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ORGANIZATIONAL CONFIGURATIONS OF STRATEGIC CHOICES AND STRATEGIC MANAGEMENT ACCOUNTING

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Abstract

This is the first study to adopt a configurational paradigm in an investigation of strategic management accounting (SMA) adoption. The study examines the alignment and effectiveness of strategic choice and strategic management accounting (SMA) system design configurations. Six configurations were derived empirically by deploying a cluster analysis of data collected from a sample of 193 large Slovenian companies. The first four clusters appear to provide some support for the central configurational proposition that higher levels of vertical and horizontal configurational alignments are associated with higher levels of performance. Evidence that contradicts the theory is also apparent, however, as the remaining two clusters exhibit high degrees of SMA vertical and horizontal alignment, but low performance levels. A particular contribution of the paper concerns its demonstration of the way that the configurational paradigm can be operationalised to examine management accounting phenomena and the nature of management accounting insights that can derive from applying the approach.

Keywords

Strategic management accounting, configurations, equifinality, strategy, market orientation.

ORGANIZATIONAL CONFIGURATIONS OF STRATEGIC CHOICES AND STRATEGIC MANAGEMENT ACCOUNTING

Introduction

The relationship between strategy and management accounting has commanded considerable attention from management accounting researchers in the last two decades (e.g., Govindarajan and Gupta, 1985; Simons, 1987; Govindarajan, 1988; Bromwich, 1990; Dent, 1990; Abernethy and Guthrie, 1994; Chong and Chong, 1997; Ittner and Larcker, 1997; Langfield-Smith, 1997; Perrera et al., 1997; Chenhall and Langfield-Smith, 1998; Abernethy and Brownell, 1999; Anderson and Lanen, 1999; Nyamori et al., 2001; Chenhall, 2003; Henri, 2006; Mahama, 2006; Naranjo-Gil and Hartmann, 2007). The body of evidence accumulated in these studies suggests that high organizational performance may result from tailoring an organisation's management accounting system to its strategy.

Much of the empirical work in the area follows a contingency approach (Langfield-Smith, 1997; Chenhall, 2003). Despite the quantum of this research effort, there has been significant criticism of the manner in which it has been undertaken (see Gresov and Drazin, 1997; Chenhall, 2003; Gerdin and Greve, 2004; 2008; Fiss, 2007). One particular shortcoming of contingency-based research revolves around its fragmentary nature. Typically, these studies deploy causal models where one variable or a set of variables is used as an antecedent of another variable or a set of variables (Luft and Shields, 2003). This approach treats variables as competing in explaining variation in outcomes rather than showing how variables combine to create outcomes (Fiss, 2007).

The recent evolution of the equifinality concept in the management and organizational literature presents a challenge to contingency based modeling. The advocates of equifinality (Doty et al., 1993; Delery and Doty, 1996; Gresov and Drazin, 1997; Fiss, 2007; Marlin et al., 2007) contend that the possibility of multiple, equally effective, structures that are supportive of a given strategy undermines the contingency research design. The assumption of equifinality is incorporated in configurational theories. These theories suggest that organizations are best understood as clusters of interconnected structures and practices (Drazin and Van de Ven, 1985; Ferguson and Ketchen, 1999; Fiss, 2007) and degree of effectiveness can be attributed to internal consistency, or fit, among the patterns of relevant contextual, structural and strategic factors (Doty et al., 1993; Ketchen et al., 1993).

In stark contrast to the rich vein of contingency-based accounting research, there has been very little theory development or empirical research concerning the way in which elements of management accounting combine with a variety of strategic choices to enhance performance. In fact, the work by Chenhall and Langfield-Smith (1998) stands in relative isolation in this regard. This is most likely attributable to the complexity involved in operationalizing the holistic approach. The simultaneous investigation of a variety of variables results in the problem of conflicting contingencies (Fisher, 1995; Gerdin, 2005), which makes interpretation and theory building difficult. Further, the simultaneous testing of multiple fits precludes us from using rigorous statistical

methods such as regression analysis or structural equation modelling (Gerdin and Greve, 2004; Fiss, 2007). Despite this, the more holistic approach represents an acknowledgment of concerns that contingency-based research provides only a partial understanding of context-structure relationships (Chenhall, 2003; Fiss, 2007). Recognition of the paucity of prior accounting research adopting a holistic approach when examining context-structure relationships provided the broad motivation for the study reported herein.

This study addresses a range of strategic choice configurations and two strategic management accounting (SMA) dimensions. The strategic choices explored concern: (1) type of business strategy, (2) degree to which strategy is deliberately formulated and (3) degree of market orientation. The two elements of strategic management accounting are the adoption of SMA techniques and accountant's participation in strategic management processes. While an almost infinite number of combinations appear to be hypothetically possible, Gerdin and Greve (2004) argue that most firms can be assigned to a limited set of system states (configurations). Configurational theory asserts that not all configurations are equally effective and that the success of a particular configuration depends on its internal consistency and its appropriateness for the context in question (Ketchen et al., 1993; Gresov and Drazin, 1997; Ferguson and Ketchen, 1999). This study pursues two main aims: (1) to appraise what organizational configurations exist in a sample of large companies in a successful transitional economy, and (2) to assess the level of effectiveness and internal consistency of the configurations identified.

The analysis is based on data collected from 193 large Slovenian companies. Slovenia was chosen following calls by Ittner and Larcker (2001) and Chenhall (2003) that research relevancy should be sought by studying novel management accounting approaches in a range of contemporary settings. Slovenia has been described as a role model of a successful transition from a socialist to a market economy (Edwards and Lawrence, 2000; Domadenik et al., 2008). A mere 16 years after gaining independence from Yugoslavia and introducing a market economy, Slovenia was the first of the former East European countries to adopt the Euro currency (1st January 2007) and the first to assume the presidency of the European Union (1st January 2008). Its progress is also evident from the fact that Slovenia's per capita GDP has surpassed Portugal and Greece, two countries whose EU membership predates Slovenia. It is also notable that Slovenia appears to have well developed SMA applications (Cadez and Guilding, 2007).

The remainder of the paper is organized as follows. In the next section, the concepts of strategic choices, SMA and organizational configurations are discussed. Then the research method is described, followed by an outline of the findings. The conclusion section provides an overview of the most salient issues arising from the study.

Strategic choices and strategic management accounting

Strategic choices

Strategy is generally viewed as “as a pattern of important decisions that (1) guides the organization in its relationship with its environment, (2) affects the internal structure

and processes of the organization, and (3) centrally affects the organization's performance" (Hambrick, 1980, p. 567). Although Hambrick sees strategy as worthy of empirical investigation due to its linkages with many other organizational facets, he feels there is a major problem revolving around the challenge of operationalizing the concept. The focus of this study is on business strategy which refers to how firms compete in an industry or market (Slater and Olson, 2001; Olson et al., 2005).

There has been a convention in management accounting research to explore relationships between management accounting system characteristics and particular strategic types (Ittner and Larcker, 2001; Chenhall, 2003; Luft and Shields, 2003). As strategies are becoming increasingly complicated (Ketchen et al., 1993; Ittner and Larcker, 2001; Olson et al., 2005; DeSarbo et al., 2005), however, this approach appears prone to overly simplistic generalizations. Ittner and Larcker (2001) and Chenhall (2003) thus advocate that more meaningful associations may become apparent when investigating several dimensions of strategy.

Strategy typologies constitute profiles of different strategic postures that emphasize integrative components of different strategies. These typologies have been widely drawn upon in organisational empirical research (Doty and Glick, 1994; Desarbo et al., 2005). An extensively used typology that was developed by Miles and Snow (1978) is based on four strategic types: prospector, defender, analyzer, and reactor. These types represent holistic configurations of organizational factors. Although the typology's longevity is generally attributed to its innate parsimony and industry-independent nature (Shortell and Zajac, 1990; Desarbo et al., 2005), recent empirical validations of the typology challenge these assertions (see Desarbo et al., 2005, 2006). One particular ambiguity associated with the typology concerns the status of reactors. Some commentators see the reactor grouping as a residual category, while others see it as a particular archetype that can be effective (Doty et al., 1993). The empirical evidence concerning the effectiveness of reactors is mixed. Smith et al. (1989) concluded that organizations classified as reactors were not effective, whereas Snow and Hrebiniak (1980) found that reactors were effective in highly regulated environments. A second point of contention with the typology concerns the relationships among the remaining three types. There is considerable evidence suggesting that the three types define a spectrum, with defenders and prospectors constituting the ends of the spectrum and analyzers located between these two extremes (Smith et al., 1989; Shortell and Zajac, 1990; Doty et al., 1993; Anderson and Lanen, 1999). It is also notable that Olson et al. (2005) feel that the Miles and Snow's typology is limited due to its internal focus and propose a hybrid model that represents a synthesis with Porter's (1980) low cost vs differentiation typology. This composite typology distinguishes between low cost defenders and differentiated defenders and has been supported in empirical analysis (Slater and Olson, 2001; Olson et al., 2005). It should also be noted that typologies can suffer from compromised explanatory or predictive power. This can be because they represent a theorist's attempt to make sense out of non-quantified observations, thus they may often not accurately reflect reality (Hambrick, 1984; Desarbo et al., 2005).

In stark contrast to the considerable interest shown in strategic typologies, the distinction between intended and realized strategy has received negligible attention from

accounting researchers. Langfield-Smith (1997) sees this to be a major weakness in management accounting research. When responding to surveys, it is unclear whether managers have reported their intended or realized strategies. Most definitions of strategy, especially in normative textbooks, imply that strategy is an outcome of a deliberate stream of decisions. Mintzberg (1987a; 1987b) counters this view by stressing the ambiguous and evolutionary nature of strategy in many organisations. He sees strategy more as a pattern or stream of actions, regardless of whether these actions are intended. In some organisations, patterns of behaviour may emerge in the absence of intentions, or in spite of them. In practice, pure deliberate and pure emergent strategies are rarely deployed, as most firms fall somewhere between the two extremes (Mintzberg et al., 1995).

It is also notable that the quantum of attention given to market orientation by strategy and marketing researchers (Hult et al., 2005) has not been matched by management accounting researchers (Guilding and McManus, 2002). Narver and Slater (1990) see market orientation lying at the heart of much modern management and strategy. The market orientation philosophy concerns the view that the goal of all company activities concerns satisfying customer needs (Jaworski and Kohli, 1993; Walker et al., 1998; Hult et al., 2005). In the modern business environment characterized by fast evolving customer demands, market orientation represents a prerequisite to the pursuit of competitive advantage (Perrera et al., 1997), effective creation of superior value for customers and enhanced performance (Slater and Narver, 1994; Henri, 2006).

The examination of degree of strategy deliberation and market orientation in this study was also motivated by an expectation that both these factors carry a particular pertinence in a transitional economy context. Bogel and Hustzty (1999) and Csaban et al. (2003) argue that in response to unleashed market liberalization and privatization forces, managers in transition economies only start to think strategically once market transition commences. Further, the socialist system is characterized by a production orientation, signifying that it is only in recent years that Slovenian companies have developed degrees of market orientation (Cadez and Guilding, 2008).¹ These observations suggest a high degree of variability can be expected with respect to strategy deliberation and market orientation in Slovenian companies.

Strategic management accounting

While interest in SMA is growing (see Coad, 1996; Lord, 1996; Tomkins and Carr, 1996; Hoque, 2001; Roslender and Hart, 2003; Bhimani and Langfield-Smith 2007; Cadez and Guilding, 2007; Langfield-Smith, 2008; Tillmann and Goddard, 2008), there is still limited consensus with respect to what constitutes SMA. One of the more comprehensive empirical investigations of the field was conducted by Cadez and

¹ A CFO in a large Slovenian furniture company provided a very insightful comment on this issue. “In the past socialist times, all companies including ours were production oriented. First we manufactured, then we worried about selling what we have manufactured. It is only recently that we have started emphasizing market orientation. Now we first turn to customer needs and then adjust our offerings accordingly to secure profitability. This is a sign of company maturity” (Cadez and Guilding, 2008).

Guinding (2008). Cadez and Guinding focused on two distinct, yet complementary, dimensions of SMA. These are: (1) the adoption of strategically-oriented management accounting techniques and (2) accountant's participation in strategic management processes. In their study, Cadez and Guinding supplemented Guinding et al's (2000) distillation of 12 SMA techniques with four additional techniques concerned primarily with customer accounting. These techniques are seen to manifest two orientations: environmental (outward-looking) and/or long-term (forward-looking). Cadez and Guinding subsequently classified these 16 SMA techniques according to the five categories outlined in Table 1.

Table 1: Classification of SMA techniques

SMA categories	SMA techniques
Strategic costing	<ol style="list-style-type: none"> 1. Attribute costing 2. Life-cycle costing 3. Quality costing 4. Target costing 5. Value chain costing
Strategic planning, control and performance management	<ol style="list-style-type: none"> 1. Benchmarking 2. Integrated performance measurement
Strategic decision making	<ol style="list-style-type: none"> 1. Strategic cost management 2. Strategic pricing 3. Brand valuation
Competitor accounting	<ol style="list-style-type: none"> 1. Competitor cost assessment 2. Competitive position monitoring 3. Competitor performance appraisal
Customer accounting	<ol style="list-style-type: none"> 1. Customer profitability analysis 2. Lifetime customer profitability analysis 3. Valuation of customers as assets

The second SMA dimension, accountant participation in strategic management processes, follows a more sociological orientation. In contemporary competitive settings, organisations are increasingly concentrating on factors that provide value to customers (Perrera et al., 1997; Slater and Narver, 2000; Henri, 2006). This customer-focus is triggering a flattening of organizational structures. The term "horizontal accounting" has evolved to reflect practices applied in companies that integrate activities across the value-chain to support a heightened customer-focussed strategy (Chenhall, 2008). In "horizontal organizations" decisions are made by cross-functional management teams, including management accountants (Scott and Tiessen, 1999; De Haas and Algera, 2002; Baines and Langfield-Smith, 2003; Frow et al., 2005; Naranjo-Gil and Hartmann, 2007; Rowe et al., 2008). This development represents a significant change in the underlying accounting paradigm. Strategic management accountants are no longer seen as just information providers, but as active players in the strategic management process. Cadez and Guinding's (2008) reference to the "strategic accountant" reflects the notion that modern accountants are furnishing individuals with power to achieve their own ends (Chenhall, 2003).

Strategy and strategic management accounting configurations

Organizational configurations are sets of organizations that share a common profile with respect to key characteristics such as strategy, structure and decision processes (Ketchen

et al., 1993; Ferguson and Ketchen, 1999; Moores and Yuen, 2001). The configurational approach suggests that insights into organization behaviour can be achieved by viewing organizations as clustered around particular characteristics, rather than modular entities to be viewed in isolation (Fiss, 2007). In configurational research, the focus is typically on the link between organizational configurations and performance (Ketchen et al., 1997; Ferguson and Ketchen, 1999).

Configurational theory differs from universalistic and contingency theories because it is guided by a more holistic principle of inquiry and adopts the systems assumption of equifinality (Delery and Doty, 1996). In general, the theory is concerned with how a pattern of multiple independent variables (e.g., strategy and SMA) is related to a dependant variable (e.g., performance), rather than how individual independent variables are related to a dependant variable.

The central assumption embodied in configurational theory is equifinality. Equifinality occurs when a sample of organizations using different strategic and structural alternatives achieve equivalent levels of performance (Payne, 2006). Gresov and Drazin (1997) suggest three forms of equifinality: suboptimal, trade-off, and configurational. A suboptimal equifinality situation arises when an organization attempts to satisfy multiple and conflicting functional demands (e.g. innovation in product design versus operating efficiency) with a limited repertoire of structural options. A trade-off equifinality situation is characterized by a single or dominant functional demand, whereas structural choice is not limited. A configurational equifinality situation is characterized by multiple and conflicting functional demands, whereby structural options available to organizations are relatively unconstrained. As a consequence, there are simultaneous trade-offs between both strategies and structures that can result in the evolution of a number of effective strategic configurations (Marlin et al., 2007). In this study, a configurational form of equifinality is assumed. This is based on the expectation that organizational performance is positively affected by the selection of strategic choices that minimize functional conflict and a structural design that fits the chosen strategy. Designs that fit the chosen set of strategic choices will be equifinal relative to each other and will outperform those that do not (Gresov and Drazin, 1997).

Organizational goal achievement is facilitated when an SMA system manifests both horizontal and vertical fit. Horizontal fit refers to the internal consistency of the organization's SMA practices, while vertical fit refers to the congruence of the SMA system with firm strategy (Delery and Doty, 1996). The study described herein enables a consideration to be made of the extent to which SMA systems in different organisational configurations exhibit horizontal and vertical fit and also the degree to which well-aligned SMA systems are reflected by heightened performance.

Research method

A range of approaches can be taken by the researcher to capture the complexity of configurations. These can be classified according to two main categories: theoretical (deductive) and empirical (inductive). While both theoretical and empirical approaches embody strengths and weaknesses (see Ketchen et al., 1993; Doty and Glick, 1994;

Bensaou and Ventkamaran, 1995; for a discussion), in this study an empirical approach has been employed. In the management literature, empirically generated classification systems are usually regarded as taxonomies (Sanchez, 1993; Doty and Glick, 1994; Payne, 2006).

The data analysis undertaken can be seen as comprising three steps. Firstly, an appraisal is made of what organizational configurations exist in the chosen sample. This will be achieved by way of cluster analysis, an acknowledged technique for discerning cases that exhibit similar characteristics (Ferligoj, 1989; Ketchen and Shook, 1996; Fiss, 2007). Secondly, the organizational configurations that are effective are identified. This will be achieved by investigating the performance of the identified configurations. Thirdly, an appraisal is made of the degree to which the identified configurations are internally consistent and congruent with strategy.

Sampling procedure

A mailed questionnaire was used to gather the data. The sample frame was based on the listing of the 500 largest Slovenian companies maintained by the *Slovenian Chamber of Commerce and Trade*. In order to include banking and insurance enterprises, this listing was supplemented by the Slovenian Banking Association and the Slovenian Insurance Association databases. Companies with less than 100 employees were then dropped from the data set together with those entities with incorrect or incomplete mailing addresses for some cases. This resulted in a final sample of 388 companies.

Table 2: Industrial affiliation of the sampled companies

Industry	Number of firms	Percentage of sample
A. Agriculture	1	0.5
B. Mining	2	1.0
C. Manufacturing	108	56.0
C1. food, beverages and tobacco	17	8.8
C2. textile, apparel, leather, wood and furniture	30	15.5
C3. chemicals, plastics, non-metallic products	19	9.8
C4. metal products	14	7.3
C5. machinery, electric, electronics and automotive	28	14.5
D. Public services and utilities	10	5.2
E. Construction	9	4.7
F. Wholesale and retail trade	30	15.5
G. Accommodation, food and leisure services	8	4.1
H. Transportation and logistics services	13	6.7
I. Financial intermediation and IT services	12	6.2
Total	193	100.0

As part of an effort to secure a high response rate, each company was contacted by phone in order to identify the most suitable person to complete the survey. In most cases, the individual identified carried the title 'Chief Accountant', 'Chief Controller', or 'Chief Financial Officer'. This phone contact was also used to outline the research objective. Each subject was sent a copy of the questionnaire, a covering letter explaining the study's purpose and a glossary of terms used. The first mailing yielded 124 usable responses and the second mailing provided a further 69 responses. This signified a

49.7% overall usable response rate. An industry classification of the companies comprising the data set is provided in Table 2.

Kolmogorov-Smirnoff tests of differences were conducted of the responses provided in the first and last 25% of the questionnaires returned, in order to investigate for potential non-response bias. These tests revealed no significant differences ($p < 0.05$) in the data provided by these sub-groups for any of the survey questions. This suggests little concern for non-response bias, however it should be recognised that accountants in firms with less advanced accounting systems may have been less inclined to participate in the survey than accountants working in companies with advanced accounting systems.

Variable measurement

Prospector/defender business strategy

Shortell and Zajac's (1990) measure was used. This measure gauges organizational strategic orientation on a seven-point scale ranging from a defender to a prospector archetype.

Deliberate vs emergent strategy

An original measure was developed, as no prior operationalisation of this dimension of strategy has been found in the literature. Drawing on Mintzberg's (1987a) terminology, three statements were developed to measure degree of strategy deliberation: (1) "In our company, the strategic decision-makers usually think through everything in advance of strategic action" (2) "In our company, strategic intentions are seldom realized with little or no deviation", and (3) "In our company, strategic action usually develops in the absence of strategic intention". A seven-point scale was provided, ranging from "1" (strongly disagree) to "7" (strongly agree), next to each statement.

Market orientation

Market orientation was gauged using the instrument developed by Guilding and McManus (2002). On a seven-point scale ranging from "1" (not at all) to "7" (to a large extent) respondents indicated the extent that they agreed with the following statements: "(1) my company has a strong understanding of our customers, (2) the functions in my company work closely together to create superior value for our customers, (3) 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, and (4) my company has a strong market orientation".

SMA usage

The extent to which 16 SMA practices are used was gauged using the approach adopted by Cravens and Guilding (2001) and Guilding and McManus (2002). After the question "To what extent does your organization use the following techniques?", the 16 SMA practices outlined in Table 1 were provided together with Likert-type scales ranging from "1" (not at all), to "7" (to a great extent). To aid interpretation, a glossary of definitions for the 16 SMA practices was provided.

Accountant's participation in strategic decision making

An instrument deriving from Wooldridge and Floyd's (1990) measure of middle management's strategic decision making involvement was developed. This instrument asked respondents to indicate their degree of participation in five dimensions of strategic management: (1) identifying problems and proposing objectives, (2) generating options, (3) evaluating options, (4) developing details about options, and (5) taking the necessary actions to put changes into place. The scale's anchors were "1" (not at all involved) and "7" (fully involved).

Performance

Performance was gauged using an adapted version of Hoque and James' (2000) measure. Three dimensions of performance were appraised: (1) return on investment, (2) customer satisfaction, and (3) development of new products. For each dimension, on a scale ranging from "1" (below average) to "7" (above average), respondents indicated their company's performance relative to their competitors.

Data analysis

The study addresses configurations of three strategic choices (prospector vs defender orientation, degree of strategy deliberation and degree of market orientation), and two dimensions of SMA (SMA usage and degree of accountants participation in strategy), a total of five constructs. SMA usage, however, contrary to the other four unidimensional constructs, was specified as a multidimensional construct comprising five dimensions (the five SMA categories identified in Table 1). This signifies that the cluster analysis was based on nine constructs. The constructs were represented as composite items calculated as an average of the original items (see Table 3) to reduce measurement error (Ittner and Larcker, 2001). For example, for the market orientation construct, the composite item was calculated as the mean of four original items. The composite items include all of the variable measurement items referred in the preceding section with two exceptions. Firstly, the quality costing technique was excluded from computation of the usage of strategic costing due to low internal reliability. Similarly, the valuation of customers as assets was excluded from computation of customer accounting usage due to low internal reliability and a non-normal distribution (usage of this technique was found to be very low; a mean score of 1.97).

Prior to cluster analysis, all variables were standardized to facilitate interpretation. In order to derive a manageable number of clusters a two step cluster analysis procedure was applied (Ferligoj, 1989; Ketchen and Shook, 1996). Firstly, Ward's hierarchical cluster procedure was used. Under this iterative method, each subject starts as its own cluster, then iterations are run until all subjects are grouped into one large cluster (Ketchen and Shook, 1996; Hair et al., 1998). The dendrogram produced in applying this approach, together with the fusion coefficient, indicated a 6 cluster solution as a viable solution. This method suffers, however, from being biased towards the production of clusters with approximately the same number of observations (Ferligoj, 1989; Hair et al., 1998), thus the nonhierachical K-means cluster procedure was also employed. K-means is an iterative partitioning method that begins by dividing observations into a predetermined number of clusters (Slater and Olson, 2001), which,

based on the hierarchical procedure, was set to 6. Contrary to hierarchical methods, nonhierarchical methods allow multiple passes through the data, thus the final solution optimizes within-cluster homogeneity and between-cluster heterogeneity (Ketchen and Shook, 1996).

Table 3: Descriptive statistics for explored constructs

	Mean	Standard deviation	Crombach alpha
Strategic choices			
Prospector/defender strategy	4.62	1.42	N/A
Degree of strategy deliberation	5.22	1.15	0.73
Market orientation	5.13	1.09	0.87
Accountant's participation in strategy	4.79	1.41	0.92
SMA usage			
SMA usage: strategic costing	3.51	1.40	0.77
SMA usage: planning and control	4.22	1.37	0.75
SMA usage: strategic decision making	4.28	1.59	0.85
SMA usage: competitor accounting	4.20	1.36	0.72
SMA usage: customer accounting	3.36	1.59	0.77
Performance variables			
Return of investment	4.23	1.46	N/A
Customer satisfaction	4.78	0.88	N/A
Development of new products	4.46	1.34	N/A

Next, to face validate the derived clusters, an appraisal was made to determine whether the members of each cluster correspond to the described configurations (Ketchen et al., 1993). Without validation, one cannot be assured of having derived a meaningful and useful set of clusters (Ketchen and Shook, 1996). Further, to assess the industry sector impact on derived configurations, a crosstabulation analysis was conducted that highlights the relationship between cluster membership and industry affiliation.

Findings

Table 4 presents the companies' standardized mean variable scores according to the six cluster groupings. The clusters are ranked according to performance, with cluster 1 being the highest performer and cluster 6 the lowest performer.² The first number in each cell represents a cluster's standardized mean score for the variable in question, and the number in parenthesis indicates the rank of this mean score relative to the other clusters. The remainder of this section is devoted to a description of the six clusters, an examination of the relationship between industry classification and the clusters, a consideration of the relative performance of the clusters and an appraisal of the clusters' SMA configurational fit.

² Allocating performance rankings to the six clusters has required the exercise of some subjectivity. The approach taken has been to aggregate the rankings of the three performance indicators appraised. This approach resulted in a tie between "analytics" and "first movers". The decision was taken to rank the performance of first movers behind analytics because of the high ROI score recorded by the analytics and the low ROI score recorded by the first movers. ROI is perceived by many as a fundamental performance measure that is contributed to by other aspects of performance such as customer satisfaction and development of new products (Kaplan and Norton, 1996).

Table 4: Cluster based cross-tabulation of mean standardised variable scores

Cluster	1	2	3	4	5	6
Cluster name	Stars	Analytics	First movers	Protectors	Laggards	Socialism relics
Number in cluster	29	42	20	38	49	15
Strategic choices						
Strategy prospector/defender	0.90 (2)	0.40 (3)	0.96 (1)	-0.45 (5)	-0.35 (4)	-1.85 (6)
Degree of strategy deliberation	0.54 (2)	0.01 (4)	0.58 (1)	0.17 (3)	-0.41 (5)	-0.91 (6)
Market orientation	0.83 (1)	0.22 (3)	0.64 (2)	0.05 (4)	-0.40 (5)	-1.89 (6)
Accountant's participation in strategy	0.72 (1)	0.07 (4)	0.24 (3)	0.49 (2)	-0.60 (5)	-1.20 (6)
SMA usage						
SMA usage: strategic costing	1.01 (1)	0.00 (3)	-0.63 (5)	0.68 (2)	-0.59 (4)	-0.93 (6)
SMA usage: planning and control	0.85 (2)	-0.16 (4)	0.89 (1)	0.55 (3)	-0.72 (5)	-1.41 (6)
SMA usage: strategic decision making	0.94 (1)	-0.34 (4)	0.31 (3)	0.76 (2)	-0.60 (5)	-1.23 (6)
SMA usage: competitor accounting	0.74 (2)	-0.08 (4)	1.16 (1)	-0.04 (3)	-0.55 (5)	-0.85 (6)
SMA usage: customer accounting	0.90 (1)	0.64 (2)	0.05 (3)	-0.05 (4)	-0.77 (5)	-0.96 (6)
Performance variables^a						
Return of investment	0.33 (2)	0.36 (1)	-0.02 (4)	0.02 (3)	-0.23 (5)	-0.93 (6)
Customer satisfaction	0.57 (1)	0.20 (3)	0.54 (2)	-0.02 (4)	-0.35 (5)	-1.19 (6)
Development of new products	0.68 (2)	0.25 (3)	0.80 (1)	-0.22 (4)	-0.43 (5)	-1.09 (6)

^a Not used in determining clusters.

Note: F-tests for all clustering variables were statistically significant at 0.01 probability level. Significant F-tests indicate that statistical differences exist for individual variables across clusters (Hair et al, 1998).

Cluster descriptions

Following Slater and Olson's (2001) recommendation, the quantitative findings have been synthesised into qualitative gestalts by labeling and describing the derived clusters. We have labelled cluster 1 "stars". These businesses are prospector oriented with a deliberate approach to strategy formulation and a high level of market orientation. Accountant's participation in strategy is highest of all 6 clusters and SMA usage is high (it ranks highest for usage of three categories of SMA and second highest for two categories of SMA). The cluster comprises 29 companies. The majority of these can be referred to as Slovenian blue-chips thus the term *stars* appears to be a valid descriptor of the group.

Cluster 2 has been labelled "analytics". Organisations in this cluster score near the middle of the sample (ranking 3 or 4) for most of the variables appraised. The only SMA practice that analytics use relatively highly is customer accounting (rank 2). The group is relatively large with 42 members. As most of the businesses within this grouping do not demonstrate strong explicit strategic priorities, it seems that the label *analytics* is a valid descriptor for the group.

Cluster 3 is comprised of "first movers". These businesses are very similar to *stars* with respect to strategic choices. They rank highest on pursuit of a prospector strategy and deliberate strategy formulation and high on market orientation. Differences are apparent, however, with respect to SMA attributes. Accountant's participation in strategy is relatively modest (rank 3) and high variability is observed for SMA usage. The high prospector orientation plays out with high competitor accounting usage, and the *first movers* also rank highest for planning and control SMA usage. The *first movers* do not score highly for the remaining SMA techniques, in particular strategic costing (rank 5).

The number of companies in this cluster is 20 and it appears that the label *first movers* is a valid descriptor of the group as most of them demonstrate a high propensity for seeking new product/market opportunities.

Cluster 4 companies have been labelled “protectors”. These businesses have a defender strategy orientation and rank near the middle of the sample with respect to deliberate strategy and market orientation. Accountant’s participation in strategy is relatively high (rank 2) and so is the usage of two SMA categories (strategic costing and strategic-decision making). Competitor and customer accounting are not widely used in this group. The *protectors* group comprises 38 companies. An examination of these companies reveals that most are predominantly focused on the domestic market.

The remaining two clusters comprise companies with similar characteristics. We label cluster 5 “laggards”. These businesses are defender type oriented, strategy is relatively undeliberate (emergent) and the level of market orientation is low. Further, accountants’ participation in strategy is low and there is low application of SMA techniques. It appears this group resembles the reactors group proposed by Miles and Snow (1978). It is the largest grouping comprising 49 of the sampled companies.

In cluster 6, the characteristics of *laggards* are taken one step further. Companies in this cluster are strongly defender oriented, strategy is undeliberate (emergent) and market orientation is extremely low. This grouping also has the lowest level of accountant participation in strategy and the lowest levels of SMA usage. This group is relatively small, comprising 15 companies which are mostly government-owned and many come from the energy sector. We label this cluster “socialism relics”.

An investigation for a relationship between industry affiliation and cluster membership has been conducted. The sample represents nine primary industry sectors (Table 2). In light of the small representation of agriculture and mining, companies in these sectors have been assigned to other industry groups. The single representative of the agricultural sector is essentially a poultry producer and was reassigned to group C1. As the two mining companies are government-owned coal mines which sell all their output to government-owned coal power plants, they were reassigned to industry group D. Further, since the manufacturing group is relatively diverse (Table 2 highlights 5 subgroups), this group has been consolidated into two subgroups. The first group, comprising C1 and C2, has been labelled ‘CI’ and can be denoted as ‘traditional manufacturing’. The second group, labeled ‘CII’, comprises groups C3-C5 and can be denoted ‘contemporary manufacturing’. A crosstabulation analysis comprising the refined 8 main industry groups and 6 strategic configurations is presented as Table 5.

Table 5 suggests some relationship between the industry sectors and cluster affiliation. Viewed from the industry perspective, it is notable that the public services and utilities sector does not feature any *stars*, *analytics* or *first movers* configurations, rather 50% of the companies in this sector manifest a *socialism relics* configuration. A similar finding holds for construction sector which also has no *stars* or *first movers* configurations, but nearly half feature in the *laggard* cluster. Viewed from the cluster membership perspective, it is notable that 40% of the *socialism relics* group are public services and

utilities. Also, the *stars* group includes no representation of three industry sectors (public services and utilities, construction, and accommodation, food and leisure services). Aside from these observations, the industry sectors are relatively spread across the six configurations.

Table 5: Group membership and industry sector crosstabulation

Cluster name	Stars	Analytics	First movers	Protectors	Laggards	Socialism relics
Number in cluster	29	42	20	38	49	15
Industry sector (number in sector)						
CI. Traditional manufacturing (48)	4/7.2	11/10.4	2/5.0	13/9.5	15/12.2	3/3.7
CII. Contemporary manufacturing (61)	13/9.2	17/13.3	5/6.3	12/12.0	12/15.5	2/4.7
D. Public services and utilities (12)	<u>0/1.8</u>	<u>0/2.6</u>	<u>0/1.2</u>	3/2.4	3/3.0	6/0.9
E. Construction (9)	<u>0/1.4</u>	2/2.0	<u>0/0.9</u>	2/1.8	4/2.3	1/0.7
F. Wholesale and retail (30)	7/4.5	5/6.5	5/3.1	3/5.9	9/7.6	1/2.3
G. Accommodation, food, leisure services (8)	<u>0/1.2</u>	3/1.7	2/0.8	1/1.6	2/2.0	<u>0/0.6</u>
H. Transportation and logistics services (13)	3/2.0	4/2.8	1/1.3	2/2.6	2/3.3	1/1.0
I. Financial intermediation and IT services (12)	2/1.8	<u>0/2.6</u>	5/1.2	2/2.4	2/3.0	1/0.9

Legend: the first digit in each cell represents observed frequencies/the second digit in each cell represents expected frequencies. Cells where observed frequencies are 0 are underlined. Cells with observed/expected frequencies ratio above 2 or below 0.5 are highlighted in bold.

Note: Chi square test indicates that observed frequencies are significantly different to expected frequencies, however this should be interpreted with care due to very small expected counts in most cells.

Cluster Performance

The performance of the six clusters was assessed on three dimensions: return on investment, customer satisfaction and new product development. As is evident from Table 4, performance of the clusters varies substantially along these dimensions. Overall, the most successful cluster is the *stars*, where performance on the three dimensions is either the highest or second highest of the six clusters. In terms of financial return on investment the *analytics* cluster is most successful, in terms of new product development the *first movers* cluster is most successful. These observations carry an intuitive consistency. The *first movers*' high performance with respect to new product development and customer satisfaction appears consistent with their high prospector orientation. Unlike *first movers*, the *analytics* group attaches high importance to financial performance. The *stars* and *analytics* can be viewed as relatively successful, scoring above the mean on all three performance dimensions appraised. The first movers are viewed as less successful due to their below average ROI.

Next, the *protectors* group is close to the overall sample average in terms of financial performance and customer satisfaction. Only with respect to new product development does it score markedly below the average which appears consistent with the defender strategic orientation of this group.

The remaining two groups are less successful and score relatively lowly across all of the three performance dimensions appraised. This is particularly true for the *socialism relics* group, where scores rank the lowest for every performance dimension appraised.

Appraisal of SMA configurational fit

Configurational theory suggests that superior performance is attributed to internal consistency in the pattern of relevant strategic and structural factors, whereby both horizontal (internal consistency of SMA practices) and vertical fit (congruence of the SMA system with strategy) are important. We now turn to assess the SMA internal consistency and congruence for each configuration.

The *stars* group features high SMA adoption rates and high accountant participation in strategy. Given that all SMA techniques exhibit a relatively ‘strategic’ orientation compared to conventional accounting techniques that tend to have a historical, short-term and inward focus (Guilding et al., 2000), an equivalent degree of usage across the SMA techniques appraised would appear to signify internal consistency. Further, strong accountant’s involvement in strategy process also appears consistent with high SMA usage. Greater involvement in strategy can be expected to inculcate accountants with an appreciation of information needs posed by strategic management, thus it is likely to result in accountants instigating novel techniques (Abernethy and Bouwens, 2005), such as SMA. It therefore appears that the stars group manifest high SMA horizontal fit. With respect to vertical fit, a deliberate prospector market-oriented configuration implies broad inter-functional discussion (Perrera et al., 1997; Chenhall, 2008), thus greater accountant participation in strategy decision making appears warranted. Also, given the outward and forward focus of SMA techniques, it appears that high SMA usage levels are congruent with a dynamic prospector type strategy (Guilding, 1999), deliberate prospecting decisions (Simons, 1987; Davila, 2000), and high market orientation (Guilding and McManus, 2002; Hult et al., 2005). Overall, the observations for *stars* suggest a high degree of consistency on both the horizontal and vertical dimensions. This view is further supported by the high performance achieved by the *stars*.

The *analytics* group demonstrates a fairly consistent (mid-range) level of SMA usage across the techniques appraised, although there is fairly high use of customer accounting. Accountant’s participation in strategy is moderate for this grouping. These observations signify fairly high SMA horizontal fit. This cluster also falls into the moderate range with respect to the prospector, deliberate strategy and market orientation measures. It would appear the *analytics* exhibit characteristics resembling the analyzers strategic archetype described by Miles and Snow, ie, characteristics of both prospectors and defenders, seeking effectiveness through both efficiency and a quest for new products/markets (Doty et al., 1993; Olson et al., 2005). Moderate levels of SMA adoption and participation appear to be congruent with the selected strategic choices, hence implying fairly high vertical fit which is manifested by a high ROI performance.

Of the six clusters, the *first movers* exhibit the highest degree of variability with respect to usage of the 5 SMA dimensions. While competitor accounting and planning and control forms of SMA are most extensively used by this group, this is not the case for the remaining three dimensions. In particular, strategic costing stands out with a low level of usage. The level of accountant participation in strategy is in the mid-range to high level. With respect to strategic choices, the *first movers* exhibit a similar configurational pattern to the *stars*, ie., scoring highly on the prospector, deliberate

approach to strategy and market orientation measures. This signifies relatively low alignment between strategy and SMA. A case could be argued, however, that the high use of competitor accounting and planning and control appears consistent with the *first movers* high prospecting orientation (Shortell and Zajac, 1990; Doty et al., 1993), and that their low use of strategic costing may relate to the type of muted concern for cost efficiency that one might expect in a highly prospector oriented enterprise (Miles and Snow, 1978; Doty et al., 1993; Langfield-Smith, 1997). Considered collectively, the moderate level of accounting participation in strategic management, low use of strategic costing and low return on investment performance may signify a limited accounting vein running through *first movers*, especially when compared to the *stars* grouping that has a similar strategic posture. Despite this conjecture, we conclude that the *first movers* variable level of SMA adoption signifies a low level of SMA horizontal and vertical fit. This low level of fit has not been strongly manifested by low performance measures that range from moderate to high.

Protectors also exhibit some variability with respect to SMA adoption rates. While strategic costing, planning and control and strategic-decision making SMA techniques are relatively widely used, this is not the case for competitor and customer accounting dimensions. This grouping has the second highest level of accountant participation in strategy. The *protectors* are defender oriented with a moderate level of strategy deliberation and market orientation. The variability in levels of SMA techniques usage suggests that this configuration comprises mainly low cost defenders. Such a conclusion was drawn from the fact that strategic costing is widely used in this group whereas competitor accounting as an essential attribute of differentiation is not widely used (Guilding, 1999; Olson et al., 2005). Following the arguments presented in the description of the *stars* group relatively high SMA adoption and participation in strategy are not consistent with the defender strategy, a view supported also by Cadez and Guilding (2008). With respect to accounting participation, Porter (1996) argues that defenders are primarily concerned with operational effectiveness where efficiencies tend to be sought with an intra-departmental philosophy, contrary to prospectors who are more concerned with strategic positioning which requires broad inter-functional discussion (Nyamori et al., 2001). Further, there is evidence that broad scope information systems such as SMA are of limited value to defender type companies (Abernethy and Guthrie, 1994; Guilding, 1999) as their focus is primarily on cost efficiency. Overall, it appears that the relationships in the *protectors* configuration are somewhat inconsistent both along the horizontal and vertical dimension.

Laggards group features low SMA adoption rates and also accountant's participation in strategy. These relations appear consistent, signifying high horizontal fit. With respect to strategic choices, *laggards* are defender type oriented, strategy is relatively undeliberate (emergent) and the level of market orientation is relatively low. Building on the arguments already outlined in this section, the *laggards* SMA configuration appears to be consistent with its strategy, signifying high vertical fit.

Finally, the *socialism relics* can be interpreted as a more extreme case to the *laggards*. Hence, the configuration of underdeveloped SMA system and a defender type emergent

non market-oriented strategy is again consistent. It is notable that the socialism relics have the lowest level of performance.

Table 6: Summary of the 6 clusters' configurational consistency and performance

Configuration	Horizontal fit degree	Vertical fit degree	Performance level
Stars	High	High	Highest
Analytics	Fairly high	Fairly high	High
First movers	Lowest	Low	Fairly high
Protectors	Low	Low	Moderate
Laggards	High	High	Low
Socialism relics	Highest	Highest	Lowest

Table 6 provides a summary of the observations made in this section. It is evident from this table that the observed configurations constitute varying degrees of fit. The most effective configuration *stars* is also highly consistent. It comprises prospector type businesses who form strategy in a deliberate manner, are highly market oriented and exhibit developed SMA systems. Also of note, the least effective configurations *socialism relics* and *laggards* have highly consistent SMA configurations. These observations are interpreted in the next section.

Conclusion and discussion

Following a call to empirically examine the way in which elements of management accounting combine with a variety of strategic choices to enhance performance (Chenhall and Langfield-Smith, 1998), this study is believed to be the first to attempt an empirically based configurational analysis of strategic management accounting. The approach taken has drawn from configuration based analyses found in the management literature (Doty et al., 1993; Ketchen et al., 1993; Bensaou and Venkatraman, 1995; Delery and Doty, 1996; Gresov and Drazin, 1997; Ketchen et al., 1997; Ferguson and Ketchen, 1999; Payne, 2006; Fiss, 2007; Marlin et al., 2007). The study provides several contributions. First, it provides insights into business configurations with respect to strategic choices and SMA system designs in a successful transition economy. Second, it provides some support for the view that organizational configurations that exhibit internally consistent SMA alignments and SMA systems that are well aligned to strategic choices will demonstrate higher performance. It also provides some support for the view that similar levels of performance can be achieved using different strategic and structural alternatives.

Six configurations were derived using cluster analysis. The first four clusters appear to provide some support for the central configurational proposition that vertical and horizontal configurational alignment is associated with high performance. Of the four clusters, the *stars*, has the highest degrees of alignment and the highest levels of performance. The second cluster, the *analytics*, has fairly high degrees of alignment and the second highest levels of performance. The third and fourth clusters, the *first movers* and *protectors*, both have lower degrees of alignment and lower levels of performance.

The final two clusters counter the central configurational proposition, however. This is because they (*laggards* and *socialism relics*) exhibit high degrees of SMA horizontal and vertical fit, yet they are the two lowest performing groups.³ This contradictory observation beckons further scrutiny. While Miles and Snow (1978) assert that all their proposed strategic types can be effective, this is only true if they are well aligned with the environment confronted (Desarbo et al., 2005) and if the business functions are supportive of the grand strategies selected (Slater and Olson, 2001). Olson et al. (2005) provide evidence that a base level of marketing is required in every company to be effective, whereas Desarbo et al. (2006) find that for defenders marketing and market-linking capabilities are most significantly related to profit. This consideration is particularly pertinent given the particular context of the country surveyed in this study. Less than two decades ago, all Slovenian companies were production oriented and competitive strategic planning was minimal. It appears plausible that the *laggards* and *socialism relics* have yet to evolve strategies that are appropriately aligned with the radically changed Slovenian commercial environment. Ketchen et al. (1993) and Ferguson and Ketchen (1999) note that this type of misalignment is not uncommon, as evolution from a mis-aligned poor-performing configuration can require strategic and structural change that is time consuming and expensive, thus disparities in fit can be experienced for prolonged periods.

This is an important consideration in this study, as we have a somewhat idiosyncratic country context under examination. It appears reasonable to expect that dramatic changes experienced in the Slovenian economy are concomitant to considerable variability in the extent of adaptation achieved across the country's businesses. As a result, even though the *socialism relics* and *laggards* exhibit consistent SMA systems that are congruent with their strategies, it may well be that their strategic choices are not compatible with their business context, an over-riding factor contributing to low performance. Stated alternatively, underdeveloped SMA systems seem consistent with the strategic inertia of these two groups, however this particular consistency is not a sufficiently strong factor to counter the implications of the pursuit of inappropriate strategies.

Some limited support is also provided for the validity of the equifinality concept. The cluster analysis yielded two clusters (i.e. *stars* and *first movers*) that are very similar in terms of selected strategic choices and in terms of non-financial performance, yet quite different with respect to SMA system design. A similar observation occurs when comparing *stars* and *analytics*. While these configurations yield very similar financial performance levels, both the selected strategic choices and SMA system designs vary considerably. This interpretation has to be qualified, however, as the *stars* configuration is successful both along financial and non-financial dimensions of performance, while the *first movers* and *analytics* are successful on either the financial or non-financial dimensions of performance, but not both.

³ It is notable that this aspect of the study's findings is consistent with Chenhall and Langfield-Smith's (1998) Australian based study that found that the lowest performing configuration had low emphasis on all strategic priorities and the least developed management accounting practices.

We have little to build on when trying to relate the findings of this study to prior configurational accounting research. Our literature search suggests that the only prior study that has attempted an identification of configurations of strategic choices and management accounting practices was conducted by Chenhall and Langfield-Smith (1998). It should be noted, however, that the Chenhall and Langfield-Smith work was theoretically grounded in the contingency framework. Several parallels emerge between the findings of the study reported herein and those reported by Chenhall and Langfield-Smith. Firstly, Chenhall and Langfield-Smith note that in organizations pursuing similar strategic priorities, performance tends to be higher where management accounting practices are congruent with strategy. Secondly, they find that similar levels of performance can be achieved using different strategic and structural alternatives. Thirdly, they find that a configuration of unclear strategic priorities and under-developed management accounting systems is associated with low performance.

The contingency-based vein of research linking strategy and management accounting is, on the other hand, much more extensive. Considerable care is required, however, when relating the findings of contingency-based research to configurational-based research. The two approaches are paradigmatically distinct, hence it is often argued that references to the literature should only be made within each school of thought, rather than to search for consistent observations across the paradigms (Gerdin and Greve, 2004; 2008; Fiss, 2007). The challenge of relating the findings of the two distinct research paradigms is highlighted by a consideration of the findings reported herein with those of Cadez and Guilding (2008) who undertook a contingency-based analysis based on the same data set. Cadez and Guilding found a statistically significant positive association between SMA usage and adoption of a prospector strategy orientation. The findings of the study reported herein call into question the universality of such a relationship. This is because it has been found that ‘protectors’ have the second lowest prospector strategy ranking, yet they are the second highest users of strategic costing and also SMA for strategic decision making. Also, ‘first movers’ have the highest prospector strategy ranking, yet they are the second lowest users of strategic costing. Further, Cadez and Guilding (2008) found a statistically significant positive association between SMA usage and performance, yet the current study highlights the insights deriving from viewing the data set as constituting ‘pockets’ of subject companies, as the ‘analytics’ use three of the five sets of SMA practice to a below average extent, yet they are the highest performing cluster with respect to return on investment. Despite these differences, this study’s findings are largely compatible with prior contingency studies that have examined one or more SMA practices. For example, it provides some support for Guilding’s (1999) finding of a positive relationship between prospector strategy and competitor accounting usage, and also support for Guilding and McManus’ (2002) observation of a positive relationship between market orientation and customer accounting.

We have noted that the considerable attention commanded by configurational theory in the management and organizational literatures has not been mirrored in the management accounting field. Most of the empirical work exploring management accounting relationships has adopted a contingency framework, despite the fact that this approach has been criticized for its piecemeal and often contradictory nature over an extended

period of time (Fisher, 1995; Gresov and Drazin, 1997; Chenhall and Langfield-Smith, 1998; Chenhall, 2003; Gerdin and Greve, 2004; 2008). Following Fiss' (2007) view that there is a clear need to move beyond simple contingency approaches, since companies face multiple contingencies which present contradictory requirements for strategy and structure, this study represents the first to take a configurational approach to investigate factors associated with SMA adoption.

It appears that the reasons for the continuing contingency dominance over the configurational approach in management accounting research are many and often of a practical nature. Firstly, the simultaneous investigation of a variety of variables that characterises the configurational approach inevitably leads to the problem of conflicting contingencies (Fisher, 1995; Gerdin, 2005). This makes interpretation and theory building difficult. Secondly, testing multiple fits simultaneously precludes the use of rigorous statistical methods (Gerdin and Greve, 2004; Fiss, 2007). Thirdly, Ittner and Larcker (2001) contend that managerial accountants exhibit an innate interest in providing insights into which management accounting practices impact positively on organizational performance. This quest is consistent with contingency theory.

A number of pointers for further research emerge from this study. The findings suggest it might be important not to assume a singular relationship between strategic choice and SMA system design. Rather, distinct SMA designs may well prove to be equally effective for a particular context. The study also demonstrates how cluster analysis is a useful technique for exploring how a wide range of variables combine and how different elements of SMA make up a system. As clusters can exhibit strong relationships with industrial sectors, it should be recognised that if a particular sector is experiencing relatively challenging economic conditions, this factor is likely to carry a more profound impact on commercial performance than the impact carried by degree of horizontal or vertical fit within the cluster. This factor suggests that further research could benefit from holding industrial sector as a constant, ie., survey companies within a particular industrial sector, thereby removing a potentially strong industry effect impacting on performance.

A number of limitations need to be borne in mind when interpreting the study's findings. A major weakness of the cluster analytical technique relates to the reliance placed on the researcher's judgement. For example, determining the number of clusters requires the exercise of subjectivity, although an attempt was made to mitigate this weakness by deploying a recommended two step clustering approach and a cluster validation procedure (Ketchen and Shook, 1996). Further, cluster analysis does not carry statistical rigour, nor a clear notion of fit. Another problem is the potential for multicollinearity between clustering variables. In this study, the correlations were not excessively high (the highest recorded correlation was 0.51), hence the decision was taken not to correct for multicollinearity due to the many pitfalls associated with the correctional methods (Ketchen and Shook, 1996). A further shortcoming of the study relates to the use of a single item measure of business strategy. Single item measurement is likely to result in measurement error (Ittner and Larcker, 2001). Another limitation arises from the fact that the study did not examine the moderating effects of other environmental and organizational variables, except for company size.

Despite these limitations, it is believed the study provides some insight into the way that strategic choices and SMA practices can combine to effect performance. It also represents an important demonstration of how a holistic configurational approach may be applied in management accounting research.

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