model of Strategic Management Accounting

The main effects to be tested based on the hypotheses proposed in the previous section are presented in the model depicted in Figure 3.2 below.

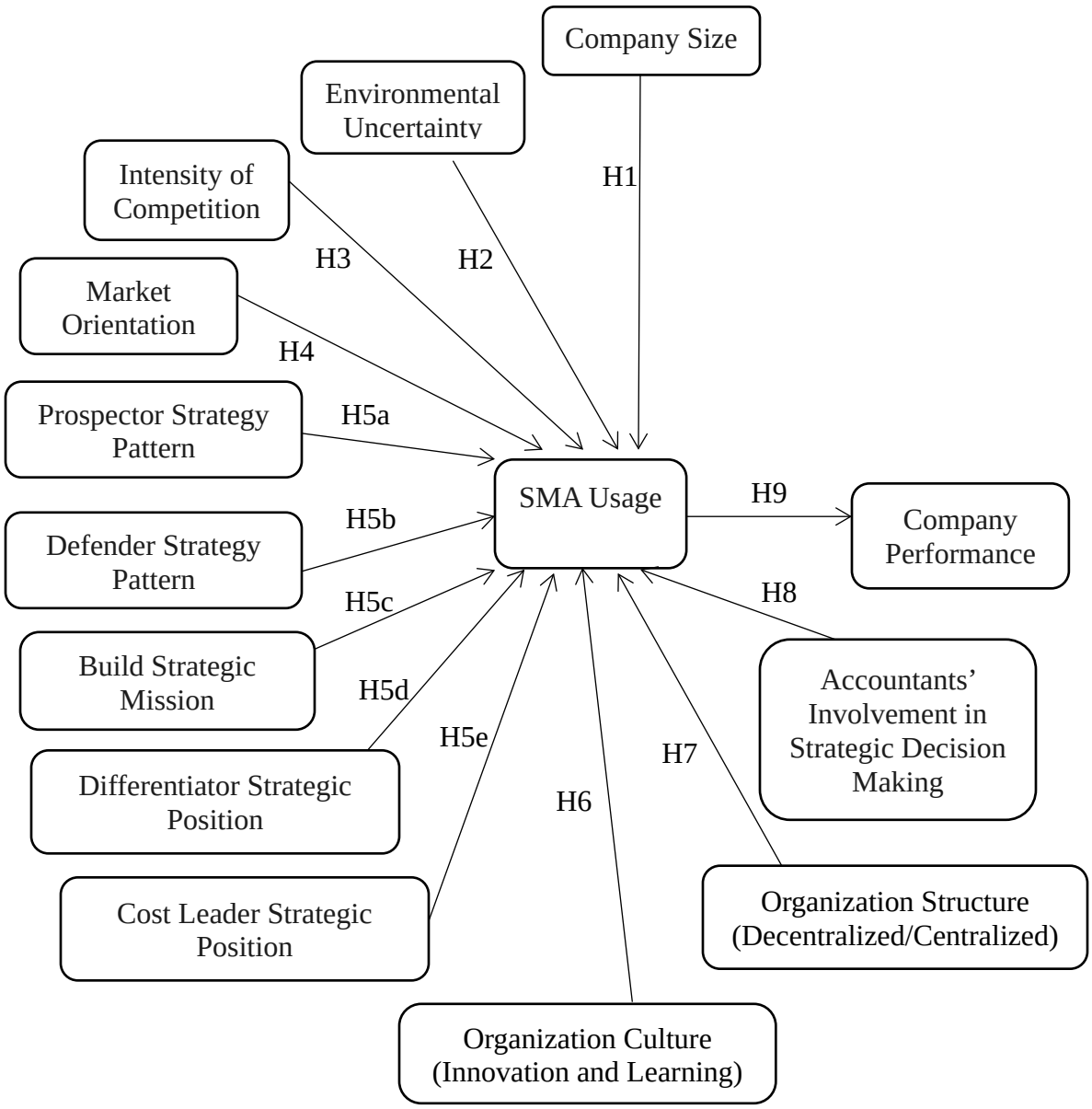

Figure 3.2. SMA Usage Theoretical Model

Contributions and Summary

While several contingency factors have been studied to date (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus 2002; Lay & Jusoh, 2012; and Said et al., 2010), these contingency studies were not performed in a systematic way, with one or two factors being investigated at one time. In addition, there have been contradictory findings for some of the contingency factors such as company size (Cadez & Guilding, 2008; Guilding, 1999; Guilding & McManus, 2002) and market orientation (Cadez & Guilding, 2008; Guilding & McManus, 2002). Some contingency factors such as intensity of competition, organization structure, organization culture, and environmental uncertainty have been recommended for future inquiry (Cadez & Guilding, 2008; Guilding, 1999; Guilding & McManus, 2002).

The proposed SMA model addresses the previously identified research gap. The current study provided a contribution to literature by testing a comprehensive contingency-based model of SMA. The contingency variables for this research included the following: (a) company size, (b) environmental uncertainty, (c) intensity of competition, (d) market orientation, (e) strategy type, (f) organization culture, (g) organization structure, and (h) accountant involvement in strategic decision making. The contingency factors of (a) company size, (b) market orientation, (c) strategy type, (d) organizational learning, and (e) accountant involvement in strategic decision-making relationships to SMA have been explored by previous researchers (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010). Contingency factors of (a) environmental uncertainty, (b) organization culture, and (c) organization structure included in this current study have not been previously considered for an SMA study and have been identified as possible contingency variables to be considered

based on the work of Cadez & Guilding (2008). Thus, a major contribution of this study has been to construct and test a comprehensive contingency-based SMA model capturing several contingency variables and their influence on SMA usage, as well as the resulting effect on firm performance.

Chapter 4. Research

Research Methodology

Before choosing the appropriate research approach, a distinction needs to be made between qualitative and quantitative research. The key distinctions of qualitative and quantitative research are provided in the following table.

Table 4.1

Qualitative versus Quantitative Approach

Key feature	Qualitative research	Quantitative research
Research purpose and focus	Theory building	Build and test theory
	In-depth understanding and interpretation	Describe, explain, and predict
Researcher involvement	High—researcher is a participant	Limited and controlled to prevent bias
Sample design	Nonprobability and purposive	Probability
Sample size	Small	Large
Data analysis	Human analysis following computer or human coding	Computerized analysis using statistical and mathematical methods
Insights and meaning	Deeper level insight based on free response questions	Limited opportunity to probe respondents
	Researcher participation in data collection allows insights to be formed during the process	Insights formed after data collection, limited ability to re-interview respondents

Note. Adapted from "Business Research Methods," by D. R. Cooper and P. S. Schindler, 2011, p. 163.

The research questions of this study related to the level of SMA usage, the main factors that affect SMA adoption, and the impact on firm performance. Several hypotheses were proposed to predict the relationships that certain contingency variables had with SMA and firm performance. To test the proposed hypotheses, a quantitative approach was used for this study. The approach tests the hypotheses using probability sampling and was intended to prevent bias

during data collection. This study was explanatory in nature, as the purpose of the design was to explain relationships among variables (Cooper & Schindler, 2011). A survey was administered; this method is widely used for quantitative explanatory research (Neuman, 2003). The survey was cross-sectional in nature, that is, it took a snap-shot approach collecting data at one point in time (i.e., as opposed to a longitudinal approach which examines relationships over several points in time). While causation in cross-sectional surveys cannot be clearly proven, there are some ways to alleviate the issues associated with the limitations of causal inference (drawing a conclusion about a causal relationship) (Van der Stede, 2014).

The current survey approach to data gathering was based, to a great extent, on prior empirical studies of SMA that have used the survey method. The following SMA researchers have used a survey approach similar to the current study: Guilding (1999), Cravens and Guilding (2001), Guilding and McManus (2002), Cadez and Guilding (2008), Cinquini and Tenucci (2010), Said et al. (2010), and Lay and Jusoh (2012). All these researchers created questionnaires that were administered to a cross-section of the firms in a particular region and/or country.

Research Population or Sample

The sample was drawn from the population of Canadian companies listed on the Industry Canada's Canadian Company Capabilities (Industry Canada, 2017) and CanWest Interactive's Infomart (2018) databases. While it has been shown that the manufacturing industry is conducive to SMA application and that many earlier studies have samples drawn mainly from the manufacturing industry (Cadez, 2006; Cadez & Guilding, 2008; Cinquini & Tenucci, 2010), the service sector or public sector also benefits from the use of strategic management accounting (Collier & Gregory, 1995; Said et al., 2010). Thus, the sample was drawn from goods-producing as well as service-producing industries in Canada.

To test the first hypothesis, “Company size is positively associated with SMA usage,” the sampling included sufficient companies of different sizes. The companies had to also have sufficient resources available to adopt advanced accounting systems and techniques. Previous studies have drawn data from large-sized companies (Cadez & Guilding, 2008) or large- to medium-sized companies (Cinquini & Tenucci, 2010). Therefore, stratified sampling was employed in the current study to include a range of small- to very large-sized companies.

The number of employees was used to determine four company sizes: (a) small (101 to 250); (b) medium (251 to 500); (c) large (501 to 1000); and (d) very large (1000+). The stratified random sample was drawn from four strata based on company size. To ensure that each stratum was properly represented, the sample size drawn from each stratum was proportionate to the stratum’s share of the total population of companies in the Canadian Company Capabilities database, namely companies that have self-identified their primary activity as either a goods-producing or a service-producing industry with employee numbers ranging from 101 to 1000+ (Industry Canada, 2017).

Table 4.2

Statistics for Canadian Companies from Canadian Company Capabilities (CCC) database

Company size	Approximate number of employees	Number of companies
Small	101 to 250	1,395
Medium	251 to 500	565
Large	501 to 1000	267
Very large	1000+	330
Total		2,557

Note. Data is current as of October 11, 2017; database resource closed in April 2018.

Appendix B shows the sample size calculations, including the proportionate strata sampling sizes. Survey response rates can be quite low; for instance, in a prior study involving an online survey of SMA usage levels in Italy, the usable response rate was 43% (Cinquini & Tenucci, 2010). A pilot study, described later in this chapter, showed the usable response rate was as low as 15% of the total sampled. To deal with a possibly high non-response rate, an additional 6.67 times (100/15) the sample size calculated was surveyed resulting in an increase in total sample size from 150 companies (see Appendix B) to 1,000 companies (to over sample). If non-response proved to be higher than estimated, then a contingency plan was to increase the sample later as the database targeted contained over 2,500 suitable companies.

Systematic sampling was utilized on each stratum. Thus, a random start for each stratum was used and every *k*-th element or skip interval was determined by dividing the sample size into the population size (*k* = skip interval = population size/sample size; Cooper & Schindler, 2011). For example, the CCC population for small-sized companies equaled 1,395 (current as at October 11, 2017) and the proportionate sample size for the small-sized companies equaled 546 (calculated as 1,395/2,557 * 1,000). Then every 3rd (calculated as 1,395 / 546) company from

the CCC database list (in alphabetical order) of small-sized companies was sampled. See Appendix B for the sample size calculated for each stratum.

Variable Measurement and Instrumentation

The survey questions were related to the constructs developed in the SMA contingency model and referred to the variables listed below.

1. Company size—three measures based on employee number, company sales, and company exports were used. The measures were the same as those used by Industry Canada (2015) to classify Canadian companies.
2. Environmental uncertainty—the measure of environmental uncertainty consisted of two of the three dimensions used by Uzkurt et al. (2012) and adapted from Jaworski and Kohli (1993). The two dimensions measured were market turbulence (i.e., the rate of change in the composition of customers and their preferences) and technological turbulence (i.e., the rate of technological change). A total of eight questions were included on a seven-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*.
3. Intensity of competition—the scale used to measure intensity of competition was an adaptation of the scale developed by Khandwalla (1977). The following six dimensions required a seven-point Likert rating: (a) selling and distribution, (b) quality, (c) variety of products, (d) price, (e) market share, and (f) customer service, all scored with respect to intensity of competition for these items and importance of each item to the company's success. The scale ranges from (1) *very negligible* to (7) *extremely intense*.
4. Market orientation—the instrument used was from Guilding and McManus (2002) as a seven-point Likert scale of four questions related to customers and markets. The

questions were a slightly modified version of the instrument applied by Cravens and Guilding (1999).

5. Strategy type (pattern, mission, and positioning)—the three dimensions of strategy were measured using a similar instrument from Cinquini and Tenucci (2010), which was derived from Shortell and Zajac's (1990) survey. Their seven-point Likert scale had two extremes of each dimension at opposite ends: (a) strategic pattern (defender/prospector); (b) strategic mission (harvest/build); and (c) strategic positioning (cost leader/differentiator).
6. Organization culture (innovation and learning)—two dimensions of organization culture are measured, and they were the same measures used by Calantone et al., 2002 to assess firm innovativeness and commitment to learning constructs. Firm innovativeness is the collective perspective to openness to new ideas as an aspect of a firm's culture (Hurley & Hult, 1998). Commitment to learning is viewed as the degree to which a company values and encourages learning (Sinkula, Baker, & Noordeweier, 1997).
7. Organization structure—the degree of decentralization was measured using a seven-item construct based on Olson, Slater, and Hult (2005) and Menon, Bharadwaj, Adidam, and Edison (1999).
8. Company performance—the measure of company performance was from Cadez and Guilding's (2008) scale of seven dimensions. Cadez and Guilding's scale was made up of Hoque and James's (2000) five dimensions of performance: (a) return on investment, (b) margin on sales, (c) capacity utilization, (d) customer satisfaction, and (e) product quality, plus two additional dimensions, (f) development of new products and (g) market share.

9. SMA usage—the degree of SMA usage was measured using an approach similar to that of Cravens and Guilding (2001) and Guilding and McManus (2002). Respondents were given a list of 16 SMA techniques and asked to indicate their level of usage for each technique using the scale from (1) *not at all* to (7) *to a great extent*. The 16 SMA techniques were selected because they were the most accepted and complete list in recent SMA studies (Cadez & Guilding, 2008; Lay & Jusoh, 2012). The glossary of SMA techniques (Appendix A) was included to provide respondents with a description of each technique.
10. Accountant involvement in strategic decision making—this measure was created by the current researcher using four questions related to accountants' participation in strategic decision making using a seven-point scale ranging from (1) *strongly disagree* to (7) *strongly agree*.

The survey (Appendix C) was designed using online survey software from FreeOnlineSurveys (freeonlinesurveys.com), which has its server housed in the U.S. Participants were informed about their responses being collected outside Canada. The model constructs along with corresponding survey questions and their initial sources are shown in Appendix D. Each of the questions in the survey relates to one of the construct items. Questions 17a through 17p are related to SMA usage; the respondents were able to refer to the glossary of SMA techniques (Appendix A) to ensure that they had a correct understanding of SMA techniques and descriptions prior to responding.

Pilot Study

Prior to actual data collection from total sample, a pilot survey was administered to a small number of respondents. The survey was administered to 80 subjects drawn from Industry

Canada's CCC database; the pilot test included subjects from the four stratums of company size—small, medium, large, and very large.

An important learning was gained from this pilot study. Apparently the contact information on the CCC database was not up-to-date or was insufficient (e.g., provided a general email address rather a specific person's email, wrong type of contact listed such a marketing director rather than the chief financial officer). Only 13 out of the sample of 80 contacts held CFO/chief accountant position. Three responses were received; two were usable, while one was not complete. The usable response rate based on the 13 qualified subjects was equal to 2/13 = 15%.

In order to have a higher usable response rate, it was critical to have the appropriate contact information for the CFO/chief accountant of the companies being surveyed. Verification of the CFO/chief accountant contact information was made using a database such as Standard & Poor's (2017) Compustat and CanWest Interactive's Infomart (2018) databases, as these keep current company data for both private and public companies. These databases are not readily available to the general public and access can be obtained through libraries that offer members access.

Feedback on the survey instrument from respondents who completed the survey indicated that there were no major issues in responding to the survey questions (i.e. the survey was clear and not too long). The respondents did not experience problems with answering any of the questions.

Given that there were only two respondents, we could not be completely confident that the survey instrument had been properly designed to capture the appropriate data. It was decided that a pretest with two or three select respondents to test the validity of the questionnaire would

be useful in identifying any issues or suggestions for improvement. The key issue was to ensure that the relevant contact information for the sampled companies could be obtained so that the survey be administered to the appropriate representatives of the companies.

Pretest

A pretest was performed by administering the survey to the CFOs of two companies from two different industries (i.e., retail trade and health care). Feedback from this pretest suggested that most of the questions on the survey were fairly straightforward to answer. It was determined that the SMA definition page was useful, as the respondents referred to the page often in order to answer the questions related to SMA techniques. Also, there was a suggestion to include sampling of companies with fewer than 100 employees. This suggestion was incorporated into the final survey to include companies with 50 to 100 employees.

Data Collection

The final survey was administered electronically via the Internet using FreeOnlineSurveys. The advantages of using an online survey as opposed to a telephone survey include cost and the scope of reach. In addition, the software compilation and data analysis process were streamlined with an online survey.

Each of the sampled companies were contacted by email, since the CCC database contained the email contact information for the chief financial officer/chief accountant. In addition, the sampled companies were screened to check for valid email addresses using the CanWest Interactive's Infomart (2018) database which is continuously updated; this ensures that there is current information on company directors. Appendix E shows the contact/cover letter that was sent by email.

The data collected via the online survey tool was easily integrated (exported) into the SPSS software for data analysis. The electronic transferring of the data to SPSS helped to eliminate transcription errors normally related to paper-based surveys.

Treatment and Analysis of the Data

An analysis of the data collected was performed. The process involved inspecting, cleaning, transforming, and modeling the data.

Assessment and cleaning of data. The data were exported from the online survey tool to SPSS. Cleaning of the data was performed. Missing values were coded with a 9. There were a few cases of outliers which were spread out to various contingency factors. A comparison of the regression results with and without the outliers yielded no difference in relationships. Thus, the data for outliers were retained. The main features of the data were determined by using the different types of analysis: frequency counts, mean, standard deviation, median and skewness. A summary of the different types of analysis has been included in the following descriptive statistics section.

Descriptive statistics. To describe the main features of the data collected, a descriptive analysis was performed. The following subsections provide details and statistics on the (a) sample size, (b) response rate, (c) company size, (d) industry, (e) SMA usage, (f) contingency factors, and (g) company performance. Correlations shown in tabular form measure the relationship between the various contingency variables to SMA techniques usage levels.

Sample size. A sample of 1,286 companies was drawn from the Canadian Company Capabilities (CCC) and CanWest Interactive's Infomart databases. The database listings represent all industries, but the sampling process excluded government and nonprofit organizations. A final total of 139 responses were received (10.8% response rate). There were

101 out of 139 usable surveys. The 38 unusable surveys included 17 respondents who chose to withdraw and 21 respondents with incomplete responses, completing up to Q9 or less of the 25-question survey (10% to 35% completion). The online survey required the completion of each Likert scale item sequentially before moving onto the next item. Q1 to Q9 contained the items related to some of the contingency factors, namely (a) environmental uncertainty, (b) intensity of competition, (c) market orientation, (d) strategic pattern, (e) strategic mission, (f) strategic position, (g) organization culture, and (h) organization structure.

Response rate. The 101 usable responses were sufficient to meet the minimum threshold of $N = 50$ to perform statistical analysis using SEM. It has been shown (Boomsma, 1982) that when N sample size is small, it is better when there is a higher indicator (item) p value to factor (construct) f value, expressed as p/f. The current study has 80 items and 10 main constructs, $p/f = 8.0$. According to Boomsma (1982), when the $p/f = 6$ or 12, $N = 50$ is sufficient. In addition, research suggests that when there are reliable indicators and normally distributed data that the "10 times" rule for sample size is not as important (Goodhue, Lewis & Thompson, 2006).

Respondents' characteristics by accounting designation. The next table shows the description of the respondents' characteristics in the lens of their accounting designation.

Table 4.3

Frequency by Accounting Designation

Accounting designation	Frequency	% of total
CMA (legacy)	31	30.7%
CGA (legacy)	8	7.9%
CA (legacy)	30	29.7%
CPA	6	5.9%
MBA	9	8.9%
N/A	12	11.9%
Other	5	5.0%
Total	101	100.0%

Company size. The next table shows the breakdown of responses by company size.

Table 4.4

Frequency by Company

Size	Number of employees	Number of companies	% of total
Small	50 to 250	24	24%
Medium	251 to 500	24	24%
Large	501 to 1000	17	17%
Very large	1000+	36	36%
Total		101	100%

The frequency of usable responses by company size (number of employees) indicated that each group size was sufficiently represented, and that the greatest number of responses came from the largest companies.

Industry statistics. Table 4.5 shows the mean SMA usage scores and frequency of usable responses by industry.

Table 4.5

SMA Usage and Frequency by Industry

Industry	SMA usage (mean)	Number of companies	% of total
Agriculture, forestry, fishing, and hunting	3.4063	2	2.0
Mining, quarrying, oil and gas extraction	3.6894	9	8.9
Utilities	3.0261	2	2.0
Construction	3.3230	9	8.9
Manufacturing	3.9098	14	13.9
Wholesale trade	3.9899	4	4.0
Retail trade	4.0223	9	8.9
Transportation and warehousing	3.3877	5	5.0
Information and cultural	3.5000	2	2.0
Finance and insurance	4.1319	15	14.9
Real estate, and rental and leasing	3.9538	3	3.0
Professional, scientific, and technical services	3.3447	7	6.9
Education services	4.3750	1	1.0
Health care and social assistance	3.9667	5	5.0
Arts, entertainment, and recreation	2.7227	5	5.0
Accommodation and food services	3.5971	1	1.0
Other Services (except public administration)	4.1712	8	7.9
Total	3.7510	101	100.0

The manufacturing and finance/insurance industries had the greatest number of responses; these two industries account for about 30% of the total responses. The highest industry users of SMA, with mean scores greater than 4.0, were (a) education services; (b) other services (except public administration); (c) finance and insurance; and (d) retail trade.

SMA usage by technique statistics. The next table provides the mean, median, mode and skewness statistics. The mean, median, and mode statistics are useful in determining central tendency.

Table 4.6

SMA Techniques—Central Tendency

SMA technique	Mean	Median	Mode	Skewness
Attribute costing	3.2381	3.5000	1.00	.260
Benchmarking	4.4301	5.0000	4.00[a]	-.353
Brand valuation	3.5529	4.0000	3.00[a]	.172
Competitor cost assessment	3.8462	4.0000	3.00	-.005
Competitive position monitoring	4.4194	5.0000	6.00	-.553
Competitor performance appraisal	3.9565	4.0000	4.00	-.183
Customer profitability analysis	4.4176	5.0000	6.00	-.395
Integrated performance measurement	4.1111	4.5000	5.00	-.383
Life cycle costing	3.2771	3.0000	1.00	.276
Lifetime customer profitability analysis	3.4222	3.5000	4.00	.342
Quality costing	3.1529	3.0000	4.00	.374
Strategic costing	3.6778	4.0000	4.00	.070
Strategic pricing	4.3258	5.0000	5.00	-.456
Target costing	3.6941	4.0000	1.00	.017
Valuation of customer as an asset	3.6477	4.0000	1.00	.099
Value chain costing	2.8471	3.0000	1.00	.438

Note. [a.] Multiple modes exist. The smallest value is shown.

The five SMA techniques that were used to the largest extent were: (a) benchmarking, (b) competitor position monitoring, (c) customer profitability analysis, (d) strategic pricing, and (e) integrated performance measurement. The five techniques that were used to the least extent

were: (a) value chain costing, (b) quality costing, (c) attribute costing, (d) life cycle costing, and (e) lifetime customer profitability analysis.

SMA usage, contingency factors and company performance statistics. The next table show mean, median, mode and skewness statistics on SMA usage, contingency factors and company performance.

Table 4.7

SMA Usage, Contingency Factors and Company Performance – Central Tendency

Variable / Factor	Mean	Median	Mode	Skewness
SMA usage (aggregate)	3.7510	3.7510	3.75	-.174
Company size	4.3647	4.5000	5.00	-.823
Environmental uncertainty	4.9765	5.0000	4.88a	-.320
Intensity of competition	5.1287	5.1667	4.92	-.399
Market orientation	5.7178	6.0000	6.00	-1.532
Strategic pattern	3.5017	3.6667	4.00	.260
Strategic mission	4.6238	4.6667	5.00	-.403
Strategic position	4.2013	4.3333	5.00	-.373
Organization culture	4.9713	5.2000	5.50	-.746
Organization structure	4.4328	4.5714	4.00a	-.587
Accountant involvement	4.8520	5.0000	5.75	-.892
Company performance	5.0128	5.0128	5.01	-.891

Note. [a.] Multiple modes exist. The smallest value is shown.

Virtually all the variables/factors were negatively skewed which as a general rule indicates that the mean and median are less than the mode. However, when one tail is long and the other tail is fat, the simple rule of skewness may not apply. For example, both strategic pattern and company performance had one tail that was longer than the other; this caused the general rule of skewness to not apply. The variables or factors with the greatest skewness were (a) market orientation, (b) accountant involvement, (c) company performance, and (d) company size.

Quality of measurement model. Construct reliability and construct validity were determined to ensure the quality of the measurements. The construct reliability is the extent to which a variable or set of variables are consistent in what it is intended to measure. An analysis of homogeneity or internal consistency provided an indication of the reliability of the measurement instrument. Cronbach's alpha was used to analyze the internal consistency of the items in each of the constructs. Analyses of the variances of the items and scales were performed. The value of Cronbach's alpha varies from 0 to 1. A higher value of alpha is desirable and indicates greater reliability. A value of 0.70 or higher is considered acceptable (Santos, 1999). Even an alpha value of 0.65 has been found to be acceptable (Bonett & Wright, 2015). In addition, the Cronbach's alpha will be high (i.e., greater than 0.85) when the intercorrelations among test items are high (i.e., greater than 0.70; Cortina, 1993). Another measure of construct reliability is the average item to total correlation, which is acceptable at 0.3 or higher (Ritter & Gemünden, 2004). Construct reliability is established before construct validity is assessed.

To determine construct validity, it must be demonstrated that convergent and discriminate validity exist. According to Campbell and Fiske (1959), convergent validity is the degree of confidence that a trait (construct) is well measured by its indicators (items) and discriminant validity is the degree to which measures of different traits (constructs) are unrelated.

The statistics in the next three tables show the constructs' reliability and validity using the various measures of Cronbach's alpha (Table 4.8), average item to total correlation (Table 4.9), average variance extracted (AVE) and Fornell-Larcker criterion (Table 4.10).

Table 4.8

Construct Reliability

Scale	Cronbach's alpha	Cronbach's alpha based on standardized items	Number of items
Environmental uncertainty	.735	.738	8
Intensity of competition	.736	.738	6
Market orientation	.879	.888	4
Strategy type	.666	.662	9
Organizational culture	.865	.869	10
Organizational structure	.837	.838	7
Accountant involvement	.900	.900	4
Company performance	.867	.870	7

In Table 4.8, the standardized reliability statistics for the constructs or contingency factors meet the minimum acceptable level of 0.65.

Table 4.9 presents the scale and item statistics for the constructs. The average item to total correlation values were moderate to high, ranging from 0.340 to 0.783. The higher overall correlation of inter-items is another indicator of the reliability of each of the constructs measured.

Table 4.9

Scale and Item Statistics

Scale	Mean	Variance	Standard deviation	Average item to total correlation	Number of items
Environmental uncertainty	39.81	55.474	7.448	0.431	8
Intensity of competition	28.14	31.081	5.575	0.474	6
Market orientation	22.87	15.813	3.977	0.756	4
Strategy type	36.98	72.560	8.518	0.340	9
Organization culture	49.71	90.847	9.531	0.586	10
Organization structure	31.03	48.089	6.935	0.596	7
Accountant involvement	19.41	30.986	5.567	0.783	4
Company performance	34.41	55.724	7.465	0.646	7

Construct validity. The measures used in assessing the latent constructs validity include convergent validity, discriminant validity, and average variance extracted. Convergent validity is the extent to which indicators of a specific construct converge or share a high proportion of variance in common, while discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). The AVE is a summary measure of convergence among a set of items representing a latent construct (Hair et al., 2010). According to Hair et al. (2010), there are several measures that indicate appropriate construct validity, if met together:

- Standardized loading estimates should be at least 0.5.
- AVE should be 0.5 or greater to suggest adequate convergent validity.
- AVE estimates for two factors (constructs) should be greater than the square of the correlation between the two factors (constructs) to provide proof of discriminant

validity (known as the Fornell-Larcker criterion; Hensler et al., 2015). As it is common to report inter-construct correlations in publications, a related approach is found in most reports on discriminant validity: square root of AVE for a factor should be greater than the correlations with any other factors (Hensler et al., 2015).

- Construct reliability should be 0.7 or higher to indicate appropriate internal consistency.

Table 4.10

Construct Validity—Average Variance Extracted and Correlations

Construct	AVE	$AVE^{0.5}$	Company Size	Env Uncertainty	Intensity Competition	Market Orientation	Strategic Pattern	Strategic Mission	Strategic Position	Organization Culture	Organization Structure	Company Performance	SMA Usage	Accountant Involvement
Company Size	0.649	0.806	1	0.120	0.172	0.185	-0.121	-0.063	-0.239*	0.006	0.022	0.096	0.287**	0.134
Env Uncertainty	0.499	0.706		1	0.451**	0.233*	0.391**	0.263**	0.068	0.350**	0.145	0.272**	0.138	0.076
Intensity Competition	0.525	0.725			1	0.242*	0.123	0.219*	0.119	0.159	0.114	0.183	0.175	0.099
Market Orientation	0.750	0.866				1	0.168	0.106	-0.052	0.692**	0.534**	0.565**	0.445**	0.498**
Strategic Pattern	0.581	0.762					1	0.237*	0.185	0.287**	0.121	0.144	0.024	0.032
Strategic Mission	0.537	0.733						1	0.369**	0.244*	0.149	0.037	-0.025	0.062
Strategic Position	0.504	0.710							1	0.072	0.027	0.133	-0.231*	-0.063
Organization Culture	0.508	0.713								1	0.615**	0.560**	0.397**	0.459**
Organization Structure	0.527	0.726									1	0.319**	0.352**	0.338**
Company Performance	0.570	0.755										1	0.356**	0.290**
SMA Usage	0.505	0.711											1	0.389**
Accountant Involvement	0.778	0.882												1

Table 4.10 present statistics to support construct validity. The average variance extracted for all latent constructs ranged from 0.499 to 0.778, which meets or exceeds 0.5, the acceptable value for AVE for convergent validity (Fornell & Larcker, 1981). The second test using the Fornell-Larcker criterion to assess discriminant validity compares the latent construct's square root of the AVE with the correlation of other latent constructs. Each latent construct should better explain its own indicators (items) than it does the items of other latent constructs, thus the square

root of AVE of each latent construct should have a higher value than with the correlations with other constructs. In this way, each of the latent constructs met the test for discriminant validity.

Correlations—constructs. Pearson correlations statistics were generated to test for relationships among the various constructs. Table 4.11 presents the Pearson correlations between constructs.

Table 4.11

Pearson Correlations—Constructs

	Company Size	Environmental Uncertainty	Intensity of Competition	Market Orientation	Strategic Pattern	Strategic Mission	Strategic Position	Organization Culture	Organization Structure	Company Performance	SMA Usage	Accountant Involvement
Company Size	1	0.120	0.172	0.185	-0.121	-0.063	-.239*	0.006	0.022	0.096	.287**	0.134
Environmental Uncertainty		1	.451**	.233*	.391**	.263**	0.068	.350**	0.145	.272**	0.138	0.076
Intensity of Competition			1	.242*	0.123	.219*	0.119	0.159	0.114	0.183	0.175	0.099
Market Orientation				1	0.168	0.106	-0.052	.692**	.534**	.565**	.445**	.498**
Strategic Pattern					1	.237*	0.185	.287**	0.121	0.144	0.024	0.032
Strategic Mission						1	.369**	.244*	0.149	0.037	-0.025	0.062
Strategic Position							1	0.072	0.027	0.133	-.231*	-0.063
Org Culture								1	.615**	.560**	.397**	.459**
Org Structure									1	.319**	.352**	.338**
Company Performance										1	.356**	.290**
SMA Usage											1	.389**
Accountant Involvement												1

Note. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

There were several significant correlations among the various constructs at both the 0.05 and 0.01 level. Market orientation (predictor) had correlations with other predictor variables at the 0.01 level—organization culture (0.692**) and organization structure (0.534**). When

multicollinearity exists (two predictor variables are highly correlated) this may affect parameter estimates of regression. Issues with estimates that may have shared variances among predictor variables can be avoided by ensuring that all constructs are measured as reliably as possible (Grewal et al., 2004). Table 4.8 shows the Cronbach's alpha (standardized) reliability statistics to be very high for the constructs market orientation (0.888), organization culture (0.869), and organization structure (0.838) exceeding the acceptable level of 0.65. As well, Table 4.10 shows that the test of discriminant validity was met as the square root of the AVE of market orientation (0.866), organization culture (0.713), and organization structure (0.726) were all higher than their correlations with other constructs. In other words, each of these constructs better explain their own indicators (items) than they do the items of the other latent constructs. Thus, the significant moderate correlation among market orientation and the other two constructs (i.e., organization culture and organization structure) did not appear to have a multicollinearity issue that affected parameter estimation.

Correlation and regression analysis. To determine whether any relationships exist among each of the 16 SMA techniques and the various contingency factors; Pearson correlations were calculated:

Table 4.12

Pearson Correlations—SMA Usage, Contingency Variables, and Company Performance

SMA Technique	Company Size	Env Uncertainty	Intensity of Competition	Mkt Orientation	Strategic Pattern	Strategic Mission	Strategic Position	Org Culture	Org Structure	Accountant Involvement	Company Performance
Attribute Costing	.323**	0.200	0.190	.267*	0.171	-0.128	-.281**	.232*	0.191	0.135	0.212
Benchmarking	0.129	0.169	0.017	.358**	0.109	-0.088	-.247*	.447**	.411**	.264*	.276**
Brand Valuation	0.138	0.200	0.119	.261*	0.096	0.056	0.016	.332**	.234*	0.073	.278**
Competitor Cost Assessment	.265*	0.197	0.188	.310**	0.089	0.021	-0.181	.235*	.250*	.334**	.250*
Competitive Position Monitoring	.283**	0.144	.259*	.441**	0.007	-0.001	-0.188	.325**	.357**	.388**	.311**
Competitor Performance Appraisal	.267*	0.121	0.163	.281**	-0.125	-0.070	-.242*	0.137	.246*	.335**	0.190
Cust Prof Analysis	.290**	0.175	0.047	.306**	-0.085	-0.119	-.269**	0.200	0.037	.275**	.211*
Int Perf Measurement	.408**	0.195	0.194	.465**	0.013	0.053	-.248*	.366**	.272**	.258*	.255*
Life Cycle Costing	.236*	-0.061	0.076	.293**	-0.041	-0.023	-.313**	.267*	0.206	.312**	0.136
Lifetime Customer Profitability Analysis	0.010	0.003	-0.114	0.192	-0.010	-0.047	-0.074	.290**	0.205	.220*	0.126
Quality Costing	.269*	0.149	.251*	.290**	0.045	0.051	-0.099	.346**	.344**	.315**	.351**
Strategic Costing	.254*	0.059	0.110	.448**	-0.009	0.081	-0.123	.391**	.334**	.448**	.389**
Strategic Pricing	0.073	-0.048	0.132	.317**	0.039	0.048	0.035	.337**	.279**	.262*	.309**
Target Costing	0.128	-0.062	0.184	.218*	-0.036	-0.060	-0.123	0.146	.233*	.231*	.295**
Valuation of Customer as Asset	0.175	0.144	0.155	.257*	0.012	0.057	-0.009	.212*	.231*	.227*	.263*
Value Chain Costing	.223*	0.010	0.081	.284**	0.045	-0.112	-.256*	0.188	.218*	.266*	0.121
SMA Theme											
Costing Theme	.279**	0.056	0.192	.349**	0.045	-0.072	-.275**	.303**	.304**	.325**	.289**
Performance Theme	.296**	.210*	0.126	.484**	0.066	-0.015	-.292**	.477**	.385**	.302**	.311**
Competitor Accounting Theme	.280**	0.168	.219*	.380**	-0.014	-0.019	-.227*	.259**	.307**	.392**	.279**
Strategic Accounting Theme	0.172	0.075	0.135	.405**	0.045	0.072	-0.033	.418**	.325**	.317**	.388**
Customer Accounting Theme	0.181	0.128	0.034	.309**	-0.032	-0.041	-0.139	.289**	0.191	.293**	.249*
(SMAUSE-Aggregate)	.316**	0.100	0.145	.444**	0.018	-0.033	-.241*	.377**	.349**	.386**	.341**

Note. *Correlation is significant at the 0.05 level (2-tailed).**Correlation is significant at the 0.01 level (2-tailed).

Significant correlations were found at both the 0.01 and 0.05 level for several contingency factors and individual SMA techniques. The four contingency factors having the most significant correlations to several individual SMA techniques were: (a) market orientation, (b) accountant involvement, (c) organization culture, and (d) organization structure. The variable SMAUSE (aggregate of all 16 SMA techniques) had significant correlations to (a) company size, (b) market orientation, (c) strategic position, (d) accountant involvement, (e) organization culture, and (f) organization structure.

A regression analysis was performed for each SMA technique (dependent) and all contingency factors (independents) to show the particular relationships of each individual SMA technique with each one of the contingency factors. In total, there were 16 separate regressions performed; see Table 4.13.

Table 4.13

Regression—SMA Techniques and Contingency Factors

SMA Techniques (dependent)	Attribute Costing	Benchmarking	Brand Valuation	Competitor Cost Assessment	Competitive Position Monitoring	Competitor Performance Appraisal	Customer Profitability Analysis	Integrated Performance Measurement	Life Cycle Costing	Lifetime Customer Prof. Analysis	Quality Costing	Strategic Costing	Strategic Pricing	Target Costing	Valuation of Customer as Asset	Value Chain Costing
Independent	Unstandardized Regression Coefficients															
(Constant)	-0.386	1.683	-0.108	-0.603	-1.355	0.336	1.927	-1.595	1.318	2.587	-1.556	-1.491	0.744	0.881	-0.926	0.720
Company Size	0.332*	0.081	0.161	0.207	0.191	0.150	0.212	0.386**	0.180	0.007	0.247	0.230	0.080	0.072	0.177	0.161
Environmental Uncertainty	0.036	0.106	0.094	0.153	-0.018	0.244	0.371	0.042	-0.394	-0.021	-0.082	-0.154	-0.428*	-0.371	0.141	-0.163
Intensity of Competition	0.295	-0.090	0.036	0.156	0.377	0.170	-0.186	0.122	0.236	-0.267	0.341	0.052	0.307	0.525*	0.089	0.147
Market Orientation	0.044	-0.058	0.075	0.125	0.296	0.213	0.397	0.462*	0.032	-0.087	-0.188	0.270	0.085	0.053	0.177	0.178
Strategic Pattern	0.216	0.048	-0.013	0.076	-0.024	-0.158	-0.160	-0.056	0.017	-0.066	0.010	-0.055	0.025	0.024	-0.059	0.112
Strategic Mission	-0.197	-0.159	-0.055	0.001	-0.036	-0.044	-0.105	0.090*	0.072	-0.093	-0.024	0.094	-0.029	-0.085	0.000	-0.096
Strategic Position	-0.306*	-0.260*	0.033	-0.189	-0.191	-0.230	-0.212	-0.287*	-0.379**	-0.051	-0.090	-0.117	0.045	-0.128	0.037	-0.239
Organization Culture	0.263	0.553*	0.495	-0.094	0.010	-0.329	0.181	0.340	0.402	0.568	0.353	0.271	0.473	0.007	-0.007	-0.004
Organization Structure	0.123	0.316	0.057	0.210	0.287	0.328	-0.328	-0.003	0.013	0.048	0.279	0.113	0.085	0.303	0.225	0.175
Accountant Involvement	-0.036	0.035	-0.139	0.274*	0.234	0.322*	0.185	-0.030	0.181	0.126	0.170	0.314*	0.089	0.168	0.149	0.157
R	0.493	0.562	0.361	0.456	0.557	0.492	0.494	0.581	0.487	0.355	0.484	0.55	0.425	0.379	0.324	0.418
R^2	0.243	0.316	0.13	0.208	0.311	0.242	0.244	0.337	0.237	0.126	0.234	0.303	0.181	0.143	0.105	0.175
F	2.892	4.161	1.349	2.368	4.057	2.881	2.908	4.579	2.793	1.301	2.752	3.912	1.985	1.505	1.054	1.907
ρ (sig.) model	0.004	<0.001	0.217	0.015	<0.001	0.004	0.003	<0.001	0.005	0.242	0.005	<0.001	0.044	0.15	0.406	0.054

Note. *Significant at the 0.05 level. **Significant at the 0.01 level.

The contingency factors with significant coefficients at the 0.01 level were company size and strategic position. Contingency factors that had significant regression coefficients at the 0.05 level were: (a) company size, (b) environmental uncertainty, (c) intensity of competition, (d) market orientation, (e) strategic mission, (f) strategic position, (g) organization culture, and (h) accountant involvement in strategic decision making. The only contingency factor that did not have a significant regression coefficient was organization structure. There were 11 SMA techniques with significant ρ model results at either the 0.01 or 0.05 level: (a) attribute costing, (b) benchmarking, (c) competitor cost assessment, (d) competitive position monitoring, (e) competitor performance appraisal, (f) customer profitability analysis, (g) integrated performance measurement, (h) life cycle costing, (i) quality costing, (j) strategic costing, and (k) strategic pricing. The 16 separate analyses provided insight into the specific SMA techniques that warranted further investigation due to significant ρ model findings.

A comparison of the initial 16 SMA techniques selected for testing and the reduced list to 11 SMA techniques is shown in Table 4.14. The 11 SMA techniques with significant ρ model findings were selected, while 5 SMA techniques with ρ values greater than 0.05 (i.e., target costing, value chain costing, brand valuation, lifetime customer profitability analysis, and valuation of customers as assets) were excluded. The techniques are grouped by themes in Table 4.14.

Table 4.14

SMA Techniques by Theme—Initial Versus Final List

Theme	Technique	Initial list (16)	Final list (11)
Costing	Attribute costing	X	X
	Life cycle costing	X	X
	Quality costing	X	X
	Target costing	X	
	Value chain costing	X	
Performance	Benchmarking	X	X
	Integrated performance measurement	X	X
Competitor accounting	Competitor cost assessment	X	X
	Competitive position monitoring	X	X
	Competitive performance appraisal	X	X
Strategic accounting	Strategic costing	X	X
	Strategic pricing	X	X
	Brand valuation (budgeting and monitoring)	X	
Customer accounting	Customer profitability analysis	X	X
	Lifetime customer profitability analysis	X	
	Valuation of customers as assets	X	

After individual SMA techniques were analyzed, regressions were performed with SMA usage (aggregate; see Table 4.15). The regression included the aggregate of the 11 techniques selected for the final model (from Table 4.14), a variable computed by using the mean score of the 11 SMA techniques as dependent variable, and the contingency factors as independent variables. In addition, regressions were run of company performance as dependent variable with independent variables, (a) Set 1:SMAUSE; (b) Set 2: SMAUSE, market orientation, strategic position, and accountant involvement; (c) Set 3: SMAUSE, market orientation, strategic position, accountant involvement, SMAUSE*accountant involvement; and (d) Set 4: SMAUSE, market orientation, and strategic position (see Table 4.16).

Table 4.15

Regression—SMA Usage and Contingency Factors

	SMA usage (dependent)		
Contingency factors (independent)	Unstandardized regression coefficients	*t*-statistic	Coefficient Sig.
(Constant)	-0.089	-0.099	0.922
Company size	0.209	2.239	.028
Environmental uncertainty	-0.011	-.085	.933
Intensity of competition	0.162	1.118	.267
Market orientation	0.153	1.025	.308
Strategic pattern	-0.006	-.075	.940
Strategic mission	-0.031	-.356	.723
Strategic position	-0.201	-2.375	.020
Organization culture	0.220	1.299	.197
Organization structure	0.129	1.025	.308
Accountant involvement	0.158	1.893	.062
R	0.628		
R^2	0.394		
F	5.853		
ρ (sig.) model	<0.001		

The regression has company size and strategic position significant at the 0.05 level. Accountant involvement is marginally significant with $\rho < 0.10$. When this regression was compared to the SEM model in Figure 4.2 Final Contingency Model of SMA the results were fairly consistent, as the SEM model had company size and accountant involvement as significant predictors at the 0.05 level and strategic position as significant at the 0.01 level.

Table 4.16

Regression - Company Performance and SMA Usage

SMA Usage / Contingency Factors (independent)	Company Performance (dependent)											
	Set 1			Set 2			Set 3			Set 4		
	Unstd. Regr. Coeff.	t-stat.	Coeff. Sig .	Unstd. Regr. Coeff.	t-stat.	Coeff. Sig .	Unstd. Regr. Coeff.	t-stat.	Coeff. Sig .	Unstd. Regr. Coeff.	t-stat.	Coeff. Sig .
(Constant)	3.852	12.249	0.000	1.037	1.864	0.065	0.342	0.355	0.723	1.026	1.858	0.066
SMA Usage (Aggregate)	0.298	3.852	0.000	0.160	1.976	0.051	0.399	1.412	0.161	0.155	1.98	0.051
Market Orientation				0.484	5.007	0.000	0.467	4.739	0.000	0.475	5.319	0.000
Strategic Position				0.160	2.491	0.014	0.160	2.498	0.014	0.159	2.497	0.014
Accountant Involvement				-0.018	-0.260	0.795	0.145	0.739	0.462			
SMA Usage*Acct Inv							-0.048	-0.883	0.380			
R		0.361			0.610			0.614			0.609	
R^2		0.130			0.372			0.377			0.371	
F		14.838			14.201			11.491			19.096	
ρ (sig.) model		<0.001			<0.001			<0.001			<0.001	

The R^2 increased by 0.242 (0.372 – 0.130) from Set 1 to Set 2 when additional predictor variables were included. Accountant involvement was tested in Set 2, given its relationship to SMA usage, $\rho = 0.062$ (Table 4.15). However, in Set 2, when it was included as a predictor variable for company performance, it was shown to be insignificant. In Set 3, the interaction term of SMA usage and accountant involvement was included to verify whether the interaction of these two variables was significant. The interaction SMA usage*accountant involvement variable was not significant. Thus, the final model has SMA usage (aggregate of 11 SMA techniques) and three antecedents as predictors of company performance. The Set 4 regression run is significant at $\rho < 0.001$. The statistics in Set 4 for company performance was consistent with the SEM model results in Figure 4.2.

Testing contingency model of SMA. Structural equation modeling (SEM) is a multivariate technique that enables the simultaneous examination of a series of relationships among measured variables and latent constructs as well as between several latent constructs (Herda, 2013). Given the range of relations that can be recognized in SEM, it was more advantageous to test the SMA model using SEM AMOS (analysis of moment structures).

There are two stages to SEM analysis: (a) the measurement model specifies the relationship between observed variables and latent variables, and (b) the structural model provides a model of relations between latent variables incorporating specified measurement error variances (Smith & Langfield-Smith, 2004). After the measurement model has demonstrated appropriate reliability and validity, the structural model can be specified by testing relationships among constructs based on the proposed theoretical model.

In the evaluation of the measurement model (see Figure 3.2), it was necessary to ensure that the chosen indicators measured the constructs prior to evaluating the structural model. In

stage one of SEM analysis, namely confirmatory factor analysis (CFA), each observed variable (indicator) was assigned to only one factor (construct). The number of factors should correspond to that of the latent constructs, which are those concepts that cannot be directly observed and, therefore, a set of measured variables (or indicators) were used to represent these theoretical concepts. Most of the scales used in this current research had been tested in prior studies, and the previous section has shown through Cronbach's alpha, average item to total correlation, average variance extracted, and Fornell-Larcker criterion that the constructs in this study were reliable and valid.

In the second stage of SEM analysis, a structural model was produced showing the relations between latent constructs while incorporating specified measurement error variances. There are two types of relationships possible among constructs: dependence relationships or correlational (covariance) relationships (Hair et al., 2010). Mediation and moderation are two complex relationship types that are variations from the two basic types of relationships of dependence and covariance (Little et al., 2007). Hair et al. (2010) described a mediation relationship as an indirect influence in which there is a sequence of relationships with at least one intervening construct involved (i.e., the indirect effect, K → M → E, represents the mediating effect of construct M on the relationship between K and E). A moderation relationship or interaction effect occurs when a third variable or construct changes the relationship between two related variables/constructs (Hair et al., 2010). Once all of the relationships were specified, SEM was used to test the set of relationships between constructs using multiple equations assessed simultaneously.

Range-of-fit indices are provided by SEM to assess the overall fit of the entire model (Smith & Langfield-Smith, 2004). Incremental indices measure the increase in fit relative to a

baseline model, often one in which all observed variables are uncorrelated (Lei & Wu, 2007). Two incremental indices—normed-fit index (NFI; Bentler & Bonnet, 1980) and comparative fit index (CFI; Bentler, 1990) are used to measure fit. NFI provided information on how much better the model fits than a baseline model; the recommended cut-off criteria is for NFI to be greater than 0.95 (Hu & Bentler, 1999). The drawback of using NFI is that it is sensitive to sample size, underestimating fit for samples less than 200 (Hooper et al., 2008). The CFI is a revised form of NFI. CFI is insensitive to sample size; an accepted threshold would be a value greater than 0.90 (Afthanorhan, 2013). The CFI performs well even when the sample size is small (Tabachnick & Fidell, 2007). Another measure of model fit is the Bollen's (1989) IFI (incremental fit index) acceptable threshold is set at greater than 0.95. The IFI adjusts the NFI for sample size and degrees of freedom, which makes the index relatively unaffected by sample size.

Thus, structural equation modelling was used to determine the relationship among the various SMA variables and contingency factors. SEM showed whether the contingency factors influenced SMA usage. The model showed the direct and indirect effects of the various contingency factors on SMA and company performance. In addition, SEM showed the direct effect of SMA usage on company performance.

SEM was run to fit the data to the initial contingency model of SMA proposed in Figure 3.2. The fitted model (standardized) in Figure 4.1 shows the path coefficients and variance explained (R^2) values. After running the model through several iterations, a more fitting model—final contingency model of SMA (see Figure 4.2) was found when the contingency factors strategic position and market orientation were included along with SMA usage as antecedents to company performance. Further discussion of these two models follows in Chapter Five.

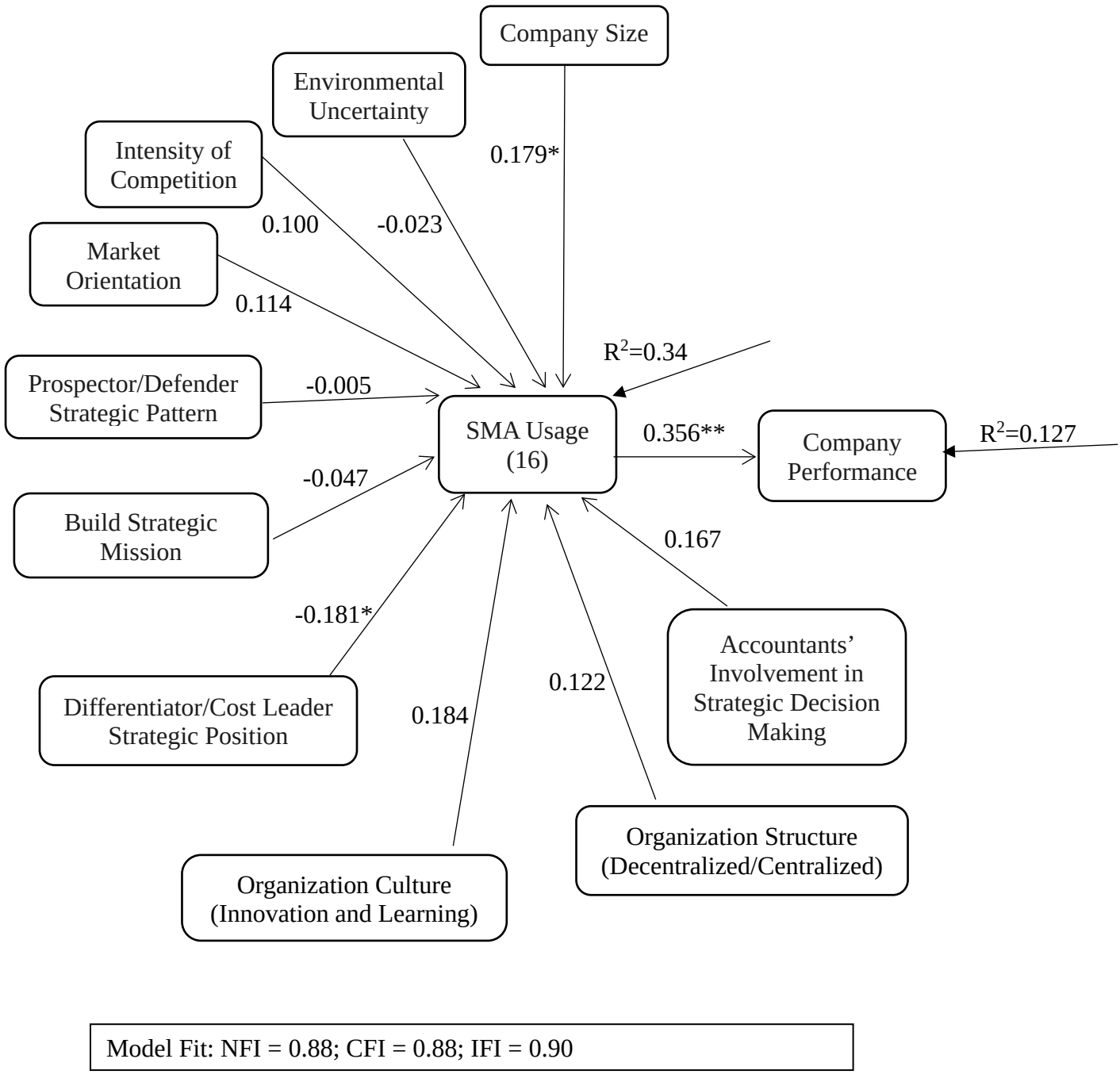

Figure 4.1. Initial contingency model of SMA (standardized).
*Note.**Coefficient is statistically significant at ρ < 0.05 (two-tail). **Coefficient is statistically significant at ρ < 0.01 (two-tail).

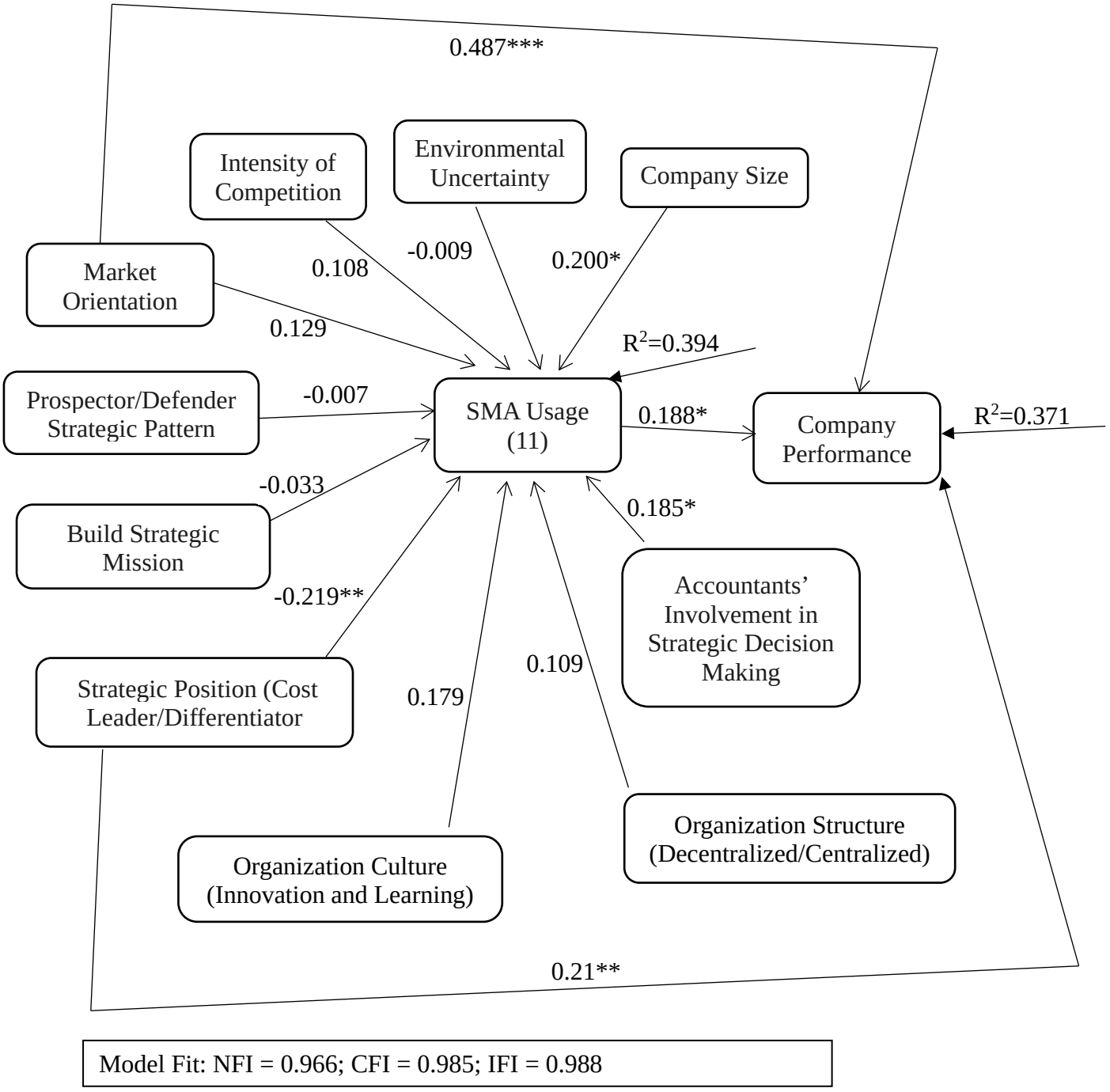

Figure 4.2. Final contingency model of SMA (standardized).
*Note.**Coefficient is statistically significant at ρ < 0.05 (two-tail). **Coefficient is statistically significant at ρ < 0.01 (two-tail). ***Coefficient is statistically significant at ρ < 0.001 (two-tail).

In light of the significant findings presented in Table 4.13, where 11 SMA techniques had significant ($\rho < 0.05$) model results with contingency factors as predictor variables; SMA usage (aggregate) was refined to 11 techniques and used in SEM model testing, and the regression estimates were compared to the initial aggregate SMA usage of 16 SMA techniques. The following Table 4.17 shows the estimates from the initial model in Figure 4.1 and compares this to the final model in Figure 4.2. The most notable difference between the two models was the inclusion of strategic position and market orientation as antecedents to company performance, that resulted in considerable change in the explanatory power (R squared) to company performance. The model fit statistics changed from being below the acceptable thresholds for NFI, CFI, and IFI to being well above what is acceptable.

Table 4.17

Summary of Initial and Final SEM Models

Dependent	Independent	Initial Model (Figure 4.1) Estimate	Final Model (Figure 4.2) Estimate	Notes
SMA Usage	Company Size	0.179*	0.200*	SMA Usage initial model is the aggregate of 16 techniques
SMA Usage	Env Uncertainty	-0.023	-0.009	SMA Usage final model is the aggregate of 11 techniques
SMA Usage	Intensity of Competition	0.1	0.108	
SMA Usage	Market Orientation	0.114	0.129	
SMA Usage	Strategic Pattern	-0.005	-0.007	
SMA Usage	Strategic Mission	-0.047	-0.033	
SMA Usage	Strategic Position	-0.181*	-0.219**	
SMA Usage	Organization Culture	0.184	0.179	
SMA Usage	Organization Structure	0.122	0.109	
SMA Usage	Accountant Involvement	0.167	0.185*	
Company Performance	SMA Usage	0.356***	.188*	
Company Performance	Strategic Position		0.21**	Antecedent applic. to final model
Company Performance	Market Orientation		0.487***	Antecedent applic. to final model
SMA Usage	R squared	0.34	0.394	
Company Performance	R squared	0.127	0.371	
NFI		0.875	0.966	
CFI		0.881	0.985	
IFI		0.9	0.988	

Note. *Coefficient is statistically significant at $\rho < 0.05$ (two-tail). **Coefficient is statistically significant at $\rho < 0.01$ (two-tail). ***Coefficient is statistically significant at $\rho < 0.001$ (two-tail).

Qualitative data analysis. In order to gain a deeper understanding of factors that may affect the adoption of SMA practices, the survey instrument included the following open-ended items for respondents:

- Indicate three major factors that positively influence the adoption of SMA techniques in Canadian companies.
- Indicate three factors that are major barriers to the adoption of SMA techniques for Canadian companies.
- Do you have any other comments about SMA?

A total of 55 respondents provided feedback to one or more of the three qualitative items.

To provide a coherent view of the qualitative data, the responses for factors influencing SMA adoption were grouped into themes along with the details of key items. Table 4.18 present the factors having a positive influence on SMA adoption. Table 4.19 present the factors identified as barriers to SMA adoption. The items in the second columns in both tables are all unique (other similar or identical items were excluded).

Table 4.18

Qualitative Themes—Factors Having a Positive Influence on SMA Adoption

Themes	Items/Comments
Perceived usefulness	Desire to have "accurate costing," use in "merger & acquisition analysis," for "board presentations," "need," "demand for relevant information," "perceived value," "ability to use in all parts of the organization," and "flexibility"
Ability to achieve results	"Achieving profitability," "enhanced decision making," "shareholder satisfaction," "ROI impact," "pay for performance measures"
Link to strategic planning	"SMA's ability to tie quantitative information to the vision, mission and long-term strategic plan" and "focus on long-term profitability"
Awareness/Education	"Simplicity to understand and measure," "understanding the business and how finance can benefit the performance of all areas of the company," "operations exposure to accounting," "global understanding of the results or predictors," "finance personnel with broad based business skills," "continuous learning of these methods and techniques," "higher education for accountants," accountants with "CPA designation"
Leadership/Culture	"Visionary leadership," "strategic leadership," "organization culture," "acceptance of accountants as true business partners"
Company structure	"Elimination of silos within an organization. Matrix structures seem to be the ideal model," "company structure," "business integration"
Intensity of competition	"Competitive intensity," "competitive market place," "competition moving toward the adoption of SMA techniques"
Environmental uncertainty	"Industries where significant change takes place," "the dynamism," "market dynamics," "ever changing customer expectations"

Table 4.19

Factors Identified as Barriers to SMA Adoption

Themes	Items/Comments
Resource constraints	"Time," "workload," "cost," "training," "number of qualified individuals to perform SMA in an organization," "technology or system/data constraints," "personnel capacity limitations"
Cost/Benefit	"Value/impact," "lack of understanding of value SMA can bring"
Complexity	"Complexity," "too rigid to adapt to changing conditions," "cumbersome," "lack of insights; tons of data but difficult to find the drivers that matter," "alignment on how to calculate and measure SMA"
Resistance to change	"Preference to using established techniques," "leadership resistance to collaboration and cultural factors in some areas"
Lack of support	"Non progressive leadership," "lack of top-level management support/push for the adoption," "poor management"
Other	"Closed and protected industries – less of an impetus to innovate"

Respondents offered additional commentary indicating that it is imperative "finance be seen as a business partner not just performance of accounting functions," that SMA is "a relevant corporate topic" and "should be a key business process in any for-profit organization." In addition, it was believed that there will be "a huge growth in the value provided by SMA and the willingness of other leadership teams to invite our professionals to the table." One respondent found SMA to be "an interesting topic and one that many companies needs to focus on" and another referred to SMA as "the sure and advance way of meeting with dynamism in the business world." An insightful comment by yet another respondent about data analytics and SMA was that "it has taken a long time to position the data as valuable and impactful for long-term planning within the organization." A comment regarding education and application was that "there needs to be a bigger focus on accountants to learn and be on top of these strategic management

accounting techniques. Depending on your background, you may or may not use these skills and how they are applied can vary widely."

Summary of analysis. Data were collected from a broad cross-section of Canadian companies in various industries using an online survey. The survey questions measured the degree of SMA techniques usage, and the various contingency factors believed to have an influence on SMA techniques usage and firm performance. Analysis of the quantitative data was performed using SPSS and the relationships among the variables was determined using regression analysis and SEM. The initial model was tested (Figure 4.1) and after further analysis a final, better fitted SMA model (Figure 4.2) was produced. The results provide a validation of an original contingency model for SMA usage. In addition, qualitative data were gathered. The qualitative data were summarized into themes. The underlying qualitative themes provided additional insight into what is believed to be factors that positively or negatively influence the adoption of SMA techniques.

Chapter 5. Research Findings

This chapter summarizes the research findings. The topics covered include introduction, findings, and conclusion.

Introduction

The reasons for the study arose from the perceived value of strategic management accounting and the shortage of empirical research in this field. So far, there have been inconsistent interpretations of what is considered to be SMA and their role for the firm performance (Cadez, 2006; Cadez & Guilding, 2008). To date, according to available literature, there have been no known empirical studies of SMA techniques in Canada. Further insight regarding SMA techniques and their influence for the firm can be gained by studying the use of SMA practices in a Canadian setting.

The main purpose of this study was to determine how firm performance is affected by the application of SMA techniques that are influenced, in turn, by a set of contingent variables. The SMA techniques chosen for this study included 16 of the most accepted techniques from previous relevant studies: (a) attribute costing, (b) benchmarking, (c) brand valuation, (d) competitive position monitoring, (e) competitor cost assessment, (f) competitor performance appraisal, (g) customer profitability analysis, (h) integrated performance measurement, (i) life cycle costing, (j) lifetime customer profitability analysis, (k) quality costing, (l) strategic costing, (m) strategic pricing, (n) target costing, (o) valuation of customers as assets, and (p) value chain costing. The contingent variables believed to be related to SMA techniques usage and to have an impact on firm performance were derived from a review of literature (Cadez & Guilding, 2008; Calantone et al., 2002; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus, 2002; Jaworski & Kohli, 1993; Kumar, Kimzan & Sert, 2012; Lay &

Jusoh, 2012; Said et al., 2010; Soobaroyen & Poorundersing, 2008; Uzkurt et. al., 2012). In this study, the contingent variable included: (a) size of firm, (b) environmental uncertainty in which a firm operates, (c) competitive intensity of the environment in which a firm operates, (d) market orientation of the firm, (e) strategic orientation of the firm, (f) organizational culture, (g) firm organizational structure, (h) firm performance, and (i) accountant involvement in strategic decision making.

The following subsections include discussion of the findings in relation to the research questions and hypotheses proposed in Chapters One and Three.

Findings

Extent to which Canadian companies are involved in SMA. Research question three asks to what extent are Canadian companies involved in SMA. Table 4.6 shows the listing of 16 SMA techniques with mean scores using a seven-point Likert scale. The five SMA techniques with the highest average usage rates were (a) benchmarking (4.43); (b) competitor position monitoring (4.42); (c) customer profitability analysis (4.42); (d) strategic pricing (4.33); and (e) integrated performance measurement (4.11). The five techniques that had the lowest usage were: (a) value chain costing (2.85); (b) quality costing (3.15); (c) attribute costing (3.23); (d) life cycle costing (3.28); and (e) lifetime customer profitability analysis (3.42).

Most of the usage levels were consistent with previous findings (Cadez, 2006) except for customer profitability analysis usage that was higher, and value chain costing and quality costing that were much lower. The explanation for the lower usage rates is likely due to Cadez's research sample being comprised of 56% companies in the manufacturing sector, whereas the sample for the current study consisted of only 14% in manufacturing. Value chain costing and quality costing are techniques that are more likely to be used in manufacturing.

It is interesting to note that the use of SMA was slightly higher in the service industries (e.g., education services, and finance and insurance industries) when compared to the goods-producing industries such as agriculture, mining, and manufacturing sectors (see Table 4.5). This finding was inconsistent with Cadez (2006) who found that in the manufacturing sector, usage levels were relatively higher than the financial/real estate sector. Similar studies focused on the manufacturing sector only (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Lay & Jusoh, 2012) so evidence of the increased usage of SMA practices in the service sector supports the diffusion of SMA.

Contingency factors' influence on the adoption of SMA. What is the relationship of the contingency factors to SMA usage? Research question one from Chapter One inquires about the influence of the key contingency factors on the adoption of strategic management accounting techniques. Hypotheses H1 to H8 outlined in Chapter Three propose that SMA is positively associated with the contingency factors (a) company size; (b) environmental uncertainty; (c) intensity of competition; (d) market orientation; (e) strategic pattern; (f) strategic mission; (g) strategic position; (h) organization culture (innovation and learning); (i) organization structure; (j) accountant involvement in strategic decision making; and (j) company performance.

Table 4.12 showed the correlations among SMA usage, contingency factors, and company performance. Significant correlations were found at both the .01 and .05 level for many individual SMA techniques and contingency factors. The three SMA techniques having the highest (absolute values) overall average correlations to contingency factors were (a) integrated performance measurement, (b) competitor position monitoring, and (c) strategic costing. These results are not surprising, as these techniques are among several SMA techniques that are frequently used (Cadez, 2006) and SMA usage has been shown to have a significant correlation

to contingency factors (Cadez & Guilding, 2008). The SMA techniques with the lowest (absolute values) overall average correlations to contingency factors were (a) lifetime customer profitability analysis, (b) target costing, and (c) valuation of customers as assets. SMA usage (aggregate) had significant correlations at either the .01 or .05 level to contingency factors: (a) company size, (b) market orientation, (c) strategic position, (d) organization culture, (e) organization structure, and (f) accountant involvement.

A regression analysis was run with SMA usage as the dependent variable and the contingency factors as independent variables (see Table 4.15). The R-square value was 0.394 (final model), indicating that 39.4% of the total variation in SMA usage can be explained by the variation in the contingency factors.

Table 5.1 summarizes the list of hypotheses and indicates the results in which findings were supported or unsupported, based on final SEM Model in Figure 4.2:

Table 5.1

Results for Hypotheses H1 to H9

Hypothesis	Supported/Unsupported
H_1. Company size is positively associated with SMA usage	Supported
H_2. Environmental uncertainty is positively associated with SMA usage	Unsupported
H_3. Intensity of competition is positively associated with SMA usage	Unsupported
H_4. Market orientation is positively associated with SMA (customer accounting) usage	Unsupported
H_{5a}. A company's business strategy pattern (prospector) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance)	Unsupported
H_{5b}. A company's strategic pattern (defender) is positively associated with SMA usage (costing)	Unsupported
H_{5c}. A company's strategic mission (build) is positively associated with SMA usage	Unsupported
H_{5d}. A company's strategic position (differentiator) is positively associated with SMA usage (competitor accounting, strategic accounting, customer accounting, and performance)	Supported (performance) Unsupported (competitor accounting, strategic accounting, customer accounting)
H_{5e}. A company's strategic position (cost leader) is positively associated with SMA usage (costing)	Supported (costing)
H_6. Organization culture (innovation and learning) is positively associated with SMA usage	Unsupported
H_7. A decentralized organization structure is positively associated with SMA usage	Unsupported
H_8. Accountant involvement in strategic decision making is positively associated with SMA usage	Supported
H_9. SMA usage is positively associated with company performance	Supported

Supported and consistent. Support for H1 (company size) was consistent with other studies (Cadez & Guilding, 2008; Guilding, 1999). There was also support for H5e strategic position (costing), consistent with Cinquini & Tenucci's (2010) findings. The supported finding

for H8 accountant involvement and H9 company performance was consistent with Cadez & Guilding (2008).

Supported and inconsistent. There was support for H5d strategic position (performance), which was not consistent with Cinquini & Tenucci (2010). Support for a significant relationship between strategic position (cost leader/differentiator) and the SMA theme of performance means that the SMA techniques of benchmarking and integrated performance measurement are used to a greater extent in companies with a strategic position of cost leadership (as opposed to a differentiator position). Cinquini & Tenucci's rationale for not finding support was that different strategies do not clearly imply different orientations in the adoption of SMA techniques. Therefore, given the inconsistent finding, further exploration of other variables is required to achieve a better understanding of how business strategy influences the adoption of SMA techniques.

Unsupported and consistent. The finding for H3 (intensity of competition) was unsupported. This finding is consistent with Guilding & McManus (2002) who found a weak relationship between competition intensity and customer accounting. H4 (market orientation) was not supported but was consistent with Cadez & Guilding (2008). In addition, the unsupported finding for H5a (pattern-prospector) being positively associated with SMA usage was consistent with Cinquini & Tenucci (2010).

Unsupported and inconsistent. The unsupported findings for H5b (pattern-defender) and H5c (mission-build) and H5d (strategic position-differentiator) were not consistent with Cinquini & Tenucci (2010) who found a positive relationship between SMA usage and pattern-defender, and SMA usage and mission-build and SMA usage (competitor accounting, strategic accounting, customer accounting) and strategic position-differentiator factors.

New factors included in current SMA study. Hypotheses H2 environmental uncertainty (Uzkurt et al., 2012; Jaworski & Kohli, 1993), H6 organization culture (Calantone et al., 2002), and H7 organization structure (Olsen, 2005) were included in prior non-SMA contingency based studies. The unsupported finding in this current study for these contingency factors and SMA usage added to the SMA body of knowledge.

It had been shown that when perceived environmental uncertainty is high, managers require more sophisticated information (Gul & Chia, 1994). Thus, the unsupported finding in this study for environmental uncertainty and SMA usage was not expected. The finding of no association for organization culture (innovation and learning) and SMA usage is surprising and inconsistent with Chia and Koh (2007) who found that organization innovation contributes positively to an increase in the level of adoption of management accounting practices; it would make sense that learning organizations would be more open to adopting innovative techniques and practices. Also, the unsupported finding for organization structure (decentralization) and SMA usage was unexpected as it has been shown that there is a positive relationship between decentralization, and level of quality and sophistication of management accounting systems (Soobaroyen & Poorundersing, 2008).

SMA usage and company performance. Research question two asks how the use of SMA affects organizational performance and Hypothesis 9 proposes that SMA usage is positively associated with company performance. There is a significant positive correlation of company performance with almost all individual SMA techniques. SMA usage (aggregate) is positively associated with company performance with a correlation of 0.341 at the 0.01 level (Table 4.12).

A regression was run (Table 4.16 Set 4) using three antecedents, namely SMA usage, strategic position, and market orientation as independent variables, The adjusted R-square value was 0.371, which indicates that 37.1% of the variation in company performance can be explained by SMA usage, strategic position, and market orientation. The same value was obtained from the final SEM fitted model (Figure 4.2) with adjusted R^2 =37.1%.

Factors believed to influence the adoption of SMA techniques. Qualitative responses from 55 respondents indicated that the factors that positively influenced SMA usage were (grouped into themes): (a) perceived usefulness; (b) ability to achieve results; (c) link to strategic planning; (d) awareness and education; (e) leadership/culture; (f) company structure; (g) intensity of competition; and (h) environmental uncertainty. Barriers to SMA adoption included: (a) resource constraints (time, workload, cost, training); (b) cost/benefit, difficult to use (complex, cumbersome); (c) resistance to change, lack of support (from management); and (d) other (protected industries—less impetus to innovate).

Some of the same or similar factors mentioned by respondents were investigated in the current and/or prior studies: (a) perceived merit, (b) deliberate strategy orientation, (c) company structure, (d) intensity of competition, and (e) environmental uncertainty. The factor of perceived merit has been shown to have a positive relationship to customer accounting (Guilding & McManus, 2002). “As well, deliberate strategy orientation (link to strategic planning) had a positive association to SMA usage (Cadez & Guilding, 2008). The finding for intensity of competition and SMA usage was unsupported in this study, and only weak support was found by Guilding & McManus (2002). The other two factors proposed by respondents, namely company structure and environmental uncertainty, were included in the current study and no association was found. Given the inconsistent or unsupported findings for intensity of competition, company

structure, and environmental uncertainty, further investigation of these factors is warranted. In addition, one of the respondents mentioned that for company structure, a “matrix structure seem [*sic*] to be the ideal model” which is a great suggestion to consider in future studies. The current study considered company structure only as a scale measuring the degree of centralization/decentralization.

Some new ideas were extracted from the qualitative responses regarding factors to consider in future SMA research, including (a) measuring the results achieved by SMA usage, (b) awareness and education, (c) leadership/culture, (d) resource constraints, (e) cost/benefit, (f) complexity, (g) resistance to change, and (h) management support.

Discussing the final contingency model of SMA. The correlations and linear regressions in the previous sections for SMA techniques, SMA usage, contingency factors, and company performance provide a partial analysis of the relationships among the various variables. However, the use of AMOS SEM to produce a structural equation model that simultaneously analyzes the various relationships is very powerful in determining the best fitting model for the SMA data collected on Canadian companies. Figure 4.1 illustrates the results for the relationships hypothesized in Figure 3.2. The indices used to measure model fit were NFI = 0.88, CFI = 0.88, and IFI = 0.90. Given that the acceptable threshold for good model fit is 0.95 for NFI and IFI, and 0.90 for CFI, the initial fitted model fell short of the cutoff criteria. Further SEM analysis was performed to determine a model with a greater degree of fit. Figure 4.2 provides a dynamic view of the various relations among variables and the model fitted to the data. The final model provides a greater degree of fit based on the acceptable standards for indices with the following results: NFI = 0.966, CFI = 0.985, and IFI = 0.988.

The final model in Figure 4.2 differs from the initial model in Figure 4.1 in that the final model has three antecedents to company performance: (a) SMA usage, (b) market orientation, and (c) strategic position; while the initial model has only one antecedent, SMA usage. In addition, the number of SMA techniques changed from 16 to 11 for SMA usage aggregate (i.e., attribute costing, benchmarking, competitor cost assessment, competitive position monitoring, competitor performance appraisal, customer profitability analysis, integrated performance measurement, life cycle costing, quality costing, strategic costing, and strategic pricing). The five SMA techniques excluded in the final model were: (a) brand valuation, (b) lifetime customer profitability analysis, (c) target costing, (d) valuation of customers as assets, and (e) value chain costing. The addition of the two antecedents strategic position and market orientation substantially increased R^2 for company performance from 0.127 to 0.371. As well, the final model fit indices increased to an acceptable threshold for NFI, CFI, and IFI that were found to be below the acceptable threshold in the initial model.

A closer look at the 11 SMA techniques selected for the final model is warranted. These SMA techniques were grouped into themes and compared to the initial list (see Table 4.14). It is interesting to note that the new list covers all of the five categories: (a) costing, (b) performance, (c) competitor accounting, (d) strategic accounting, and (e) customer accounting. The five SMA techniques excluded in the new list were (a) target costing, (b) value chain costing, (c) brand valuation, (d) lifetime customer profitability analysis, and (e) valuation of customers as assets. The revised SMA techniques listing preserves the coverage in all five categories indicating the importance of all five themes for SMA practices. Having a relevant mix of SMA practices will increase the effectiveness of SMA.

There were significant findings (see Figure 4.2) for the regression values for SMA usage as dependent variable with independent contingency variables: (a) company size (0.200*); (b) strategic position (-0.219**); and (c) accountant involvement in strategic decision making (0.185*). As well, there were significant findings for Company performance as dependent variable with contingency variables: (a) market orientation (0.487***); and (b) strategic position (0.210**). SMA usage as a predictor of company performance was significant with a regression value of 0.188* at $\rho < 0.05$. The R^2 values were 0.394 for SMA usage and 0.371 for company performance. Table 5.2 summarizes the significant results.

Table 5.2

Final SMA Model Coefficients (Standardized)

Dependent Variable	Independent Variable	Coefficient	Comments
SMA usage	Company size	0.200*	Sig. at $\rho < 0.05$
	Strategic position	-0.219**	Sig. at $\rho < 0.01$
	Accountant involvement	0.185*	Sig. $\rho < 0.05$
Company performance	SMA usage	0.188*	Sig. at $\rho < 0.05$
	Strategic position	0.210**	Sig. at $\rho < 0.01$
	Market orientation	0.487***	Sig. at $\rho < 0.001$

Some of the findings were consistent with prior research. Company size had long been positively associated with greater management accounting complexity (Guilding, 1999; Merchant, 1981). The significant finding of strategic position (differentiator/cost leader) positively associated with SMA usage is consistent with Cinquini & Tenucci (2010), as a company following a cost leadership strategy would require extensive cost information. It was no surprise to see that accountant involvement in strategic decision making was significant in the adoption of SMA, particularly since the correlation from Table 4.12 between SMA use and

accountant involvement were significant at $\rho < 0.01$. This finding for accountant involvement is consistent with Cadez & Guilding's (2008) significant finding for accountants' participation in strategic decision-making processes impact on SMA usage. Further insight from the qualitative data gathered from respondents indicates that some barriers to SMA adoption include resource constraints such as time, workload, cost, and training; some respondents indicated that SMA techniques are "complex" and "cumbersome." This may help explain why accountants have not fully adopted SMA.

The contingency factors proposed in this study that did not have a significant relationship with SMA usage were (a) environmental uncertainty; (b) intensity of competition; (c) market orientation; (d) strategic pattern (prospector/defender); (e) strategic mission (build/harvest); (f) organization culture; and (g) organization structure. Each of these were discussed in more detail earlier in this chapter in Contingency factors' influence on the adoption of SMA.

SMA usage as a predictor of company performance was significant and is consistent with other SMA research (Cadez & Guilding, 2008; Lay & Jusoh, 2012). A major difference between the initial SMA model and the final SMA model was the addition of two direct links, strategic position and market orientation to company performance, with strategic position significant at $\rho < 0.01$ and market orientation significant at $\rho < 0.001$. Strategic position had significant associations with both SMA usage and company performance. The finding for strategic position and company performance was consistent with Lay & Jusoh's (2012) finding for differentiation strategy (strategic position) and firm performance. The significant finding for market orientation on company performance is consistent with Cadez & Guilding (2008) who found that there was a very strong (sig. $\rho < 0.05$) direct relationship between market orientation and performance. It is not surprising to find that market orientation had a significant, direct impact on company

performance. Narver and Slater (1990) found that market orientation had a positive substantial effect on firm performance. The long-term and competitor focus of market orientation aligns with the essence of SMA.

It was interesting to note that when determining the final fitted SMA model, including contingency factors such as organization culture or organization structure as direct links to company performance did not really increase the total variation explained (R^2) in company performance. Further analysis found that there were significant covariances for organization culture and market orientation, as well as organization structure and market orientation. The final model already included market orientation as being a significant predictor of company performance. Thus, it is concluded that having more predictor variables (contingency variables) may not necessarily increase the explanation in variation (R^2) in a dependent variable (company performance).

Chapter 6. Conclusions

This chapter summarizes the current study. It includes a reminder of what has already been discussed in the previous chapters on the rationale/motivation for the study, the research problem and questions, and the limitations of the study. As well this chapter provides the theoretical and applied contributions, recommendations for future research and final conclusions.

Summary of Motivation and Research Problem

The reasons for the study arose from the perceived value of strategic management accounting and the shortage of empirical research in this field. So far, there have been inconsistent interpretations of what is considered to be SMA and its role in firm performance (Cadez, 2006; Cadez & Guilding, 2008). To date, according to available literature, there have been no known empirical studies of SMA techniques in Canada. Further insight regarding SMA

techniques and their influence for the firm can be gained by studying SMA practices usage in a Canadian setting.

Therefore, the main purpose of the study was to determine how firm performance is affected by the application of SMA techniques that are influenced, in turn, by a set of contingent variables. The SMA techniques chosen for this study consisted of 16 of the most accepted techniques in previous relevant studies: (a) attribute costing, (b) benchmarking, (c) brand valuation, (d) competitive position monitoring, (e) competitor cost assessment, (f) competitor performance appraisal, (g) customer profitability analysis, (h) integrated performance measurement, (i) life cycle costing, (j) lifetime customer profitability analysis, (k) quality costing, (l) strategic costing, (m) strategic pricing, (n) target costing, (o) valuation of customers as assets, and (p) value chain costing. The contingent variables believed to be related to SMA techniques usage and to have an impact on firm performance were derived from a review of literature (Cadez & Guilding, 2008; Calantone et al., 2002; Cinquini & Tenucci, 2010; Cravens & Guilding, 2001; Guilding, 1999; Guilding & McManus, 2002; Jaworski & Kohli, 1993; Kumar, Kimzan & Sert, 2012; Lay & Jusoh, 2012; Said et al., 2010; Soobaroyen & Poorundersing, 2008; Uzkurt et al., 2012). The contingent variables included: (a) size of firm, (b) environmental uncertainty in which a firm operates, (c) competitive intensity of the environment in which a firm operates, (d) market orientation of the firm, (e) strategic orientation of the firm, (f) organizational culture, (g) firm organizational structure, (h) firm performance, and (i) accountant involvement in strategic decision making.

Three research questions guided this study.

- Research question one: What is the influence of the key contingency factors on the adoption of strategic management accounting techniques?

- Research question two: How does the use of strategic management accounting techniques affect organizational performance?
- Research question three: To what extent are Canadian companies involved in strategic management accounting practices?

Contributions

This investigation provides several theoretical and applied contributions from research that draws upon quantitative and qualitative empirical data. In addition, as the study was both confirmatory and exploratory in nature, it provides evidence complementary to SMA theory.

Theoretical contributions. A key theoretical contribution of the study is the construction and testing of a comprehensive contingency-based SMA model of several contextual and/or contingency variables, and their influence on SMA usage and on firm performance. Prior contingency studies had been performed in bits and pieces, with only one or two factors being investigated at one time. The study offers greater coherence by testing a comprehensive contingency-based model of SMA adoption and use.

Several contingency factors were investigated together in the current research: (a) company size; (b) environmental uncertainty; (c) intensity of competition; (d) market orientation; (e) strategic pattern; (f) strategic mission; (g) strategic position; (h) organization culture (innovation and learning); (i) organization structure; and (j) accountant involvement in strategic decision making. While many of these factors had been included in prior SMA studies, some new factors were believed to influence SMA usage: (a) environmental uncertainty, (b) organization culture, and (c) organization structure. In this research, all these contingency factors, SMA usage, and company performance were brought together in one model to test and provide insight on what effects these factors have on SMA usage, and in turn, how SMA usage

impacts company performance. The comprehensive model design allowed for testing the multitude of hypotheses and complex relationships (indirect and direct effects) simultaneously, using SEM.

In addition, the collection and analysis of qualitative responses regarding factors influencing the adoption of SMA provided further insights. Factors believed to impact SMA usage and that should be given future consideration are (a) leadership style, (b) awareness and education, (c) cost/benefit, (d) complexity, (e) resistance to change, and (f) management support.

Applied contributions. The applied contribution of the study is the quantitative evidence of the degree to which SMA techniques are adopted in Canadian companies, and the effect that the use of SMA techniques and the influence that contingency factors have on firm performance.

By testing the initial model of SMA usage (Figure 3.2), a depiction of the relationships among the various contingency factors, SMA usage, and company performance emerged (Figure 4.1). A final more parsimonious fitted model (Figure 4.2) was produced that is compatible with underlying SMA theory and extends prior SMA research. The best model fit for the final contingency model of SMA is when SMA usage is specified as consisting of 10 contingency factors (i.e., company size, environmental uncertainty, intensity of competition, market orientation, strategic pattern, strategic mission, strategic position, organization culture, organization structure, and accountants' involvement in strategic decision making) and company performance is specified as having three contingency factors (i.e., SMA usage, market orientation, and strategic position). It was found that when SMA usage is the aggregate of 11 SMA techniques (i.e., attribute costing, benchmarking, competitor cost assessment, competitive position monitoring, competitor performance appraisal, customer profitability analysis,

integrated performance measurement, life cycle costing, quality costing, strategic costing, and strategic pricing), this provided a better fitted model than when SMA use included all 16 of the SMA techniques believed to influence company performance. Thus, it has been shown that the right mix of SMA techniques usage can create a stronger relationship with contingency factors and company performance. In addition, the reduction in the list of SMA techniques to include only those that have a significant association with contingency factors (Table 4.13) is more cost effective as it represents a cost savings of 31% to management implementation of SMA practices.

The quantitative findings from the structural model support some of the hypothesized relationships. It was found that contingency factors company size (H1), strategic position (H5d, H5e), and accountant involvement in strategic decision making (H8) had an impact on SMA usage. In addition, the factors having a significant association with company performance were SMA usage (H9), strategic position, and market orientation.

The research supports contingency theory of management accounting (Gordon & Miller, 1976) that showed how management accounting systems (SMA usage) can have an effect and be affected by organizational and external contingencies. A company's performance is dependent on the fit between a company's structure and other contingency variables (Chenhall, 2003).

Limitations

As any empirical research, this study may include some limitations beyond researcher's control. Some of these factors for this study are:

1. The SMA techniques list may not be comprehensive and inclusion of some specific techniques may be subject to interpretation. The list of 16 SMA techniques to date are the

most popular and considered complete; future studies should consider other or additional techniques that may be conceived.

2. The list of contingency factors may be incomplete, but no study can claim exhaustivity. Nonetheless, the factors considered in this study have been included in prior SMA studies (Cadez, 2006; Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Guilding & McManus, 2002; Lay & Jusoh, 2012; Said et al., 2010) as well as in non-SMA studies (Calantone et al., 2002; Jaworski & Kohli, 1993; Soobaroyen & Poorundersing, 2008; and Uzkurt et al., 2012). The current study has acquired qualitative data suggesting additional factors such as (a) leadership style; (b) awareness and education, (c) cost/benefit; (d) complexity; (e) resistance to change, and (f) management support could be considered for future research.
3. The study took a quantitative approach and an online survey was utilized. Given the non-experimental methodology, the correlation of variables does not imply that a causal relationship exists (Van der Stede, 2014). As this study is based upon a cross-sectional survey, it cannot explore causality. It is suggested that future studies of SMA consider a longitudinal approach so that developments in SMA usage can be detected over a longer period of time.
4. The sample used was one of convenience derived from the Canadian Company Capabilities (CCC; Industry Canada, 2017) and CanWest Interactive's Infomart (2018) databases, and relied on the sampled individuals' willingness to respond to the survey. Therefore, sampled companies might not be representative of the population of Canadian companies. In order to increase response rates, contacting sampled companies initially by postal mail and following up with a phone call would likely increase response rates.

Recommendations for Future Research and Final Conclusions

Future research should focus on testing contingency factors believed to influence the use of SMA techniques and the impact on firm performance. The current research found a fitted model that had a significant positive association between SMA usage and two factors, namely company size and strategic position. There were also significant findings for positive associations between company performance and each of three factors, namely SMA usage (mediating), strategic position (direct) and market orientation (direct). In addition, a significant association was found between SMA usage and accountant involvement in strategic decision making. There was no significant support for many of the other contingency factors and SMA usage. Due to the unsupported findings from the current research and/or inconsistent findings from prior studies, further research for the following contingency factors: (a) environmental uncertainty, (b) intensity of competition, (c) strategic pattern, (d) strategic mission, (e) organization culture, and (f) organization structure would help to further our understanding of SMA adoption. In addition, suggestions made by respondents from the current study highlighted other factors that should be considered such as (a) leadership style; (b) awareness and education; (c) cost/benefit; (d) complexity;(e) resistance to change; and (f) management support.

Qualitative research using a case study approach on SMA practices within organizations would provide richer insights. In particular, there is strong indication that SMA awareness and education is of utmost importance in influencing SMA usage and enhancing the diffusion of SMA. Future research should consider the educational aspects of SMA usage such as the training of professional accountants and financial analysts for their roles in an ever increasingly competitive business environment. Research on how accountants and financial analysts

collaborate as business partners within business units of companies will help to shed greater light on how SMA is used to facilitate business decision making.

To date, much of the SMA research has focused on the manufacturing sector. SMA investigation in the service sector would add to the growing body of SMA knowledge. The use of SMA techniques can vary across industries, and this should be explored to achieve a better understanding of how SMA usage can be tailored to fit the needs and circumstances of specific sectors.

While the current research is thought to include one of the most thorough contingency models developed to date, it is certainly not complete. Additional research that examines factors related to SMA usage and the impact on firm performance is recommended. Given the unsupported and inconsistent findings to date for several factors, we are still in the early phase of developing a sturdy theory of SMA usage.

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Appendix A: Glossary of SMA techniques

Attribute costing. Costing of the benefits that products provide for customers. Viewing product attributes as cost objects and matching product attributes to consumers' tastes (Bromwich, 1990; Roslender & Hart, 2003).

Benchmarking. The comparison of internal processes to an ideal standard within and across industries. Identifying "best practices" to improve business processes (Elnathan, Lin, & Young, 1996, p.39).

Brand valuation. Measurement of the net present value of the future earnings stream of a brand (Wood, 2000).

Competitor cost assessment. A systematic approach to competitor cost analysis which usually involves estimating competitor's cost structure, products and product's costs in the production process (Jones, 1988) and appraising competitors' manufacturing facilities, economies of scale, governmental relationships and technology product design (Bromwich, 1990).

Competitive position monitoring. A comprehensive approach to competitor assessment including the appraisal of major competitors' sales, market share, volume, and unit sales (Simmonds, 1986).

Competitor performance appraisal. The numerical analysis of a competitor's published statements as a part of an assessment of a competitor's key sources of competitive advantage. This can include data such as competitor's trends in sales, profit levels, asset and liability movements (Moon & Bates, 1993).

Customer profitability analysis. This involves calculating profit earned from a specific customer. The profit calculation is based on costs and sales that can be traced to a particular

customer. This technique is sometimes referred to as customer account profitability (Bellis-Jones, 1989; Ward, 1992a).

Integrated performance measurement. A measurement system which focuses typically on acquiring performance knowledge based on customer requirements and may encompass non- financial measures. This measure involves departments monitoring those factors which are critical to securing customer satisfaction (Ittner, Larcker & Randall, 2003; Kaplan & Norton, 1992).

Life cycle costing. View costs long-term by appraising the costs of the different stages of a product's life (design, introduction, growth, maturity, and decline) (Dunk, 2004).

Lifetime customer profitability analysis. This involves extending the time horizon for customer profitability analysis to include future years. The practice focuses on all anticipated future revenue streams and costs involved in servicing a particular customer (Foster & Gupta, 1994).

Quality costing. Analyzing costs of quality which include prevention, appraisal and failure costs (Heagy, 1991; Tayles, Woods, & Seary, 1996).

Strategic costing. Cost analysis which considers strategic issues; combining cost accounting and strategy to analyze firm's cost structure (Shank & Govindarajan, 1988).

Strategic pricing. Competitive oriented analysis of pricing such as competitor price reaction, price elasticity, projected market growth and economies of scale (Simmonds, 1982).

Target costing. Designing a product with a target cost and striving to maintain that product cost in order to achieve a target profit (Brausch, 1994; Morgan, 1993).

Valuation of customers as assets. The technique refers to the calculation of the value of customers to the company. For example, this could be undertaken by computing the present

value of all future profit streams attributable to a particular customer (Guilding & McMannus, 2002).

Value chain costing. Costing approach that builds on Porter's (1985) concept of analysis of the value adding activities of an organization (Shank & Govindarajan, 1992). Emphasis is placed on the analysis of costs and cost drivers within the value chain.

Appendix B: Sample size calculations

7-point Likert scale (continuous data)

Almost all the survey items are using a 7-point scale. Calculation of the sample size required for 7-point scale using formula (Bartlett, Kotrlik, & Higgins, 2001).

$$N = \frac{(t)^2 * (s)^2}{(d)^2} = \frac{(1.96)^2(1.167)^2}{(7*.03)} = 118$$

t = value for alpha of 0.05 or 0.025 in each tail 1.96, the level of risk that the true margin of error may exceed the acceptable margin of error

s = estimate of standard deviation, 1.167 (7 point scale divided by 6 range)

d = acceptable margin of error = Number points on primary scale * acceptable margin of error = 7 x .03 = 0.21

Cross-tabulation calculation (categorical data)

Cross-tabulation is a technique for comparing data from two or more categorical variables (Cooper & Schindler, 2011). As a general rule of thumb, that the desired number of observations for each cell is 10 (Fienberg, 2007) and the largest crosstab will be = 2 x 5. Then sample size calculation would be 2 x 5 x 10 = 100. 2 = number of company groups (small+ medium, large + very large) and 5 = industry growth/decline (Q5). There is no plan to crosstab subdivisions of goods and service producing industries (Q6).

Sample size of a Proportion

The sample size calculation involving proportions is included in order to categorize sampled data, i.e. proportion of companies that use SMA techniques, proportion of companies that do not use SMA techniques. Calculate sample size using:

B= SQRT(pq/n) where B = the standard error of the proportion, pq = measure of sample dispersion, n = sample size.

Since probable value of p is not known, use p = .5. B = 0.05 (subjective decision). B = two components, 0.10/2 =.0.05, where 0.10 = desired interval range and 2 = 95% confidence interval range, rounded up from 1.96

0.05=SQRT (0.5 x0.5/n)

n = 100

Sample size calculation for SEM & CFA

The confirmatory factor analysis is used to test the measures of the construct; in other words, whether the data fit the hypothesized measurement model. It has also been proposed that a sample size of 200 or more would be required to produce valid fit measures and to avoid inaccurate inferences (Smith & Langfield-Smith, 2004; Herda, 2013). While a sample size of 200 is considered appropriate for SEM, there have been new test statistics developed that allow for model estimations with as small as 60 participants (Bentler & Yuan, 1999). In another scholarly article, minimum sample sizes ranging from 132 to 187 were acceptable (MacCallum, Browne, & Sugawara, 1996). It had been suggested by (Marsh, Hau, Balla & Grayson, 1998) that a higher value of indicator (item) to factor (construct), expressed as *p/f* is better when sample size (N) is small. Boomsma (1982) recommended that at minimum N=100 when *p/f* = 3 or 4 and that N=50 is sufficient when *p/f* = 6 or 12. This current study has 76 items and 10 constructs, *p/f* = 7.6. Thus, for this study a sample size of 150 would be more than sufficient.

Choose the greatest of the four calculations, 150 as sample size. To allow for high non response rate the number of sampled companies will be equal to 1,000 (6.67 x 150) will be

drawn from CCC database (Industry Canada, 2017). Thus, sample size will be equal to 1,000.

Proportionate Strata Sampling

Size	# Employees	# of Companies	% of Total	**Proportionate Sample**
Small	101 to 250	1,395	55%	**550**
Medium	251 to 500	565	22%	**220**
Large	501 to 1000	267	10%	**100**
Very Large	1000+	330	13%	**130**
Total		2,557	100%	**1,000**

Note. Sample size of a proportion is computed in a similar manner as *Business Research Methods, 11th ed.*, by D.R. Cooper & P.S. Schindler, 2011, New York, NY: McGraw-Hill/Irwin. Proportionate strata sampling # companies from CCC database (Industry Canada, 2017).

Appendix C: Strategic management accounting survey

Welcome to the Strategic Management Accounting Survey!

Thank you for agreeing to take part in this important survey which measures innovative business / management accounting practices in Canada. The survey will take approximately 20 minutes to complete. Be assured that all answers you provide will be held in the strictest confidentiality. There are no known risks in responding to the online questionnaire. Participation in this survey is completely voluntary and you may withdraw from the survey at any point. Completion of the survey will indicate your willingness to participate in this study.

The data collected will provide useful information on strategic management accounting practices in Canada. If you would like a summary copy of this study, please email me at pamela.quon@fb.athabascau.ca requesting the "study results for strategic management accounting". If you need additional information or have any questions please do not hesitate to contact me at pamela.quon@fb.athabascau.ca or by phone at 1-866-213-0822.
This research has been reviewed and approved by the Athabasca University Research Ethics Board. If you have questions or concerns on this study, you may contact the Research Ethics Board at 1-780- 675-6718 or by e-mail at rebsec@athabascau.ca, or my doctoral supervisors Dr. Mihail Cocosila at mihail.cocosila@fb.athabascau.ca or Dr Eric Wang at eric.wang@fb.athabascau.ca .

Please select the best choice for each question / multi-part question as it pertains to your organization.

Company Environment

1. To what extent do you agree with the following statements?

	1 Strongly Disagree	2 Disagree	3 Mildly Disagree	4 Neutral	5 Mildly Agree	6 Agree	7 Strongly Agree
a. The demand of our customers varies a lot	☐	☐	☐	☐	☐	☐	☐
b. In our industry the product and brand features vary a lot	☐	☐	☐	☐	☐	☐	☐
c. In our industry the price/quality demanded by customers vary a lot	☐	☐	☐	☐	☐	☐	☐
d. In our industry, customers often take unpredictable actions	☐	☐	☐	☐	☐	☐	☐

e. The technology in our industry is changing rapidly	☐	☐	☐	☐	☐	☐	☐
f. The technology changes provide big opportunities in our industry	☐	☐	☐	☐	☐	☐	☐
g. It is difficult to forecast where the technology in our industry will be in the next two to three years	☐	☐	☐	☐	☐	☐	☐
h. A large number of new product ideas have been made possible through technological breakthrough in our industry	☐	☐	☐	☐	☐	☐	☐

2. Please indicate the perceived intensity of competition faced by your organization in respect to the following variables.

	1 Extremely Small Extent	2 Very Small Extent	3 Small Extent	4 Moderate	5 Large Extent	6 Very Large Extent	7 Extremely Large Extent
a. Selling and distribution	☐	☐	☐	☐	☐	☐	☐
b. Quality	☐	☐	☐	☐	☐	☐	☐
c. Variety of products	☐	☐	☐	☐	☐	☐	☐
d. Price	☐	☐	☐	☐	☐	☐	☐
e. Market share	☐	☐	☐	☐	☐	☐	☐
f. Customer service	☐	☐	☐	☐	☐	☐	☐

3. Indicate the importance of the following items to your company's long-term profitability and growth.

1 Extremely Unimportant	2 Very Unimportant	3 Unimportant	4 Neutral	5 Important	6 Very Important	7 Extremely important

a. Selling and distribution	☐	☐	☐	☐	☐	☐	☐
b. Quality	☐	☐	☐	☐	☐	☐	☐
c. Variety of products	☐	☐	☐	☐	☐	☐	☐
d. Price	☐	☐	☐	☐	☐	☐	☐
e. Market share	☐	☐	☐	☐	☐	☐	☐
f. Customer service	☐	☐	☐	☐	☐	☐	☐

4. To what extent do you agree with the following statements?

	1 Strongly Disagree	2 Disagree	3 Mildly Disagree	4 Neutral	5 Mildly Agree	6 Agree	7 Strongly Agree
a. My company has an understanding of our customers.	☐	☐	☐	☐	☐	☐	☐
b. The functions in my company work together to create superior value for our customers.	☐	☐	☐	☐	☐	☐	☐
c. Management in my organization thinks in terms of serving the needs and wants of well-defined markets chosen for their long-term growth and profit potential for the company.	☐	☐	☐	☐	☐	☐	☐
d. My company has a market orientation.	☐	☐	☐	☐	☐	☐	☐

Strategy, Culture & Structure

5. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

	1 The business experiences constant competition.	2	3	4 Neutral	5	6	7 The business experiences dynamic competition.
Strategic pattern A	☐	☐	☐	☐	☐	☐	☐

	1 The business has a relatively stable set of products/services	2	3	4 Neutral	5	6	7 The business has relatively frequent changes in its set of products/services.
Strategic pattern B	☐	☐	☐	☐	☐	☐	☐

	1 There is an efficiency and specialization tendency.	2	3	4 Neutral	5	6	7 There are continuous efforts to pioneer in new market areas.
Strategic pattern C	☐	☐	☐	☐	☐	☐	☐

6. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

	1 Maximize profitability in the short to medium term.	2	3	4 Neutral	5	6	7 Increase sales and market share.,
Strategic mission A	☐	☐	☐	☐	☐	☐	☐

	1 Willing to sacrifice market share to maximize profit.	2	3	4 Neutral	5	6	7 Willing to accept lower returns on investment in the short or medium term.
Strategic mission B	☐	☐	☐	☐	☐	☐	☐

	1 Company actions are independent on the actions of customers/competitors.	2	3	4 Neutral	5	6	7 Company actions dependent on the actions of customers/competitors.
Strategic mission C	☐	☐	☐	☐	☐	☐	☐

7. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

1 The main focus is to achieve low costs	2	3	4 Neutral	5	6	7 The main focus is to be unique through superior

	relative to competitors.						product features, customer service, brand image and/or performance.
Strategic positioning A	☐	☐	☐	☐	☐	☐	☐
	1 Rigorously pursues cost reductions from experience.	2	3	4 Neutral	5	6	7 Does not ignore costs but it is not the primary focus.
Strategic positioning B	☐	☐	☐	☐	☐	☐	☐
	Incentives based on meeting strict quantitative targets.	2	3	4 Neutral	5	6	7 Subjective measurement and incentives instead of quantitative measures.
Strategic positioning C	☐	☐	☐	☐	☐	☐	☐

8. To what extent do you agree with the following statements?

	Strongly Disagree	Disagree	Mildly Disagree	Neutral	Mildly Agree	Agree	Strongly Agree
a. Our company frequently tries out new ideas.	☐	☐	☐	☐	☐	☐	☐
b. Our company seeks out new ways to do things.	☐	☐	☐	☐	☐	☐	☐
c. Our company is creative in its methods of operation.	☐	☐	☐	☐	☐	☐	☐
d. Our company is often the first to market with new products and services.	☐	☐	☐	☐	☐	☐	☐

e. Innovation in our company is perceived as too risky and is resisted.	☐	☐	☐	☐	☐	☐	☐
f. Our new product introduction has increased over the last 5 years.	☐	☐	☐	☐	☐	☐	☐

9. To what extent do you agree with the following statements?

	Strongly Disagree	Disagree	Mildly Disagree	Neutral	Mildly Agree	Agree	Strongly Agree
a. Managers basically agree that our organization's ability to learn is the key to our competitive advantage.	☐	☐	☐	☐	☐	☐	☐
b. The basic values of this organization include learning as key to improvement.	☐	☐	☐	☐	☐	☐	☐
c. The sense around here is that employee learning is an investment, not an expense.	☐	☐	☐	☐	☐	☐	☐
d. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	☐	☐	☐	☐	☐	☐	☐

10. To what extent do you agree with the following statements about your organization?

	Strongly Disagree	Disagree	Mildly Disagree	Neutral	Mildly Agree	Agree	Strongly Agree
a. In this organization, decisions tend to be made at a high level.	☐	☐	☐	☐	☐	☐	☐
b. The individual decision maker has wide latitude in the	☐	☐	☐	☐	☐	☐	☐

choice of means to accomplish goals.							
c. Managers are allowed flexibility in getting work done.	☐	☐	☐	☐	☐	☐	☐
d. A person who wants to make their own decision would quickly be discouraged.	☐	☐	☐	☐	☐	☐	☐
e. Even small matters are referred to someone higher in the organization for a decision.	☐	☐	☐	☐	☐	☐	☐
f. Many important decisions are made locally rather than centrally.	☐	☐	☐	☐	☐	☐	☐
g. Middle- and lower-level managers have substantial autonomy.	☐	☐	☐	☐	☐	☐	☐

Strategic Management Accounting

11. Please indicate your company's performance in relation to competitors.

	1 Far Below Average	2 Moderately Below Average	3 Slightly Below Average	4 Average	5 Slightly Above Average	6 Moderately Above Average	7 Far Above Average	8 NA - Not Applicable
a. Return on investment	☐	☐	☐	☐	☐	☐	☐	☐
b. Margin on sales	☐	☐	☐	☐	☐	☐	☐	☐
c. Capacity utilization	☐	☐	☐	☐	☐	☐	☐	☐
d. Customer satisfaction	☐	☐	☐	☐	☐	☐	☐	☐
e. Product or service quality	☐	☐	☐	☐	☐	☐	☐	☐

f. Development of new products or services	☐	☐	☐	☐	☐	☐	☐	☐
g. Market share	☐	☐	☐	☐	☐	☐	☐	☐

12. To what extent does your organization use the following techniques? Indicate "1" (not at all) to "7" (to a great extent) or NA - not applicable to organization.

	1 Not at all	2 Very Little	3 A little	4 Somewhat	5 Often	6 Very Often	7 To a great extent	8 NA - Not Applicable
a. Attribute costing	☐	☐	☐	☐	☐	☐	☐	☐
b. Benchmarking	☐	☐	☐	☐	☐	☐	☐	☐
c. Brand valuation	☐	☐	☐	☐	☐	☐	☐	☐
d. Competitor cost assessment	☐	☐	☐	☐	☐	☐	☐	☐
e. Competitive position monitoring	☐	☐	☐	☐	☐	☐	☐	☐
f. Competitor performance appraisal	☐	☐	☐	☐	☐	☐	☐	☐
g. Customer profitability analysis	☐	☐	☐	☐	☐	☐	☐	☐
h. Integrated performance measurement	☐	☐	☐	☐	☐	☐	☐	☐
i. Life cycle costing	☐	☐	☐	☐	☐	☐	☐	☐
j. Lifetime customer profitability analysis	☐	☐	☐	☐	☐	☐	☐	☐

k. Quality costing	☐	☐	☐	☐	☐	☐	☐	☐
l. Strategic costing	☐	☐	☐	☐	☐	☐	☐	☐
m. Strategic pricing	☐	☐	☐	☐	☐	☐	☐	☐
n. Target costing	☐	☐	☐	☐	☐	☐	☐	☐
o. Valuation of customers as an asset	☐	☐	☐	☐	☐	☐	☐	☐
p. Value chain costing	☐	☐	☐	☐	☐	☐	☐	☐

13. To what extent do you agree with the following statements? "1" (strongly disagree) to "7" (strongly agree).

	1 Strongly Disagree	2 Disagree	3 Mildly Disagree	4 Neutral	5 Mildly Agree	6 Agree	7 Strongly Agree
a. Accountant(s) in my company use some or all of the techniques described in the previous question (16).	☐	☐	☐	☐	☐	☐	☐
b. Accountant(s) in my company are involved in corporate strategic decision making processes.	☐	☐	☐	☐	☐	☐	☐
c. Accountant(s) work with all functional areas to deliberate corporate strategy.	☐	☐	☐	☐	☐	☐	☐
d. Accountant(s) add value to the strategic decision making processes in my company.	☐	☐	☐	☐	☐	☐	☐

14. Indicate three major factors that positively influence the adoption of strategic management accounting (SMA) techniques in Canadian companies.

15. Indicate three factors which are major barriers to the adoption of strategic management accounting (SMA) techniques for Canadian companies.

16. Do you have any other comments about strategic management accounting?

Background

17. Please indicate whether you have a professional accounting designation or graduate degree. Select all that apply.

- o ☐ 1. CMA (legacy)
- o ☐ 2. CGA (legacy)
- o ☐ 3. CA (legacy)
- o ☐ 4. CPA
- o ☐ 5. MBA
- o ☐ 6. N/A
- o ☐ 7. Other (Please Specify)
- o

18. Province where your company's head office is located.

- o ☐ Alberta
- o ☐ British Columbia
- o ☐ Manitoba
- o ☐ New Brunswick
- o ☐ Newfoundland and Labrador
- o ☐ Northwest Territories
- o ☐ Nova Scotia
- o ☐ Nunavut
- o ☐ Ontario
- o ☐ Prince Edward Island
- o ☐ Quebec
- o ☐ Saskatchewan
- o ☐ Yukon

19. Number of employees in your company. Choose ONE of the following:

- o ☐ 101 to 250
- o ☐ 251 to 500
- o ☐ 501 to 1000
- o ☐ 1001+

20. Indicate your company's total sales per year. Choose ONE of the following:

- o ☐ $1 to $999,999
- o ☐ $1,000,000 to $4,999,999
- o ☐ $5,000,000 to $9,999,999
- o ☐ $10,000,000 to $24,999,999
- o ☐ $25,000,000 to $49,999,999
- o ☐ $50,000,000+
- o ☐ Not applicable

21. Indicate total company exports (outside of Canada) per year. Choose ONE of the following:

- o ☐ $1 to $999,999
- o ☐ $1,000,000 to $4,999,999
- o ☐ $5,000,000 to $9,999,999
- o ☐ $10,000,000 to $24,999,999
- o ☐ $25,000,000 to $49,999,999
- o ☐ $50,000,000+
- o ☐ Not applicable

22. Which of the following best describes your company?

- o ☐ Privately held (owned by a relatively small number of company members which does not trade its company shares to the general public on the stock exchange)
- o ☐ Publicly held (owned by the general public in many shares of stock which are freely traded on a stock exchange)
- o ☐ Government owned
- o ☐ Not-for-profit organization

23. How many years has your company been operating?

- o ☐ 0 to 10 years
- o ☐ 10 to 20 years
- o ☐ 20 to 30 years
- o ☐ Greater than 30 years

24. Which of the following best describes the industry in which your company operates in?

a. ☐ Has experienced rapid growth in the last 18 months.
b. ☐ Has experienced steady growth in the last 18 months.
c. ☐ Has experienced neither growth nor decline in the last 18 months.
d. ☐ Has experienced steady decline in the last 18 months.
e. ☐ Has experienced rapid decline in the last 18 months.

- o **25. Which industry does your company belong in? Please choose ONE of the following.**

- o ☐ 1. Agriculture, Forestry, Fishing and Hunting
- o ☐ 2. Mining, Quarrying, Oil & Gas Extraction
- o ☐ 3. Utilities
- o ☐ 4. Construction
- o ☐ 5. Manufacturing
- o ☐ 6. Wholesale Trade
- o ☐ 7. Retail Trade
- o ☐ 8. Transportation and Warehousing
- o ☐ 9. Information and Cultural
- o ☐ 10. Finance and Insurance
- o ☐ 11. Real Estate and Rental & Leasing
- o ☐ 12. Professional, Scientific and Technical Services
- o ☐ 13. Management of Companies and Enterprises
- o ☐ 14. Administrative & Support, Waste Management and Remediation
- o ☐ 15. Education Services
- o ☐ 16. Health Care and Social Assistance
- o ☐ 17. Arts, Entertainment and Recreation
- o ☐ 18. Accommodation and Food Services
- o ☐ 19. Other Services except Public Administration

o ☐ 20. Public Administration

26. Contact Information (optional). For related follow-up study. Click on link to go to a separate site to input your contact information.

Contact Information Link

Name

Job Title
Company Name
Address

Contact Phone Number

Email address

SURVEY IS COMPLETE! THANK YOU FOR YOUR PARTICIPATION.

Appendix D: Contact/Cover letter

Date

Dear (Participant's name):

My name is Pamela Quon; I am completing my doctoral studies at Athabasca University. For my thesis I am examining novel business / management accounting practices in Canada. Completion of this study will advance our knowledge of techniques used by Canadian firms in the areas of costing, competitor/strategic accounting, brand value accounting and performance management. A better understanding of business and management accounting practices will help to inform business and accounting education and training.

Your company was randomly drawn from a list of companies from a database of Canadian companies. I would like to invite you or an appropriate designate (such as a senior accountant or senior financial / marketing analyst who is familiar with the strategic and management accounting reporting requirements for your organization) to participate in this very important research.

I am attaching a link to the online survey which will take approximately 20 minutes to complete. As a token of my appreciation a donation of $10 will be made to a charity for each completed survey. There are no known risks in responding to the online questionnaire. All data collected will be analyzed in aggregate form and individual responses will be anonymous. Participation in this survey is completely voluntary and you may withdraw from the survey at any point.

Sincerely,

Pamela Quon, MDE, CMA

Login to the Survey

Appendix E: Constructs and associated survey questions

Many of the constructs for the current study were derived from prior studies with some of these studies providing the internal consistency measures and/or factor loadings for items in constructs:

- Environmental Uncertainty adapted from Technological Turbulence construct with Cronbach's alpha = 0.88 (Jaworski & Kohli, 1993)
- Market Orientation adapted from Guilding & McManus (2002) study with factor loadings for items ranging from 0.764 to 0.878 with Cronbach's alpha = 0.86 for four items.
- Organization Culture adapted from Calantone et al. (2002) study with Firm Innovativeness construct of Cronbach alpha = 0.89, item loadings ranging from 0.67 to 0.92 and Commitment to learning Cronbach alpha = 0.80, item loadings from 0.69 to 0.82
- Organization Structure adapted from Olsen et al. (2005) study with Decentralization construct of Composite Reliability = 0.80, items ranging from 0.65 to 0.80

Company Size Construct

3. Number of employees in your company. Choose ONE of the following:
    a. 101 to 250
    b. 251 to 500
    c. 500 to 1000
    d.1001+
4. Indicate your company's total sales per year. Choose ONE of the following:
    a. $1 to $999,000
    b. $1,000,000 to $4,999,999
    c. $5,000,000 to $9,999,999
    d. $10,000,000 to $24,999,999
    e. $25,000,000 to $49,999,999
    f. $50,000,000+
    g. Not applicable
5. Indicate total company exports (outside of Canada) per year. Choose ONE of the following:
    a. $1 to $999,000
    b. $1,000,000 to $4,999,999
    c. $5,000,000 to $9,999,999
    d. $10,000,000 to $24,999,999
    e. $25,000,000 to $49,999,999
    f. $50,000,000+
    g. Not applicable

References: Categories in each question based on Industry Canada (2015) categories

Environmental Uncertainty Construct

6. To what extent do you agree with the following statements?

a. The demand of our customers varies

b. In our industry the product and brand features vary

c. In our industry the price/quality demanded by customers vary

d. In our industry, customers often take unpredictable actions

e. The technology in our industry is changing rapidly

f. The technology changes provide big opportunities in our industry

g. It is difficult to forecast where the technology in our industry will be in the next two to three years

h. A large number of new product ideas have been made possible through technological breakthrough in our industry

References: Uzkurt, Kumar, Kimzan & Sert (2012) which was adapted from Jaworski & Kohli (1993)

Intensity of Competition Construct

7. Please indicate the perceived intensity of competition faced by your organization in respect to the following variables.

a. Selling and distribution

b. Quality

c. Variety of products

d. Price

e. Market share

f. Customer service

8. Indicate the importance of the following items to your company's long-term profitability and growth.

a. Selling and distribution

b. Quality

c. Variety of products

d. Price

e. Market share

f. Customer service

References: Adapted from Khandwalla (1977)

Market Orientation Construct

9. To what extent do you agree with the following statements?

a. My company has an understanding of our customers.

b. The functions in my company work together to create superior value for our customers.

c. Management in my organization thinks in terms of serving the needs and wants of well-defined markets chosen for their long-term growth and profit potential for the company.

d. My company has a market orientation.

References: Scale from Guilding & McManus (2002), adapted from Cravens & Guilding (1999)

Strategic Pattern, Mission and Position Construct

10. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

Experience constant competition, have relatively stable set of products/services, have a centralized organization.

Experience dynamic competition, relative frequent changes to set of products/services, continuous effort to pioneer in new markets, organization structure is flexible.

11. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

Maximize profitability in the short to medium term.

Increase sales and market share, willing to accept lower returns on investment in the short or medium term.

12. Which of the following two statements best describes your organization? Choose the point that is the best fit along the scale.

The main focus is to achieve low costs relative to competitors.

The main focus is to be unique through superior product features, customer service, brand image and/or performance.

References: Cinquini & Tenucci (2010) which was derived from Shortell & Zajac (1990)

Organization Culture (Innovation and Learning) Construct

13. To what extent do you agree with the following statements?

a. Our company frequently tries out new ideas.

b. Our company seeks out new ways to do things.

c. Our company is creative in its methods of operation.

d. Our company is often the first to market with new products and services.

e. Innovation in our company is perceived as too risky and is resisted.

f. Our new product introduction has increased over the last 5 years.

14. To what extent do you agree with the following statements?

a. Managers basically agree that our organization's ability to learn is the key to competitive advantage.

b. The basic values of this organization include learning as key to improvement.

c. The sense around here is that employee learning is an investment, not an expense.

d. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.

References: From Calantone, Cavusgil, & Zhao (2002)

Organization Structure Construct

15. To what extent do you agree with the following statements about your organization?

In this organization, decisions tend to be made at a high level.

The individual decision maker has wide latitude in the choice of means to accomplish goals.

Managers are allowed flexibility in getting work done.

A person who wants to make their own decision would quickly be discouraged.

Even small matters are referred to someone higher in the organization for a decision.

Many important decisions are made locally rather than centrally.

Middle- and lower-level managers have substantial autonomy.

References: Adapted from Olson, Slater, & Hult (2005) and Menon, Bharadwaj, Adidam & Edison (1999)

Company Performance Construct

16. Please indicate your company's performance in relation to competitors.

a. Return on investment

b. Margin on sales

c. Capacity utilization

d. Customer satisfaction

e. Product or service quality

f. Development of new products or services

g. Market share

References: The blending of two scales from Hoque & James (2000) and Cadez & Guilding (2008)

SMA Construct

17. To what extent does your organization use the following techniques? Indicate "1" (not at all) to "7" (to a great extent) or NA - not applicable to organization.

a. Attribute costing
b. Benchmarking
c. Brand valuation
d. Competitor cost assessment
e. Competitive position monitoring
f. Competitor performance appraisal
g. Customer profitability analysis
h. Integrated performance measurement
i. Life cycle costing
j. Lifetime customer profitability analysis
k. Quality costing
l. Strategic costing
m. Strategic pricing
n. Target costing
o. Valuation of customers as assets
p. Value chain costing

References: Similar approach as Cravens & Guilding (2001) and Guilding & McManus (2002)

Accountant Involvement in Strategic Decision Making Construct

18. To what extent do you agree with the following statements? "1" (strongly disagree) to "7" (strongly agree).

a. Accountant(s) in my company use some or all of the techniques described in the previous question 17.
b. Accountant(s) in my company are involved in corporate strategic decision making processes.
c. Accountant(s) work with all functional areas to deliberate corporate strategy.
d. Accountant(s) add value to the strategic decision making processes in my company.

References: Current researcher's own scale

Appendix F: Research Ethics Board application and approval

General Info

File No: -1
Title: Strategic Management Accounting Use in Canada: An Exploratory Study of Techniques and Contingency Factors
Start Date: 01/04/2015
End Date: 31/12/2015
Keywords: strategic management accounting, SMA, SMA techniques, SMA practices, SMA adoption, SMA usage, structural equation modeling, SEM, contingency factors, contextual variables

Project Members

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Others

Rank	Last Name	First Name	Affiliation	Role In Project
Associate Professor	Cocosila	Mihail	Faculty of Business	Co-Supervisor
Associate Professor	Wang	Eric	Faculty of Business	Co-Supervisor

Common Questions

1. Project Description

#	Question	Answer
1.1	Provide a clear statement of the purpose and objectives of the project.	The main purpose of this study is to determine how firm performance is affected by the contingent variables and the application of strategic management accounting techniques. To empirically test the following contingent variables believe d (by the current researcher based upon a review of literature) to have a relationship with SMA techniques usage and an impact on firm performance: (1) the size of firm, (2) the environmental uncertainty in which a firm operates, (3) the competitive intensity of the environment in which a firm operates, (4) the market orientation of the firm, (5) the strategic orientation of the firm, (6) the organization culture, (7) the organization structure of the firm, (8) firm performance and (9) accountant involvement in strategic decision making.
1.2	Comment on the significance of this research study in light of the existing body of knowledge.	Currently, there are only a few empirical studies on strategic management accounting techniques (Guilding et al., 2000; Cadez, 2006; Cinquini & Tenucci, 2010). To improve the SMA notion, further studies of what constitutes strategic management accounting and the factors that influence the adoption of SMA practices and

		the impact on firm performance is required. Studying SMA in more settings will help to provide additional understanding of how SMA practices are the same or different in other environments. Previous SMA techniques studies had focused on countries in the eastern hemisphere (e.g., Guilding, 1999; Guilding & McManus; Cadez & Guilding, 2008; Cinquini & Tenucci; 2010; Said et al., 2010; Lay & Jusoh, 2012). SMA studies of companies in the Americas will provide a western perspective.
1.3	Describe how research results will be disseminated.	Final research report to be provided to AU|Article(s) to be submitted to academic and professional journals. Distribution of final report to participants upon request
1.4	If 'other', please explain.	n/a
1.5	State the research question(s) and/or any associated hypothesis or proposition.	1. What is the impact of strategic management accounting techniques use on organizational performance? 2. To what extent are Canadian companies involved in strategic management accounting practices? 3. What is the relationship among the main factors affecting the adoption of SMA techniques?
1.6	Provide a brief summary of the mode of inquiry for the research. Note the research design/methods and the procedures to be followed.	The research will follow a quantitative mode of inquiry using a survey instrument. Given the research questions, the quantitative method of inquiry is most suitable for explaining and predicting the relationships among SMA variables, organizational performance and contextual factors.
1.7	List of references cited and sources for all quotes in this application is appended.	Yes

2. Data Collection

#	Question	Answer

2.1	Will the researcher or study team be able to identify any of the participants at any stage of the study?	No
2.2	Will participants be recruited or their data be collected from Alberta Health Services or Covenant Health or a data custodian as defined in the Alberta Health Information Act?	No
2.3	The primary/raw data collected will (check all that apply):	Be anonymous - the information NEVER had identifiers associated with it (e.g., anonymous surveys) and risk of identification of individuals is low or very low
2.4	If this study involves secondary use of data, list all original sources. If not, please enter N/A.	Canadian Companies Capabilities database from Industry Canada website http://www.ic.gc.ca/eic/site/ccc-rec.nsf/eng/home
2.5	In research where total anonymity and confidentiality is sought but cannot be guaranteed (e.g., where participants talk in a group) how will confidentiality be achieved? If not applicable, please enter N/A.	n/a

3. Data Identifiers

#	Question	Answer
3.1	Personal Identifiers: Will you be collecting - at any time during the study, including recruitment - any of the following (check all that apply):	Surname and First Name|Address|Telephone Number|Email Address|Other will be collected via a separate online form for related follow-up. No personal identifiers will be collected in this survey so no connection can be established.
3.2	If other, please describe.	Company Name will be collected in a separate online form.
3.3	Will you be collecting - at any time of the study, including recruitment of participants - any of the following (check all that apply):	None
3.4	If other, please describe.	n/a

3.5	If you are collecting any of the above, provide a comprehensive rationale to explain why it is necessary to collect this information. If you are not, please enter N/A.	This data are optional for respondents for related follow-up or clarification by researcher.
3.6	If identifying information will be removed at some point, when and how will this be done? If this is not applicable, please enter N/A.	n/a
3.7	Specify what identifiable information will be RETAINED once data collection is complete, and explain why retention is necessary. Include the retention of master lists that link participant identifiers with de-identified data.	Identifiable information will be retained for related follow-up or clarification.
3.8	Describe your plans to link the data in this study with data associated with other studies (e.g., within a data repository) or with data belonging to another organization. If not applicable, please enter N/A.	n/a

4. Data Confidentiality and Privacy

#	Question	Answer
4.1	How will confidentiality of the data be maintained? Describe how the identity of participants will be protected both during and after research.	Only the principal investigator and research assistant(s) will have access to the data which will be password protected. Data results from a large number of respondents (sample size = 400) will be reported in aggregate.
4.2	How will the principal investigator ensure that all study personnel are aware of their responsibilities concerning participants' privacy and the confidentiality of their information?	The principal investigator will review the study personnel's responsibilities concerning participants' privacy and the confidentiality of their information.
4.3	Will identifiable data be transferred or made available to persons or agencies outside the research team?	No

4.4	If YES, describe in detail what identifiable information will be released, to whom, why they need access, and under what conditions. What safeguards will be used to protect the identity of subjects and the privacy of their data? If NO, please enter N/A.	n/a
4.5	Provide details if identifiable data will be leaving the institution, province, or country (eg. member of research team is located in another institution or country, etc.). If not applicable, please enter N/A	n/a

5. Data Storage, Retention and Disposal

#	Question	Answer
5.1	Describe how research data will be stored (e.g., digital files, hard copies, audio recordings, other). Specify the physical location and how it will be secured to protect confidentiality and privacy. (For example, study documents will be kept in a locked filing cabinet and computer files will be encrypted, etc.). If not applicable, please enter N/A.	Research data will be stored in digital files on the principal investigator's AU computer in Edmonton (home office).
5.2	University policy requires that you keep your data for a minimum of 5 years following completion of the study but there is no limit on data retention. Specify any plans for future use of the data. If the data will become part of a data repository or if this study involves the creation of a research database or registry for future research use, please provide details. If not applicable, please enter N/A	Data will be kept for a minimum of five years. If a future follow up study is performed, then there may be plans for later use of the data.

5.3	If you plan to destroy your data, describe when and how this will be done. Indicate your plans for the destruction of the identifiers at the earliest opportunity consistent with the conduct of the research. If not applicable, please enter N/A.	After five years if there is no plans for a future study then the data will be destroyed by deleting digital files. The identifiers will be deleted after five years.

6. Participant Information

#	Question	Answer
6.1	Who are you studying? Describe the population that will be included in this study.	Canadian companies listed in the Canadian Companies Capabilities database (Industry Canada http://www.ic.gc.ca/eic/site/ccc-rec.nsf/eng/home). These include companies that are self-registered across various industries across Canada.
6.2	Describe the inclusion criteria for participants (e.g., age range, health status, gender, etc.). Justify the inclusion criteria (e.g. safety, uniformity, research methodology, statistical requirement, etc.).	Participants will include chief accountant, chief financial officer or controller of randomly sampled companies that have 100+ employees. The participants in a senior accounting role are better able to respond to the questions related to their company's strategic accounting practices.
6.3	Describe and justify the exclusion criteria for participants.	Companies with less than 100 employees will be excluded from the sample as they would be less likely to have the resources necessary to implement strategic management accounting practices.
6.4	Will you be interacting with human subjects, (i.e., will there be direct contact with human participants, for this study)? Note: NO means there will be no direct contact with participants, chart reviews, secondary data, interaction, etc.	No
6.5	How many participants do you hope to recruit (including controls, if applicable)?	Sample size calculated equals 400.

6.6	Of these recruits, how many are controls? (Possible answer: None, Half, Random, Unknown, or an estimate in numbers, etc.)	None
6.7	If this is a multi-site study, how many participants (including controls, if applicable) are expected to be enrolled by all investigators at all sites in the entire study? If not applicable, please enter N/A.	n/a
6.8	Provide a justification of sample size.	Sample size calculation included in Appendix B of the thesis proposal (attached).
6.9	Does the research specifically target aboriginal groups or communities?	No

7. Recruitment

#	Question	Answer
7.1	Describe how you will identify potential participants (please be specific as to how you will find potentially eligible participants).	Eligible participants will be drawn from the Canadian Companies Capabilities (CCC) database from Industry Canada website http://www.ic.gc.ca/eic/site/ccc-rec.nsf/eng/home
7.2	Once you have identified a list of potentially eligible participants, indicate how the potential participants' names will be passed on to the researchers (if applicable) AND how the potential participants will be approached about the research.	The contact information (email and phone number) of the potential participants (chief financial officer) will be made available from the CCC database. An initial letter will be emailed out to the potentially eligible participants describing the research and asking for their participation.
7.3	How will people obtain details about the research in order to make a decision about participating? Select all that apply:	Researchers will contact potential participants
7.4	Provide the locations where recruitment will occur (e.g., schools, shopping malls, clinics, etc.).	Initial contact will be by email using the CCC database.

7.5	Will potential participants be recruited through pre-existing relationships with researchers (e.g., Will an instructor recruit students from his/her classes, or a physician recruit patients from his/her practice? Other examples may be employees, acquaintances, own children or family members, etc.)?	No
7.6	If YES, identify the relationship between the researchers and participants that could compromise the freedom to decline participation (e.g. professor-student). How will you ensure that there is no undue pressure on the potential participants to agree to the study? If NO, please enter N/A.	n/a
7.7	Outline any other means by which participants could be identified, should additional participants be needed (e.g., response to advertising such as flyers, posters, ads in newspapers, websites, email, listserves; pre-existing records or existing registries; physician or community organization referrals; longitudinal study, etc.).	The CCC database will be the only means of identifying participants as the criteria of company size > 100 employees can be determined using this database.

8. Informed Consent Determination

#	Question	Answer
8.1	Describe who will provide informed consent for this study. Select all that apply. Additional information on the informed consent process is available at: http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/chapter3-chapitre3/#toc03-intro	All participants have capacity to give free and informed consent
8.2	If applicable, provide justification for requesting a Waiver of Consent (Minimal risk only, additional guidance	n/a

	available at: http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/chapter3-chapitre3/#toc03-1b). If not applicable, please enter N/A.	
8.3	How is participant consent to be indicated and documented? Select all that apply:	Implied by overt action (i.e. completion of questionnaire)
8.4	Except for "Signed consent form" use only, explain how the study information will be communicated and participant consent will be documented. Provide details for EACH of the options selected above.	The study information will communicated via an email. A link to the online survey will be included. It will be assumed that by completion of the questionnaire that the participant has indicated consent.
8.5	Authorized Representative, Third Party Consent, Assent: Explain why participants lack capacity to give informed consent (e.g., age, mental or physical condition, etc.). If not applicable, please enter N/A.	n/a
8.6	Will participants who lack capacity to give full informed consent be asked to give assent?	No
8.7	Provide details. If applicable, attach a copy of assent form(s) in the Attachments Tab. If not applicable, please enter N/A.	n/a
8.8	In cases where participants (re)gain capacity to give informed consent during the study, how will they be asked to provide consent on their own behalf? If not applicable, please enter N/A.	n/a
8.9	What assistance will be provided to participants, or those consenting on their behalf, who have special needs (e.g., non-English speakers, visually impaired, etc.)?	n/a
8.10	If at any time a participant wishes to withdraw, end, or modify their participation in the research or certain aspects of the research, describe how their participation will be ended or changed.	The participant will be given the option to exit at any point during the survey.

8.11	Describe the circumstances and limitations of data withdrawal from the study, including the last point at which it can be done.	The participant withdrawal early on in the survey would become invalid. The survey will be online and thus would be set up so that a question must be answered before continuing to the next question. Non response rate is expected to be high, initial contact will be by email. This will be followed up with a phone call for non-participants.
8.12	Will this study involve any group(s) where non-participants are present? For example, classroom research might involve groups that include participants and non-participants.	No

9. Group Research Dissemination

#	Question	Answer
9.1	How will you ensure that non-participants are not included in the study? How will you ensure that data from non-participants are not used in the study?	The sample will be drawn from the CCC database and the list of participants with their direct contact information (email and phone) will be compiled. As direct contact via email and/or phone will be made to appropriate participants, there will be no risk of non-participants involved.
9.2	During the recruitment process, how will you guard against peer pressure influencing an individual's decision to participate or not?	Online request for participation, thus peer pressure is n/a.
9.3	How will you provide appropriate activities for non-participants?	n/a

10. Risk Assessment and Benefit Analysis

#	Question	Answer

10.1	Provide your assessment of the risks that may be associated with this research.	Minimal Risk - research in which the probability and magnitude of possible harms implied by participation is no greater than those encountered by participants in those aspects of their everyday life that relate to the research (TCPS2)
10.2	Provide a description of potential physical risks and discomforts.	The physical risks will NOT be greater than those encountered by the participants in everyday life
10.3	Provide details of the risks and discomforts associated with the research, for instance, health, cognitive or emotional factors, socio-economic status or physiological or health conditions. If there are none, please state.	There will be no risk of discomforts associated with the research.
10.4	Describe how you will manage and minimize risks and discomforts, as well as mitigate.	n/a
10.5	If your study has the potential to identify individuals that are upset, distressed, or disturbed, or individuals warranting medical attention, describe the arrangements made to try to assist these individuals. Explain if no arrangements have been made.	n/a
10.6	Other, please list and describe.	n/a
10.7	Describe any potential benefits of the proposed research to the participants. If there are no benefits, state this explicitly.	The proposed research will benefit participants as the research questions will have them consider their organizations' management accounting practices and how their circumstances compare with their competitors. A summary of research findings will be made available to participants, this information may be useful to participants as they will be able to assess their organizations' level of adoption of SMA as compared to the overall average of sampled companies.
10.8	Describe the scientific and/or scholarly benefits of the proposed research.	The proposed research will address a research gap. A comprehensive contingency based SMA model of several

		contextual factors and their influence on SMA usage and firm performance is proposed and tested.
10.9	Benefits/Risks Analysis: Describe the relationship of benefits to risk of participation in the research.	The benefits of participation are greater that the risks (nil). Participants will gain knowledge about SMA application and how their organizations compare overall. This research will give participants a greater appreciation of how SMA usage may be beneficial.

11. Interviews, Focus Groups, Surveys and Question ...

#	Question	Answer
11.1	Are any of the questions potentially of a sensitive nature? If yes, please enter details below. If no, please enter N/A.	n/a
11.2	If any data were released, could it reasonably place participants at risk of criminal or civil law suits? If yes, provide justification for including such information in the study. If no, please enter N/A.	n/a
11.3	Will you be using audio/video recording equipment and/or other capture of sound or images for the study? If yes, provide details. If no, please enter N/A.	n/a
11.4	Internet-based research: Will your interaction with humans occur in private spaces (e.g., members only chat rooms, social networking sites, email discussions, etc.)?	Not applicable
11.5	Will these interactions occur in public space(s) where you will post questions initiating and/or maintaining interaction with participants?	Not applicable
11.6	Describe how permission to use the site(s) will be obtained. If not applicable, please enter N/A.	n/a

11.7	If you are using a third party research tool, website survey software, transaction log tools, screen capturing software, or masked survey sites, how will you ensure the security of data gathered at that site? If not applicable, please enter N/A.	Website survey software will be used. Access to this site is pass word protected.
11.8	If you do not plan to identify yourself and your position as a researcher to the participants, from the onset of the research study, explain why you are not doing so, at what point you will disclose that you are a researcher, provide details of debriefing procedures, if any, and if participants will be given a way to opt out. If not applicable, please enter N/A.	n/a
11.9	How will you protect the privacy and confidentiality of participants who may be identified by email addresses, IP addresses, and/or other identifying information that may be captured by the system during your interactions with these participants? If not applicable, please enter N/A.	Online website survey is password protected. Principal investigator will download data to PC which is pass word protected.

12. Use of Deception or Partial Disclosure

#	Question	Answer
12.1	Describe the information that will be withheld from, or the misinformation that will be provided to, the participants. If not applicable, please enter N/A.	n/a
12.2	Provide rationale for withholding information.	n/a
12.3	Indicate how and when participants will be informed of the concealment and/or deception. Describe the plans for debriefing the participants. Indicate when the participants	n/a

	will be debriefed, and describe the nature and extent of debriefing	

13. Conflict of Interest

#	Question	Answer
13.1	Have you read the “Conflict of Interest in Research Policy” and related Procedures found in the Research section of the policy manual? Available at http://ous.athabascau.ca/policy/humanresources/150_002.htm	Yes
13.2	How will you ensure that all research team members will be apprised of the above-noted policy and procedures?	n/a

14. Study Objectives and Design

#	Question	Answer
14.1	Provide a lay summary of your proposed research suitable for the general public (restricted to 300 words).	The proposed research will study the factors that affect strategic management accounting (SMA) techniques usage and the effect that it has on organizational (company) performance. The factors believed to have an influence on the adoption of SMA practices are company size, environmental uncertainty, intensity of competition, market orientation, company strategy, organization culture, organization structure and accountant involvement in strategic decision making. The 16 SMA techniques include attribute costing, benchmarking, brand valuation, competitive position monitoring, competitor cost assessment, competitor performance appraisal, customer profitability analysis, integrated performance measurement, life cycle costing, lifetime customer profitability analysis, quality costing, strategic costing, strategic pricing, target costing, valuation of customers as assets and value chain costing. A

		model is proposed and will be tested using structural equation modelling (SEM) and data will be collected from Canadian companies to determine the factors that affect the successful application of SMA. In turn, the SMA usage level will be assessed to determine the relationship to company performance.
14.2	Provide a description of your research proposal including study objectives, background, scope, methods, procedures, etc. (restricted to 1000 words). Footnotes and references must be uploaded in the Attachments Tab.	Study Objectives The study objectives are to answer three questions related to strategic management accounting (SMA). The first main question relates to SMA and organizational performance. The other secondary questions are related to SMA techniques usage and its relationship with contingency factors 1. What is the impact of strategic management accounting techniques use on organizational performance? 2. To what extent are Canadian companies involved in strategic management accounting practices? 3. What is the relationship among the main factors affecting the adoption of SMA techniques? Background and Scope The main reasons for this study stems from both the importance of strategic management accounting (SMA) and the shortage of empirical research in this field. So far there are not many key empirical studies of SMA practices. The few studies that have emerged are from countries such as New Zealand, U.S., U.K., Slovenia, Italy, and Malaysia. An additional understanding of SMA can be gained by studying the SMA practices of other countries. Up to the present time, there had been no studies of SMA usage in Canada and this is considered a knowledge gap. Canada’s abundance of natural resources, its close proximity to a large trading partner (U.S.) and its modest population density over a large geographic area provides some unique differences when compared to some of the countries that have already been studied. Given Canada’s different circumstances it would be interesting for international readers if there were a SMA study of Canada. The research will assess the

		level of SMA usage by Canadian companies to gain a competitive benefit and achieve greater financial performance. The reason for this study is to provide empirical evidence on the degree of adoption of SMA practices in Canada. Understanding the factors affecting the level of adoption of SMA techniques will help establish the degree to which Canadian firms are involved in strategic management accounting practices and the effect that these practices are having on organizational performance. Methods A quantitative research method is proposed. The reason for this method is that the research is of an explanatory and predictive nature. The research questions relate to the level of SMA usage, the factors that affect SMA adoption and the influence on firm performance. Several hypotheses have been proposed and a SMA model has been put forward which predict the relationship that certain contextual factors have with SMA and firm performance. A quantitative approach as opposed to a qualitative approach would be more appropriate for this study. Procedures A survey instrument has been developed with the survey questions being related to the constructs developed in the proposed SMA model. This questionnaire will be administered online to a random sample of Canadian companies from the Canadian Company Capabilities (CCC) database (Industry Canada, 2015). The survey approach has been used by several SMA researchers (Guilding, 1999; Cravens & Guilding, 2001; Guilding & McManus, 2002; Cadez & Guilding, 2008, Cinquini & Tenucci, 2010; Said et al., 2010; Lay & Jusoh, 2012). A pilot study will be performed to a smaller number of respondents (about 20) prior to actual data collection from the total sampled companies. The data collection will be administered via an online survey tool, FreeOnlineSurveys (www.freeonlinesurveys.com). To increase the response rate, the

		companies will be first contacted via email or telephone to determine who the best person would be to complete the survey (normally the chief accountant, chief financial officer or controller). The data collected via online survey tool can be easily integrated (exported) into SPSS software for data analysis. The electronic transferring of the data to SPSS will eliminate transcription errors normally related to paper based surveys. An analysis of the data will be performed. The process will involve inspecting, cleaning, transforming and modeling the data. A descriptive analysis will provide information on the sample size, sample size in subgroups (industry, company size, and SMA technique usage) and show the characteristics of the sample. Crosstabs will measure the relationship between the various contingency variables to SMA techniques usage levels. An analysis of homogeneity or internal consistency will provide an indication of the reliability of the measurement instrument. Cronbach's alpha will be used to analyze the internal consistency of the items in each of the constructs. An analysis of the variances of the items and scales will be performed. Given the range of relations that can be recognized in structural equation modelling (SEM), it would be more advantageous to test the SMA model using SEM. There are two stages to SEM analysis: (1) the measurement model specifies the relationship between observed variables and latent variables and (2) the structural model provides a model of relations between latent variables incorporating specified measurement error variances. (Smith & Langfield-Smith, 2004). Confirmatory factor analysis (CFA) will be used to evaluate the measurement model to ensure that the chosen indicators measure the constructs prior to evaluating the structural model. The number of factors in CFA will correspond to the latent constructs.

14.3	Describe procedures, treatment, or activities that are above or in addition to standard practices in this study area (e.g., health-related procedures, curriculum enhancements, extra follow-up, etc.).	n/a
14.4	If the proposed research is above minimal risk and is not funded via a competitive peer review grant or industry-sponsored clinical trial, the REB will require evidence of scientific review. Provide information about the review process and its results if appropriate. If not applicable, please enter N/A.	n/a
14.5	If applicable, please append the body of literature, along with references.	Appended

15. Research Methods and Procedures

#	Question	Answer
15.1	Some research methods prompt specific ethical issues. The methods listed below have additional questions associated with them in this application. This study will involve the following: Select all that Apply.	Surveys and Questionnaires (including internet surveys)
15.2	If other, describe.	
15.3	Is this study a Clinical trial? (i.e., any investigation involving participants that evaluates the effects of one or more health-related interventions on health outcomes)?	No
15.4	If you are using any tests in this study diagnostically, indicate the member(s) of the study team who will administer the measures/instruments. If not, please enter N/A.	n/a

15.5	If any test results could be interpreted diagnostically, how will these be reported back to the participants? If not applicable, please enter N/A.	n/a

16. Research Locations and Other Approval

#	Question	Answer
16.1	List the locations of the proposed research, including recruitment activities. Provide name of institution or organization, town, or province as applicable	n/a
16.2	Are you using AU Resources? If yes, please list below. If no, please enter N/A.	n/a

17. Multi-Institution Review

#	Question	Answer
17.1	Has this study already received approval from another REB (or equivalent)?	No
17.2	If yes, please list the institution and attach the approval memo in the Attachments Tab. If not applicable, please enter N/A.	n/a

18. Funding

#	Question	Answer
18.1	Will some organization or person other than the researcher be providing cash funding or in-kind support to this research project?	No
18.2	If funding approved, specify source(s).	

18.3	If funding pending, specify source(s).	
18.4	Describe any expectations, expressed or implicit, that arise from the funder-researcher relationship.	

19. Reimbursements and Incentives

#	Question	Answer
19.1	If you are providing expense reimbursements, describe in detail the expenses for which participants will be reimbursed, the value of the reimbursements and the process (e.g. participants will receive a cash reimbursement for parking, at the rate of $x per visit for up to # of visits for a total value of $x). If not applicable, please enter N/A.	n/a
19.2	If you will be collecting personal information to reimburse or pay participants, describe the information to be collected and how privacy will be maintained. If not applicable, please enter N/A.	n/a
19.3	Will participants receive any incentives for participating in this research? Select all that apply:	Other
19.4	Provide details of the value, including the likelihood (odds) of winning for prize draws and lotteries. If not applicable, please enter N/A.	Value will be small. $10 donation to charity for each completed survey. I will apply for research funding for this amount . If all 400 sampled companies respond then the total estimated amount will be $4,000.
19.5	Excluding prize draws, what is the maximum value of the incentives offered to an individual throughout the research?	Less than $10
19.6	If incentives are offered to participants, they should not be so large or attractive as to constitute coercion. Justify the	The incentive is nominal. The monetary amount will go to a charity and not directly to the participant.

	value of the incentives you are offering relative to your study population. If not applicable, please enter N/A.	

20. Aboriginal Peoples

#	Question	Answer
20.1	If your research involves aboriginal peoples, please complete this section. If your research does not involve aboriginal peoples, move on to the next tab.	No, my research does not involve aboriginal peoples
20.2	If you will be obtaining consent from Elders, leaders, or other community representatives, provide details. If not applicable, please enter N/A.	n/a
20.3	If leaders of the group will be involved in the identification of potential participants, provide details. If not applicable, please enter N/A.	n/a
20.4	Provide details if: • property or private information belonging to the group as a whole is studied or used; • the research is designed to analyze or describe characteristics of the group, or • individuals are selected to speak on behalf of, or otherwise represent the group. If not applicable, please enter N/A.	n/a
20.5	Provide information regarding consent, agreements regarding access, ownership and sharing of research data with communities.	n/a
20.6	Provide information about how final results of the study will be shared with the participating community (e.g., via band office, special presentation, deposit in community school, etc.). If not applicable, please enter N/A.	n/a
20.7	Is there a research agreement with the community?	Not applicable

20.8	Provide details about the agreement or why an agreement is not in place, not required, etc. If not applicable, please enter N/A.	n/a

21. Sound or Image

#	Question	Answer
21.1	If your research involves sound or images, please complete this section. If your research does not involve sound or images, please move on to the next tab.	No, my research does not involve sound or images
21.2	Explain if consent obtained at the beginning of the study will be sufficient to cover the use of sound or image data collected during the course of the study, or if it will be necessary to obtain consent at different times, for different stages of the study, or for different types of data. If not applicable, please enter N/A.	n/a
21.3	At what stage, if any, can a participant withdraw his/her material? If not applicable, please enter N/A.	n/a
21.4	If you or your participants' audio- or video-records, photographs, or other materials artistically represent participants or others, what steps will you take to protect the dignity of those that may be represented or identified?	n/a
21.5	Who will have access to this data? For example, in cases where you will be sharing sounds, images, or materials for verification or feedback, what steps will you take to protect the dignity of those who may be represented or identified?	
21.6	When publicly reporting data or disseminating results of your study (e.g., presentation, reports, articles, books, curriculum material, performances, etc.) that include the	

	sounds, images, or materials you have collected by participants, what steps will you take to protect the dignity of those who may be represented or identified?	
21.7	What opportunities are provided to participants to choose to be identified as the author/creator of the materials created in situations where it makes sense to do so?	
21.8	If necessary, what arrangements will you make to return original materials to participants?	

22. Registries and Databases (including Biobanks)

#	Question	Answer
22.1	If your research involves registries and databases, please complete this section. If your research does not involve registries and databases please move on to the next tab.	No, my research does not involve registries and databases
22.2	Where will the databases be located? Specify if the database will be under Canadian or foreign jurisdiction. Note that data housed on US servers fall under the US Patriot Act. At a minimum, participants should be informed of this potential breach in confidentiality.	
22.3	Who will have access to the databases? How is that access determined?	
22.4	Specify if the biobank(s) will be located under Canadian or foreign jurisdiction	
22.5	If other, please provide details:	
22.6	Will identifying information be stored within the database?	
22.7	Will identifying information be forwarded to non-local registries?	

22.8	If the database is to be maintained locally, what steps have been taken to ensure the privacy and security of the database are upheld?	
22.9	Who is responsible for the database?	
22.10	Please explain standard operating procedures for the database management, use and access. Please append any documentation in the Attachments Tab.	

23. Hazard Safety

#	Question	Answer
23.1	Does the proposed research involve biohazards? If yes, consult the Public Health Agency of Canada Laboratory Biosafety Guidelines and contact the Research Ethics Office at rebsec@athabascau.ca.	No
23.2	Does the proposed research involve radiation? If yes, please contact the Research Ethics Office at rebsec@athabascau.ca.	No

24. Clinical Trials

#	Question	Answer
24.1	If your research involves Clinical Trials, please complete the questions in this section. If your research does not involve Clinical Trials, please move on to the next tab.	No, my research does not involve clinical trials
24.2	Protocol number if applicable. If not applicable, please enter N/A	
24.3	Protocol Date if applicable. If not applicable, please enter N/A	

24.4	Clinical trials must be registered before participant recruitment can begin. Provide registry and registration number (e.g., clinicaltrials.gov) if applicable. If not applicable, please enter N/A.	
24.5	Is this an investigator-initiated clinical trial?	
24.6	Does the study involve any of the following?	
24.7	If other, please describe.	
24.8	Trial Phase: Check all that apply.	
24.9	If applicable, describe the provisions made to break the code of a double-blind study in an emergency situation, and indicate who has the code. If not applicable, please enter N/A.	
24.10	If applicable, provide justification for using placebo or no-treatment arm. If not applicable, please enter N/A.	
24.11	If applicable, describe the clinical criteria for withdrawing an individual subject from the study due to safety or toxicity concerns. If not applicable, please enter N/A.	

25. Data Safety and Monitoring for Clinical Trials

#	Question	Answer
25.1	If your research involves clinical trials, please complete this section. If your research does not involve clinical trials, please move on to the next tab.	No, my research does not involve clinical trials
25.2	Check the one that most accurately reflects the plan for data safety and monitoring for this study:	
25.3	Describe data monitoring procedures while research is going on. Include details of planned interim analysis, Data	

	Safety Monitoring Board, or other monitoring systems. If not applicable, please enter N/A.	
25.4	Summarize any pre-specified criteria for stopping or changing the study protocol due to safety concerns. If not applicable, please enter N/A.	

26. Health and Biological Specimen Collection

#	Question	Answer
26.1	If your research involves health and biological specimen collection, please complete this section. If your research does not involve health and biological specimen collection, please move on to the next tab.	No, my research does not involve health and biological specimen collection
26.2	Indicate health or biological specimen(s) that will be collected (for example, body tissues or fluids, be specific). If none, please enter N/A.	
26.3	This study will involve the following (select all that apply):	
26.4	If other, please provide details:	
26.5	Explain how the specimen will be collected. If not applicable, please enter N/A	
26.6	Explain how the specimen will be stored and how long the specimens will be stored and where the specimen will be stored. If not applicable, please enter N/A.	
26.7	Specify all intended uses of collected specimen(s). If not applicable, please enter N/A.	

27. Checklist

#	Question	Answer
27.1	In the Attachments Tab, please ensure that you have appended all of the applicable documents	Letter of Initial Contact|Questionnaires, Cover Letters, Surveys, Tests, Interview Scripts etc|Other Documents (e.g., Study Budget, Course Outline, or other documents not mentioned above)
27.2	If other, please list:	SMA list of references Sample Size Calculation

Appendix G: Ethical approval – renewal July 2015

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **21878**

Principal Investigator:
Ms. Pamela Quon, Academic Coordinator
Faculty of Business\Core Faculty: Accounting and Taxation

Supervisor:
Dr. Mihail Cocosila
Dr. Eric Wang

Project Title:
Strategic Management Accounting Use in Canada: An Exploratory Study of Key Techniques and Factors

Effective Date: July 20, 2015 **Expiry Date**: July 19, 2016

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: July 20, 2015**

Fathi Elloumi, Chair
Faculty of Business, Departmental Ethics Review Committee

Athabasca University Research Ethics Board
University Research Services, Research Centre
1 University Drive, Athabasca AB Canada T9S 3A3
E-mail rebsec@athabascau.ca
Telephone: 780.675.6718

Appendix H: Ethical approval – renewal June 2017

Athabasca University
RESEARCH ETHICS BOARD

The future of learning.

CERTIFICATION OF ETHICAL APPROVAL - RENEWAL

The Athabasca University Research Ethics Board (AUREB) has reviewed and approved the research project noted below. The AUREB is constituted and operates in accordance with the current version of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS)* and Athabasca University Policy and Procedures.

Ethics File No.: 21878

Principal Investigator: Pamela Quon, Academic Coordinator, Faculty of Business

Project Title: 'Strategic Management Accounting Use in Canada: An Exploratory Study of Key Techniques and Factors' *new title*

Effective Date: June 30, 2017 **Expiry Date**: December 31, 2018

Restrictions:

- Any modification or amendment to the approved research must be submitted to the AUREB for approval.
- Ethical approval is *valid for a period of 18 months*. A request for renewal must be submitted and approved by the above expiry date if a project is ongoing.
- A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: June 30, 2017**

Sherri Melrose, Chair
Athabasca University Research Ethics Board

Athabasca University Research Ethics Board
University Research Services, Research Centre
1 University Drive, Athabasca AB Canada T9S 3A3
E-mail: rebsec@athabascau.ca
Telephone: 780.675.6718

Appendix I: Ethical approval – renewal December 2018

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL - RENEWAL

The Athabasca University Research Ethics Board (AUREB) has reviewed and approved the research project noted below. The AUREB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS) and Athabasca University Policy and Procedures.

Ethics File No.: **21878**
Principal Investigator:
Ms. Pamela Quon, Academic Coordinator
Faculty of Business\Core Faculty: Accounting and Taxation

Project Team:
Dr. Mihail Cocosila (Co-Investigator)
Dr. Eric Wang (Co-Investigator)

Project Title:
Strategic Management Accounting Use in Canada: An Exploratory Study of Key Techniques and Factors

Effective Date: December 7, 2018 **Expiry Date**: December 31, 2019

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date:** December 7, 2018

Carolyn Greene, Chair
Athabasca University Research Ethics Board

Athabasca University Research Ethics Board
University Research Services, Research Centre
1 University Drive, Athabasca AB Canada T9S 3A3
E-mail rebsec@athabascau.ca
Telephone: 780.675.6718

Appendix J: Ethical approval – renewal December 2019

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL - RENEWAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **21878**
Principal Investigator:
Ms. Pamela Quon, Academic Coordinator
Faculty of Business\Core Faculty: Accounting and Taxation

Supervisor:
Dr. Mihail Cocosila (Co-Investigator)
Dr. Eric Wang (Co-Investigator)

Project Title:
Strategic Management Accounting Use in Canada: An Exploratory Study of Key Techniques and Factors

Effective Date: December 2, 2019 **Expiry Date**: December 31, 2020

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: December 02, 2019**

Carolyn Greene, Chair
Athabasca University Research Ethics Board

Athabasca University Research Ethics Board
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