

Contextual Factors Moderating the Impact of Strategic Management Accounting on Competitive Advantage

Babajide Oyewo

Department of Accounting, University of Southampton, Southampton, UK

meetjidemichael@gmail.com

B.M.Oyewo@soton.ac.uk

Abstract

Purpose

This study investigates the influence of six interrelated contextual factors (namely Organisational Structure, Quality of Information Technology, Business Strategy in terms of Deliberate Strategy-Formulation, Market Orientation, Market Competition and Perceived Environmental Uncertainty) on the usage intensity of innovative management accounting techniques commonly referred to as Strategic Management Accounting (SMA); the impact of SMA usage on Competitive Advantage; and the moderating influence of the contextual factors on the relationship between SMA usage and Competitive Advantage.

Design/methodology/approach

Survey data was obtained through a structured questionnaire from publicly listed manufacturing companies on the Mainboard of the Nigerian Stock Exchange. Ordinary least square regression and moderated regression were used to analyse data. Both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to examine the validity and reliability of variables as first and second order of analysis. Structural equation modelling (maximum likelihood estimation method) was applied to assess the robustness of result.

Findings

Market Orientation and Deliberate Strategy-Formulation emerged as significant determinants of SMA usage intensity. Although there is a significant relationship between SMA usage and Competitive Advantage, the strength of the relationship is moderate. Organisational Structure, Deliberate Strategy-Formulation, and Perceived Environmental Uncertainty significantly moderate the relationship between SMA usage and Competitive Advantage.

Originality/ Value

The current study is the first, to the researcher's knowledge, to specifically examine interrelated contextual factors distinctively affecting SMA usage and organisational competitiveness in a developing country. Whilst these six factors have been stressed as important determinants of the adoption of innovative management accounting techniques, the study provides empirical evidence on the extent to which they exert on SMA. The study provides empirical evidence on the relevance of market orientation—a variable which has surprisingly received little research attention in management accounting literature—as a variable which could affect the adoption of management accounting innovation.

Practical implications

The emergence of Deliberate Strategy-Formulation, as both a significant predictor of SMA usage intensity and as the strongest moderator of the relationship between SMA usage and Competitive Advantage, establish that it is organisations that take a proactive approach to strategy issues that may derive the most benefit from SMA utilisation. This result also brings to fore the need to involve management accountants in strategy formulation and implementation in order to leverage their competence in deploying SMA techniques to enhance organisational competitiveness.

Keywords: Competitive Advantage; contextual Factors; contingency theory; management accounting innovation; Strategic Management Accounting

1. INTRODUCTION

Innovative management accounting techniques, commonly referred to as strategic management accounting (SMA), have gained prominence in recent times due to their widely acclaimed usefulness in strategy implementation—an endeavour critical for the achievement of long-term organisational goals. SMA refers to the panoply of modern and innovative management accounting techniques that provide and analyse information concerning an organisation's product(s) in the market, cost structure and competitive strategies over a considerable period beyond one year (Bromwich & Bhimani, 1994; Subramaniam, 2018). Considering that SMA involves the provision of information to support strategic decisions in an organisation (Davila & Foster, 2005; Gomez-Conde & Lopez-Valeiras, 2018), SMA techniques are future-oriented and externally focused (Guilding, Cravens & Tayles, 2000). Although literature on SMA has witnessed tremendous growth, there is still lack of consensus on the definition of SMA, as the concept is open to various interpretations (e.g., Simmonds, 1981; Guilding et al., 2000; Langfield-Smith, 2008; Alamri, 2019; Hutaibat, 2019).

Simmonds (1981), who was the first to coin the term “strategic management accounting”, conceives it as a collection of externally-orientated management accounting techniques that analyse data about a business and its competitors, which is also used to develop and monitor the strategy of a business. Guilding et al. (2000) perceive SMA as accounting techniques that are “strategic” as the techniques are focusing on a timeframe beyond a year (future-oriented) and externally focused. They recommend that these considerations (i.e., future orientation and external focus) should guide the inclusion of an accounting technique in the pool of SMA techniques. Roslender and Hart (2003) suggest that SMA is an accounting technique that integrates insights from management accounting and marketing management within a strategic management framework for the purpose of providing information for strategic positioning. Relatedly, The Chartered Institute of Management Accountants, CIMA (2005) conceives SMA as a form of management accounting in which emphasis is placed on information which relates to factors external to the entity, as well as non-financial information and internally-generated information. Langfield-Smith (2008) views SMA as taking a strategic orientation to the generation, interpretation and analysis of management accounting information and competitors' activities. Tillman and Goddard (2008, p. 80) define SMA as “the use of management accounting systems in

supporting strategic decision-making”. Ma and Tayles (2009) define SMA as the body of management accounting concerned with strategically orientated information for decision-making and control. However, Langfield-Smith (2008) and Nixon, Burns and Jazayer (2011) argue that the term “strategic management accounting” is not used within the lexicon of accountants in practice.

Notwithstanding the lack of concurrence on the meaning of SMA, an appraisal of the definitions attributed to SMA reveals certain attributes which can be used as rubrics for designating accounting techniques as SMA. One of the common themes in the definitions proffered is that SMA is *externally-oriented* because organisations applying the techniques will look outward to compare what is done in the organisation with what is obtainable in the industry. SMA is also *strategy-driven*, providing information for strategic positioning. SMA helps to gain *competitive advantage* by seeking ways to differentiate a firm’s products/services from competitors. SMA is geared towards creating value using a combination of quantitative and qualitative information. SMA is concerned with the *long-term* and has a leaning towards the market, hence it is *market-orientated*. According to Lord (1996), SMA is characterised by collection of competitor information (such as pricing, costs and volume), exploitation of cost reduction opportunities (a focus on continuous improvement and non-financial performance measures), and matching the accounting emphasis with the firm’s strategic position. Also, SMA emphasizes providing information for strategy-formulation.

The characteristics of SMA may also be viewed in the light of how it compares with Traditional management accounting (TMA). TMA, no doubt, has been limited by its focus on events in the factory (Bromwich & Bhimani, 1989). In comparison to TMA, SMA introduces a longer-term and more external perspective. TMA emphasizes short-term planning and control, decision making, and product costing. TMA may be difficult to integrate into flexible manufacturing systems, computer integrated manufacturing and optimised manufacturing which characterise the fourth evolution stage of management accounting. For example, performing a variance analysis under a standard costing system may be irrelevant in a Just-In-Time (JIT) system where production runs commence when customers place order, whereby production flow and cycle time are critical, because JIT seeks to drastically reduce or eliminate stock holding/carrying costs; therefore,

reporting a ‘favourable’ purchase price variance is irrelevant if the quality of material supplied is low as to delay or discontinue production. Unlike TMA which provides quantitative accounting information, SMA provides quantitative and qualitative financial and non-financial information. The CIMA Official Terminology (2005) captures the characteristics of SMA by comparison with TMA system. These includes: (i) external orientation towards customers, competitors, suppliers and perhaps other stakeholders; (ii) future orientation, using relevant costs and revenue for decision-making; (iii) goal congruence—SMA requires the inputs of many areas of the business, translates the consequences of different strategies into a common accounting language for comparison, and relates business operations to financial performance.

In this study, SMA is conceptualised as a collection of modern and innovative management accounting techniques that focus on customers, competitors and other strategic issues including strategic planning, strategic control, performance measurement, and decision-making.

2. CONTEXT AND RESEARCH GAP

Whilst it is desirable to deploy SMA techniques because of their renown sophistication and perceived benefits over TMA techniques restricted to internal routine functions of planning, control and decision-making, their implementation may be affected by certain internal and external contextual factors (Ahmad & Zabri, 2015). The influence of contextual factors on SMA usage intensity has precipitated calls to gain increased understanding of factors explaining management accounting sophistication (e.g., Gerdin, 2005; Chendall, 2007; Ajibolade, 2013; Al-Mawali, 2015). Whereas there are various contingency factors that may affect the adoption of management accounting innovation, internal contingency variables (such as organisational structure, information technology, business strategy, market orientation) and external contingency variables (including market competition and perceived environmental uncertainty) may uniquely affect SMA usage. This is because these six contingency variables, in comparison to other factors, more reflect the distinctive characteristics of SMA as a burgeoning field in management accounting such as: (i) the focus on customers (thus, appearance of market orientation as a contingency variable); (ii) inclination towards strategy (variables such as organisational structure, and business strategy fit this circumstance because implementation of strategy will alter organisational structure); (iii) appropriateness of application in a modern business environment characterised by computerisation

(hence, relevance of information technology as a contingency variable); and (iv) external-orientation (thereby bringing about the investigation of market competition and perceived environmental uncertainty as contextual variables). Moreover, the six contingency variables have been stressed in prior studies as the most important factors exerting on utilisation of innovative management accounting techniques (e.g., Chenhall, 2003; Al-Mawali, 2015; Ahmad & Zabri, 2015).

Although these contextual factors have been documented to affect SMA usage, empirical results on the strength, direction and statistical significance of their impact have been mixed (e.g. Williams & Seaman, 2001; Waweru, Hoque & Uliana, 2004; Kattan, Pike & Tayles, 2007; Abdel-Kader & Luther, 2008; Cadez & Guilding, 2008). For example, while scholars such as Waweru et al. (2004), and Kattan, Pike and Tayles (2007) report a positive relationship between intensity of competition in the business environment and SMA, Williams and Seaman (2001) report a negative relationship. Also, Cadez and Guilding's (2008) finding of a positive association between strategy and SMA usage controverts Abdel-Kader and Luther's (2008) observation of no connection between competitive strategy and degree of sophistication in management accounting system. While Ajibolade (2013) finds that organisations facing higher environmental uncertainty have a propensity to adopt sophisticated management accounting techniques in order to cope with such turbulence, Abdel Al and McLellan (2011) empirically demonstrate a greater reliance on TMA techniques and conservatism in adopting new or advanced practices (such as activity based costing and management, target costing and product life cycle analysis) by Egyptian organisations when there are new challenges and uncertainty in the working environments. "Strategy" unignorably features in the SMA nomenclature, but surprisingly only a few studies have investigated business strategy, to some extent, as a variable affecting SMA adoption (e.g., Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Fowzia, 2011)—even at this, results on the influence of strategy on usage intensity of SMA have been inconsistent.

Going by the attributes of innovative management accounting techniques such as external-emphasis, strategy-focus, long-termism and market-orientation (Bhimani & Langfield-Smith, 2007), SMA usage can create and sustain competitive advantage. However, the extent to which SMA may deliver such anticipated benefits could be affected by some contextual factors. The need

for more research into the nexus between SMA and organisational competitiveness is justified by the unresolved debate on the benefits derivable from the more sophisticated management accounting system in terms of improving organisational performance (Roslender & Hart, 2002; Hyvonen, 2005; Gomez-Conde, 2015). Despite the documented benefits of the application of SMA, empirical evidence on its impact on organisational competitiveness is still contentious as there are doubts on the essence of its usage (Lord, 1996; Tomkins & Carr, 1996). Studies on the benefits of SMA adoption report mixed outcomes. While some scholars find a significant, positive association between SMA usage and perceived benefits (e.g. Adler, Everett & Waldron, 2000), others report low benefits (e.g. Hyvonen, 2005; Angelakis, Theriou & Floropoulos, 2010; Yap, Lee, Said & Yap, 2013). Thus, investigating the impact of SMA usage on organisational competitiveness, as well as the contingency variables moderating the relationship between SMA usage and competitive advantage becomes cogent, especially in developing countries where studies on management accounting innovation are limited.

The current study therefore investigates the contextual factors moderating the impact of SMA usage on competitive advantage in the Nigerian manufacturing sector. Consistent with the contingency theory invoked as theoretical framework, the contextual factors are referred to as the contingency variables affecting SMA usage in this study. The objectives of this study are to evaluate: (i) the contingency variables affecting SMA usage intensity; (ii) the impact of SMA usage intensity on competitive advantage; and (iii) the moderating influence of contingency variables on the relationship between SMA usage and competitive advantage.

Result shows that market orientation and deliberate strategy-formulation are the strongest determinants of SMA usage intensity (research objective one). Although there is a significant relationship between SMA usage and competitive advantage, the strength of the relationship is moderate (research objective two). Organisational structure, deliberate strategy-formulation, and perceived environmental uncertainty significantly moderate the relationship between SMA usage and competitive advantage (research objective three). The current study contributes to knowledge in that it is the first, to the researcher's knowledge, to specifically examine interrelated contextual factors distinctively affecting SMA usage and organisational competitiveness in a developing country.

The remainder of the paper is organised as follows. Section 3 presents literature review, followed by the methodology in Section 4. Section 5 covers data analysis and results. The paper is concluded in Section 6 with a discussion of the study's implications for research and practice.

3. LITERATURE REVIEW

3.1 Contingency Variables Affecting SMA Usage

This study invokes the contingency theory as the theoretical framework. The selection of the contingency theory is informed by the consideration that it explains both the internal/organisational (endogenous) variables and the external (exogenous) variables affecting SMA usage. The contingency theory also finds relevance in this study as it explains the impact of SMA usage on competitive advantage.

The contingency theory, which stems from the contingency or situational approach to management, emerged in management literature in the late 1960s and the 1970s as an alternative to the classical theory of management (Woodward, 1980; Wehrich, 1982; Mullins & Christy, 2013). The contingency approach to management posits that the managerial method to be used in a scenario is dependent on the prevailing circumstances in the environment, as factors that interplay in business environment vary (Battilana & Casciaro, 2012; Boddy, 2012). Also, the contingency theory, as applied to management accounting, states that management accounting practices is contextual, varying from one organisation to another. International Federation of Accountants IFAC (1998) cautions that the role and organisational positioning of management accounting inevitably differ across organisations, cultures and countries. The Chartered Institute of Management Accountants (CIMA) Official Terminology cited in BPP (2008, p. 124) states that “contingency theory relates to the design of accounting systems and presupposes that the systems can be effectively designed to suit the circumstances of the firm including its technology, entity structure and its competitive environment”. What is most appropriate for an organisation is dependent, in part, on internal contingent factors (such as age, size, growth, degree of centralisation, geographic dispersion, culture present within the organisation, role of centre in terms of decision-making, established strategy being pursued and technology usage and dependency), and external contingencies (including structure of the environment and environmental conditions like competition, economy, markets) [BPP, 2009a, 2009b; Ahmad &

Zabri, 2015]. Hiromoto (1988) suppose that management accounting practice may vary greatly depending on industry. Tillema (2005) contends that the appropriateness of using management accounting techniques might be dependent on the circumstances.

A notable number of studies have applied the contingency theory in management accounting research. Abdel-Kader and Luther (2008) apply the contingency theory to explore why firms adopt different management accounting practice. Their study investigates ten contingency variables devolved into external characteristics (environmental uncertainty, customer power); organisational characteristics (competitive strategy, structure, size); and processing characteristics (system complexity, extent of implementation of Advanced Manufacturing Technology (AMT), implementation of Total Quality Management (TQM), implementation of Just In Time (JIT), and product perishability). The study adds product perishability and customer power as additional contingency variables not considered in previous studies. Upon investigating the influence of four contingency variables (business strategy, degree to which adopted strategy is deliberately formulated, market orientation, and firm size) on SMA system design in one hundred and ninety-three (193) large Slovenian companies, Cadez and Guilding (2008) validate the claim that contingency theory has become the dominant paradigm in management accounting research. Other studies in management accounting have cited the contingency theory to explain the factors influencing management accounting practice (e.g. Albu & Albu, 2012; Ahmad & Zabri, 2015; Al-Mawali, 2015; Oyewo, Olowo & Obanor, 2021).

Amongst the contextual factors affecting management accounting practice, variables such as organisational structure, information technology, business strategy, market orientation, market competition and perceived environmental uncertainty may distinctively affect SMA usage because they are closely aligned with the attributes of innovative management accounting techniques such as focus on customers, inclination towards strategy, and external-orientation. These are explained as follows:

3.1.1 Organisational Structure

Organisational Structure as applied in this study connotes the degree of centralisation/decentralisation of decision-making in an organisation. The level of centralisation

and decentralisation as delineated in the organisational structure may affect SMA (Hutaibat, 2019). A complex business environment characterised by high level of uncertainty may require a decentralised structure to facilitate quick decision-making (Gul & Chia, 1994; Abdel-Kader & Luther, 2008). Since SMA techniques are externally oriented, high level of uncertainty may promote their extensive usage in order to cope with unpredictable changes. A decentralised system will therefore need a sophisticated accounting system to cope with environmental uncertainty. The decision of a strategic business unit to adopt and implement SMA will be quicker in a decentralised system compared to a centralised structure that would take a longer process to decide and implement such decisions. Thus, decentralisation may promote the propensity to use SMA (Abdel-Kader & Luther, 2008). However, results on the impact of the level of centralisation/decentralisation have been mixed (e.g. Gerdin, 2005; Ajibolade, 2013).

3.1.2 Information Technology

Information Technology (IT) is critical for the implementation of management accounting innovation (Lehner, Leitner-Hanetseder & Eisl, 2019). Regular and unpredictable changes typifying the modern business environment impose requirements on management accounting functions in organisations to capture and analyse information on the external business environment using technological innovations (Gotthardt, Koivulaakso, Paksoy, Saramo, Martikainen & Lehner, 2019). Since SMA is externally oriented, the role of IT in ensuring that the management accounting function collects and processes external information cannot be overstressed. Therefore, the robustness of IT facilities may affect the implementation of SMA. Studies have shown that IT is a core competence that has strategic ramifications (Szychta, 2002; Brown, Booth & Giacobbe, 2004; Abdel-Kader & Luther, 2008; Maelah, Auzair, Amir & Ahmad, 2017; Leitner-Hanetseder, Lehner, Eisl & Forstenlechner, 2021). Tayles and Drury (1994) report that Advanced Manufacturing Technology (AMT) has a significant effect on performance evaluation subsystem of a management accounting system. Szychta's (2002) study of firms in Poland, Waweru et al.'s (2004) examination of South African entities, as well as Al-Omiri and Drury's (2007) investigation of cost accounting system in the UK all report that IT is a driver of the utilisation of sophisticated management accounting techniques. Ahmad and Zabri (2015) detect that IT has a significant positive impact on SMA adoption among Small and Medium Scale Enterprises (SMEs) in Malaysia. Pitcher (2015) posits the essence of robust information system for the implementation

of management accounting techniques supporting the strategic management process. Empirical evidence abounds to support the proposition that the quality of IT is positively associated with SMA usage (Abdel-Maksoud, Dugdale & Luther, 2005; Abdel-Kader & Luther, 2008; Maelah et al., 2017).

3.1.3 Strategy

A crucial terminology in the SMA nomenclature is strategy. Anticipatedly, business strategy should influence adoption of SMA techniques, as some of the techniques directly carry the word “strategy” (e.g., strategic costing and strategic pricing), while others not labelled by the phrase (e.g., value-chain, target costing, and lifecycle costing, amongst others) are analogously underpinned by strategy. The decision to adopt SMA is affected by business strategy. This is because SMA techniques can be used for strategy formulation and implementation. Studies have linked adoption of management accounting practice to the type of business strategy pursued by organisations (e.g., Naranjo-Gil, Maas, & Hartmann, 2009; Auzair, Amiruddin, Majid & Maelah, 2013; Rosli, Said & Mohd, 2014). While Hiromoto (1988) notes that there is a link between corporate goals and management accounting practice, Langfield-Smith (1997) supported by Chenhall (2003) asserts that certain types of management accounting system will be more suited to particular strategies than others. Rosli *et al.* (2014) find that SMA usage has a significant relationship with firm performance in Malaysian government-linked companies (GLCs).

3.1.4 Market Orientation

The concept of market orientation has received little research attention in management accounting research (Guilding & McManus, 2002; Cadez & Guilding, 2008; Al-Mawali, 2015). There is lack of agreement among marketing researchers as to a widely-accepted definition of market orientation (Dreher, 1994). However, some of the conceptualisations put forward portray market orientation as an ideology in which management of the activities of an organisation is primarily geared towards satisfying customer’s needs (Jaworski & Kohli, 1993; Walker, Boyd, & Larreche, 1998). A market-oriented organisation seeks to create superior value for customers in an effective and efficient manner (Narver & Slater, 1990). Since SMA could be deployed to cope with developments in the external business environment, including customers’ taste and fashion, market orientation is a highly relevant contextual factor in the SMA discourse (Lehner & Harrer, 2019).

Cadez and Guilding, (2008) decry that while marketing academics have afforded this construct much attention, accounting researchers do not attach much importance to it, and sparingly research the variable. Considering that SMA has a leaning towards the external environment, market orientation may be positively associated with SMA usage intensity. Companies with strong market orientation will attach great importance to market-orientated information (Slater & Narver, 1994), and because highly market-oriented organisations have a very strong external focus (Kotler, 1977), a positive association between market orientation and SMA usage may be envisaged (Guilding & McManus, 2002; Al-Mawali, 2015). Highly market-oriented organisations have a greater tendency to deploy customer-focused SMA to satisfy their customers. They will seek external information concerning the activities of their customers and competitors in order to consolidate and/or scale up their market share. SMA usage may, therefore, be positively associated with market orientation (Guilding & McManus, 2002; Cadez & Guilding, 2008; Al-Mawali, 2015).

3.1.5 Intensity of Competition

The development of SMA is traceable to high level of competition in the business environment. High competition level would force an organisation to continuously monitor its market share and that of competitors, benchmark its activities with competitors, assess cost of competitors, value its brand and pursue strategic pricing (Aouadi & Marsat, 2018; Tauringana, 2020). Firms operating in a highly competitive environment are likely to utilise SMA more. High level of competition will also imply high level of environmental uncertainty. Abdel-Maksoud *et al.* (2005) suggest that companies in difficult competitive situations would want to assess performance from all dimensions available to them. Khandwalla (1972) corroborated by Al-Omiri and Drury (2007) argue that the deployment of sophisticated management controls is spurred by intense competition in the market. Companies facing intense competition may adopt and implement SMA as a competitive strategy to survive. High competition may force an organisation to seek cost-cutting strategies, monitor competitors and increase market share. Studies document that SMA usage is positively associated with intensity of competition (e.g. Cadez & Guilding, 2008; Ahmad & Zabri, 2015).

3.1.6 Perceived environmental uncertainty

Perceived environmental uncertainty (PEU) is a concept connected to the external business environment which refers to the totality of physical and social variables affecting decision-making

(Duncan, 1972 cited in Ajibolade, 2013). External environment factors include political, economic, socio-cultural, technological, ecological and legal (PESTEL) (Strandholm & Kumar, 2003). According to Ajibolade (2013), although unpredictability of the business environment has been studied using various concepts such as turbulence, hostility, diversity, complexity and restrictiveness, complexity and dynamism, controllability and uncertainty, uncertainty appears to be the widely-used conceptualisation in contingency studies. The inclusion of PEU as a contingency variable in the SMA discourse reiterates the influence of external business environment on management accounting practice.

The unpredictability of the business environment may also affect the use of management accounting techniques (Ajibolade, 2013; Mathuva, Mboya & McFie, 2017). Greater level of uncertainty in the environment causes higher importance to be attached to external, non-financial information (Gordon & Narayanan, 1984). Conversely, when PEU is low, predictions about the market may be relatively accurate, thus diminishing the need for external and *ex-ante* information (Gul & Chia, 1994). According to Chapman (1998), in times of uncertainty, greater communication is required between accountants and others (including management) to survive the instability. There is the need for accountants to be more aware of happenings in the environment, as they (accountants) use their knowledge of business, knowledge of methods, rules, regulations, and knowledge of the business environment to produce reports meaningful and useful to support management (Gomez-Conde, Lunkes & Rosa, 2019; Tingbani, Chithambo, Tauringana & Papanikolaou, 2020). Management accountants (or *Accountants in business*; CIMA, 2015) would therefore need sophisticated accounting techniques more at the period of uncertainty, thus the relevance of SMA in environment characterised by greater level of uncertainty. Chenhall (2003) maintains that environmental uncertainty is the most important factor affecting management accounting technique. Considering that high level of competition breeds environmental uncertainty, companies in difficult competitive situations would want to assess performance from all dimensions available to them. Since SMA can assist in providing the required information, high competition and environmental uncertainty may be positively associated with SMA usage (Ajibolade, 2013; Ahmad & Zabri, 2015; Al-Mawali, 2015; Frezatti, Bido, Cruz & Machado, 2015).

3.2 SMA Usage and Competitive Advantage

The utilisation of SMA techniques may create competitive advantage for companies intensely utilising them (Bhimani & Langfield-Smith, 2007). This stems from the consideration that SMA as a collection of innovative management accounting techniques is driven by strategy. Organisations implementing SMA will constantly seek strategies to outwit competitors. The external emphasis of SMA will cause organisations implementing the techniques to constantly scout for opportunities in the external business environment and leverage on the first-mover advantage. The market-orientation nature of SMA will cause organisations intensely utilising the techniques to be concerned about satisfying and exceeding customers' expectation, which may result in increased patronage and repeat business. The long-termism emphasized by SMA will motivate organisations to be proactive by looking into the future and implementing sustainable course of action that leads to the realisation of organisational objectives (Boakye, Tingbani, Ahinful, Damoah, & Tauringana, 2020; Oyewo, 2021). Hence, SMA usage can create and sustain competitive advantage. There is a body of literature providing empirical evidence that the utilisation of SMA techniques add value to organisations (e.g., Fuller, 2001; Wegmann, 2002; Yazdifar & Askarany, 2010; Gholami, 2011; Kraaijenbrink & Spender, 2011; Abdullah & Said, 2015; Oboh & Ajibolade, 2017).

4. METHODOLOGY

4.1 Research Design, Population and Sample selection

This study adopted quantitative research design and the survey method. The population of the study is comprised of operational manufacturing companies listed on the Main board (first-tier security market) of the Nigerian Stock Exchange (NSE). A total of 56 firms satisfying this inclusion criterion were all included in the study. Structured questionnaire was used to gather primary data from the companies. Three (3) copies of the questionnaire were dispatched to each company to be completed by senior finance personnel on behalf of their companies, making a total of one hundred and sixty-eight (168) copies administered. Prior studies have used a similar multi-informant strategy to improve the reliability of survey data (e.g. Gholami, 2011; Kraaijenbrink & Spender, 2011).

4.2 Measurement of Variables

4.2.1 Contingency Variables

(a) Organisational structure (STRC) was measured using a scale developed by the researcher based on the degree of centralisation/decentralisation. Respondents were asked to indicate on a scale of 1 (not at all) to 5 (very high extent): (i) level of power given to divisional managers/ departmental heads; (ii) level of independence accorded to branches/subsidiaries in making key decisions, and; (iii) degree to which responsibilities are shared to branches/ subsidiaries.

(b) Quality of information technology (QIT) was measured by adapting the scale developed by Teng, Cheon and Gover (1995). Respondents were requested to rate their information systems on a 5-point tapered scale of 1 (very low) to 5 (very high) in terms of its (i) accuracy, (ii) precision, (iii) reliability, (iv) completeness and (v) relevancy.

(c) Business Strategy was measured in terms of Deliberate strategy-formulation (STR-DEL) using Cadez and Gulding's (2012) measurement. Drawing on Mintzberg's (1987a) terminology, Cadez and Gulding (2008, 2012) developed the following statements, which were also adopted in this study: (i) "In our company, the strategic decision-makers usually think through everything in advance of strategic action" (ii) "In our company, strategic intentions are seldom realised with little or no deviation", and (iii) "In our company, strategic action usually develops in the absence of strategic intention". Next to each statement, a five-point scale was provided, ranging from 1 ('strongly disagree') to 5 ('strongly agree').

(d) Market orientation (MKT) was measured using the scale used in prior studies (e.g., Cravens & Guilding, 2001, Guilding & McManus, 2002; Al-Mawali, 2015). On a 5-point scale ranging from 1 ('not at all') to 5 ('to a very large extent'), respondents were asked to indicate the extent to which they agree with the following statements: "(i) My company has a strong understanding of our customers, (ii) the functions in my company work closely together to create superior value for our customers, (iii) management in my organisation 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 (iv) my company has a strong market orientation".

(e) Intensity of market competition (CMPT) was measured using the scale developed by Hansen and Van der Stede (2004). Respondents were requested to rank the intensity of market competition

on a scale of 1 (Not intense at all), 2 (Not intense), 3 (Slightly intense), 4 (Intense), and 5 (Very intense).

(f) Perceived environmental uncertainty (PEU) was measured using by Kren and Kerr's (1993) instrument developed from Miles and Snow's (1987) measurement. Respondents were requested to indicate their perception about the predictability of some stakeholders' actions namely: (i) customers, (ii) suppliers, (iii) competitors, and (iv) government.

(g) Organisational size:

Organisational size (SIZE) was enumerated as a control variable. Whilst different measures have been used to proxy size in literature such as Total Asset (Abdel-Kader & Luther, 2008; Pavlatos, 2011; Chiekiezie, Egbunike & Odum, 2014; Iredele, Ogunleye & Okpala, 2017), Annual Total Turnover/ Revenue (Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Ahmad & Zabri, 2015), and number of employees (Yap, *et al.*, 2013; Al-Mawali, 2015), organisational size (SIZE) was operationalised using Total Revenue. The average Total Revenue for three years (2015-2017) was computed from the audited annual reports for each company. To normalise the data, logarithmic transformation of average Total Revenue was used (Cadez & Guilding, 2008; Ahmad & Zabri, 2015).

4.2.2 Strategic Management Accounting

SMA usage intensity (SMA-Us) was measured by requesting respondents to rank the extent to which their firms use a list of nineteen (19) SMA techniques on a 5-point scale of 1 ('not at all') to 5 ('very great extent'). The techniques enlisted are: Attribute costing, Life cycle costing; Quality costing; Target costing; Value-chain costing; Activity based costing; Activity based management; Benchmarking; Integrated performance measurement; Environmental Management Accounting; Strategic costing (strategic cost management); Strategic pricing; Brand valuation; Competitor cost assessment; Competitive position monitoring; Competitor performance appraisal; Customer profitability analysis; Lifetime customer profitability analysis; and Valuation of customers as assets. The grouping of the techniques and their operationalisation is presented in Appendix 1. The scores were additively combined and averaged to derive an index for SMA usage intensity (SMA-Us). Prior studies have used a similar approach to measure SMA (e.g., Cadez & Guilding, 2008; Fowzia, 2011). Sample questionnaire is presented in Appendix 2.

4.2.3 Competitive Advantage

Measures of Competitive Advantage were adapted from Cadez and Guilding (2008) who modified version of the Hoque and James' (2000) instrument by including two measures. Hoque and James' (2000) original dimensions comprise: (i) return on investment, (ii) margin on sales, (iii) capacity utilisation, (iv) customer satisfaction, and (v) product quality. The two dimensions added by Cadez and Guilding (2008) were: (vi) development of new products, and (vii) market share, making a total of seven (7) performance indicators. Respondents were asked to rate how the performance of their company compared with that of competitors over the past five years in the seven dimensions of: (i) return on investment, (ii) margin on sales, (iii) capacity utilisation, (iv) customer patronage, (v) product quality, (vi) development of new products, and (vii) market share. A 5-point continuum of 1 ('far below average'), 2 ('below average'), 3 ('average'), 4 ('above average'), to 5 ('far above average') was used to capture response. Rating on these measures were averaged to determine the competitive advantage index (CAI) for each firm. Prior studies have used a similar approach to measure organisational performance (e.g., Govindarajan, 1988; Brown & Gulycz, 2002; AbuKasim & Minai, 2009; Cadez & Guilding, 2012; Alsoboa, Al-Ghazzawi & Joudeh, 2015).

4.3 Scale Purification, Validity, Reliability and Multi-collinearity

4.3.1 Scale Purification/ Data Reduction

Internal validity was achieved by adopting and adapting existing scales used in prior studies to measure variables (Robson, 2002). To assess the reliability of the measurement scale, both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. EFA and CFA were used to examine the validity and reliability of variables as first and second order of analysis respectively (Gerbing & Hamilton, 1996; Cadez & Guilding, 2008). The result from EFA is discussed as follows (full result presented in Appendix 3a to 3g):

(a) SMA Usage

Three components were generated for SMA Usage, with 61.101%, 9.197%, and 7.886% variance explained for components 1, 2 and 3 respectively (Appendix 3a). All the nineteen SMA techniques loaded strongly on component 1 (the component with the highest variance explained) well above

0.70. The communalities extraction coefficients also show that a high proportion of each variable was extracted as the lowest extraction among the variables was at 0.657 (i.e., 65.7%).

(b) Quality of Information Technology

In Appendix 3b, 1 component explaining 86.314% variance was generated. All the items measuring Quality of Information Technology loaded very strongly above 0.90. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.813).

(c) Market Orientation

In Appendix 3c, 1 component explaining 89.075% of the variance was generated. All the items measuring Market Orientation loaded very strongly above 0.90. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.855).

(d) Organisational structure

In Appendix 3d, 1 component explaining 81.105% of the variance was generated. All the items measuring Organisational Structure loaded very strongly above 0.80. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.708).

(e) Perceived Environmental Uncertainty

In Appendix 3e, 1 component explaining 56.016% of the variance was generated. All the items measuring Perceived Environmental Uncertainty loaded very strongly above 0.70. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.628).

(f) Deliberate Strategy-Formulation

In Table 3f, 1 component explaining 64.899% of the variance was generated. All the items measuring Deliberate Strategy-Formulation loaded very strongly above 0.70. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.557).

(g) Competitive Advantage

In Appendix 3g, 1 component explaining 67.202% of the variance was generated. All the items measuring Competitive Advantage loaded very strongly above 0.60. The communalities extraction coefficients also show that a high proportion of each variable was extracted (lowest extraction was at 0.530).

Since all factors loaded above a 0.30 threshold for each variable on the measurement scale during EFA (Appendix 3a to 3g), they were all retained for analysis. CFA result (Appendix 4a to 4g) provides corroborative evidence for the retention of the variables on the measurement scale as factors generally loaded satisfactorily.

4.3.2 Reliability/ Internal Consistency

Internal consistency was also assessed using Cronbach Alpha and Kaiser-Meyer-Olkin (KMO) Measure of Sampling as presented in Table 1.

Insert Table 1 here

From the result in Table 1, the Cronbach's alpha coefficients for all the multi-item variables are above the recommended 0.70 minimum (Qingping, 2009; Drost, 2011). The KMO test confirms that the sampling is adequate since the coefficients are above the recommended minimum of 0.5 (Cerny & Kaiser, 1977). The KMO statistics also establishes the factorability of variables. Furthermore, the p value of the Bartlett's Test of Sphericity is significant for all items at 5% (i.e., $p < .01$), indicating sufficient items for each factor. These results confirm internal consistency.

4.3.3 Test of Multicollinearity

Before performing the regression analysis on the influence of contingency variables on SMA usage, multicollinearity between the independent variables was inspected using correlation analysis. The result is presented in Table 2.

Insert Table 2 here

The correlations between the variables are positive and statistically significant. However, the strength of the relationship is average in most of the cases, and moderate at best (less than 0.750). Thus, there is strong reason to believe that multicollinearity is unlikely to be a problem (Tabachnick & Fidell, 2001; Tauringana, 2020).

4.4 Model Specification

Models 1 to 3 are underpinned by the contingency theory. There are three forms of fit relating to structural contingency theory such as the selection, interaction, and systems approaches (Chenhall & Chapman, 2006; Al-Omiri & Drury, 2007). The current study adopts both the selection and interaction approaches to structural contingency theory. The selection approach (which focuses on how contextual factors affect structural configuration) guided the assessment of the influence of the six selected contingency variables on SMA usage (Model 1). The interaction approach (which traces difference in organisational performance to the alignment of contextual factors with structural configuration) applies to this study in respect of understanding how variations in structure (SMA usage intensity) under particular conditions of context (contingency variables) affect performance (competitive advantage) [Models 3.1 to 3.6]. In other words, the interaction approach was employed to evaluate the impact of contextual factors on the interaction between SMA usage and competitive advantage.

4.4.1 Contingency Variables Affecting SMA Usage

To assess the contingency variables affecting SMA usage intensity (in respect of research objective one), Model 1 is specified in equation 1.

$$SMA-Us = \beta_{10} + \beta_{11} * STRC + \beta_{12} * QIT + \beta_{13} * STR-DEL + \beta_{14} * MKT + \beta_{15} * CMPT + \beta_{16} * PEU + \beta_{ctr} * SIZE + et_1 \quad (1)$$

Where *SMA-Us* is SMA usage, STRC is organisational structure, QIT is Quality of Information Technology, STR-DEL is Deliberate strategy-formulation, MKT is Market orientation, CMPT is Intensity of market competition, PEU is Perceived Environmental Uncertainty, and SIZE is firm size (Control Variable). β_{10} is the constant, β_{11} to β_{16} are regressor coefficients, β_{ctr} is coefficient of the control variable, and et_1 is stochastic error term for Model 1.

Model 1 is underpinned by the selection approach to the contingency theory. The selection approach examines the relationship between contextual variables and organisational structure. The variables included are contingency variables affecting the use of SMA. Firm size was retained as control variable as many studies have shown that organisational size influences management accounting practice (Libby & Waterhouse, 1996; Bjørnenak, 1997; Guilding, 1999; Abdel-Kader & Luther, 2008; Ahmad & Zabri, 2015; Oyewo, 2017). Moreover, the companies under study differ in size as per Turnover. Some prior studies have also used firm size as a control variable (e.g., Cadez & Guilding, 2008; Cinquini & Tenucci, 2010; Pavlatos, 2011; Al-Mawali, 2015).

4.4.2 Impact of SMA Usage on Competitive Advantage

To assess the impact of SMA usage on competitive advantage, Model 2 specified in equation 2 was used:

Model 2 (Impact of SMA Usage on Competitive Advantage):

$$CAI = \beta_{20} + \beta_{21} \text{ SMA-Us} + et_2 \quad (2)$$

Where CAI is Competitive Advantage Index; *SMA-Us* is SMA usage; β_{20} is constant, β_{21} is regressor coefficient, and et_2 is stochastic error term for Model 2.

4.4.3 Moderating influence of Contingency Variables on the Relationship between SMA Usage and Competitive Advantage

To assess the moderating influence of each contingency variable on the relationship between SMA Usage and Competitive Advantage, Models 3.1 to 3.6 are specified in equations 3.1 to 3.6:

$$\text{Model 3.1: } CAI = \mu_{10} + \mu_{11} \text{ SMA-Us} + \mu_{12} \text{ STRC} + \mu_{13} \text{ SMA-Us*STRC} + et_{3.1} \quad (3.1)$$

$$\text{Model 3.2: } CAI = \mu_{20} + \mu_{21} \text{ SMA-Us} + \mu_{22} \text{ QIT} + \mu_{23} \text{ SMA-Us*QIT} + et_{3.2} \quad (3.2)$$

$$\text{Model 3.3: CAI} = \mu_{30} + \mu_{31} \text{ SMA-Us} + \mu_{32} \text{ STR-DEL} + \mu_{33} \text{ SMA-Us*STR-DEL} + \text{et}_{3.3} \quad (3.3)$$

$$\text{Model 3.4: CAI} = \mu_{40} + \mu_{41} \text{ SMA-Us} + \mu_{42} \text{ MKT} + \mu_{43} \text{ SMA-Us*MKT} + \text{et}_{3.4} \quad (3.4)$$

$$\text{Model 3.5: CAI} = \mu_{50} + \mu_{51} \text{ SMA-Us} + \mu_{52} \text{ CMPT} + \mu_{53} \text{ SMA-Us*CMPT} + \text{et}_{3.5} \quad (3.5)$$

$$\text{Model 3.6: CAI} = \mu_{60} + \mu_{61} \text{ SMA-Us} + \mu_{62} \text{ PEU} + \mu_{63} \text{ SMA-Us*PEU} + \text{et}_{5.6} \quad (3.6)$$

Where CAI is Competitive Advantage Index, *SMA-Us* is SMA usage, STRC is organisational structure, QIT is Quality of Information Technology, STR-DEL is Deliberate strategy-formulation, MKT is Market orientation, CMPT is Intensity of market competition, and PEU is Perceived Environmental Uncertainty. μ_{10} to μ_{60} are constants; μ_{11} to μ_{63} are regressor coefficients, and $\text{et}_{3.1}$ to $\text{et}_{3.6}$ are stochastic error terms for Models 3.1 to 3.6 respectively.

To gain a deeper understanding of the fit between management accounting innovation, firm characteristics and organisational competitiveness, the interaction between SMA usage, contingency variables and competitive advantage was explored in Models 3.1 to 3.6 as advocated by the interaction fit contingency study (e.g. Chenhall & Langfield-Smith, 1998; Chenhall, 2003). The six contingency variables were investigated as moderators of the relationship between SMA usage and Competitive Advantage based on their reoccurrence in literature as mainstream determinants of SMA usage.

4.5 Respondents' Attrition and Response Rate

From the one hundred and sixty-eight (168) copies of the questionnaire administered, one hundred and thirty-one (131) copies were retrieved, representing a response rate of 77.9%. Two (2) copies were found unsuitable for use because they were not properly completed, thereby reducing the number of usable copies to one hundred and twenty-nine (129). This diminished the effective response rate to 76.7%. The one hundred and twenty-nine (129) valid responses were processed for analysis.

5. RESULTS

Results are presented according to the research objectives. The influence of contingency variables on SMA usage intensity is presented in Section 5.1, the impact of SMA usage intensity on competitive advantage presented in section 5.2, and the moderating influence of the contingency variables on the relationship between SMA usage intensity and competitive advantage is presented in section 5.3.

5.1 Contingency variables affecting SMA usage Intensity

Regression results on the influence of Contingency variables on SMA usage Intensity are presented in Table 3.

Insert Table 3 here

In Table 3, the p value of the F statistics confirms that the model is statistically significant. The omnibus correlation coefficient (R) of 0.933 means that the contingency variables have a strong positive relationship of 93.3% with SMA usage. The coefficient of determination (R square) at 0.870 proves that the selected contingency variables jointly account for 87.0% of SMA usage intensity. The beta coefficients of all the independent variables are positive. In other words, a decentralised organisational structure, high-quality information technology, deliberate strategy-formulation, a strong market orientation, high level of market competition, and high level of environmental uncertainty promote the uptake of SMA. The statistical significance evinced by firm size buttresses the assertion in literature that utilisation of management accounting practice is dependent on firm size (e.g., Tauringana, 2020). However, a closer examination of the contributions of each the contingency variables to SMA usage intensity reveals that Deliberate Strategy-Formulation (STR-DEL) and Market Orientation (MKT) have statistically significant unstandardised beta values of 0.266 ($p = 0.012 < .05$) and .425 ($p = 0.002 < .01$) respectively. Market Orientation ($t = 3.257, p < 0.01$) has the higher magnitude of contribution in comparison to Deliberate Strategy-Formulation ($t = 2.649, p < 0.05$). This leads to the conclusion that although the contingency variables jointly have a strong and significant influence on SMA usage, market orientation and deliberate strategy-formulation are the strongest determinants of SMA usage intensity (research objective one).

5.2 Impact of SMA Usage on competitive advantage

The impact of SMA usage on competitive advantage was assessed using regression analysis as presented in Table 4.

Insert Table 4 here

In Table 4, the correlation coefficient (R) of 0.801 means that there is a strong positive relationship at 80.1% between SMA Usage and Competitive Advantage. The coefficient of determination (R square) at 0.642 implies that 64.2% of Competitive Advantage is attributable to SMA Usage. The positive and statistically significant relationship between the variables is confirmed by the beta of SMA Usage (SMA-Us) at 0.62 which is positive and significant ($p = 0.000 < 0.05$). This leads to the conclusion that, to a moderate extent, SMA usage has a positive impact on competitive advantage of companies (research objective two). Plot of SMA usage and competitive advantage is shown in Figure 1.

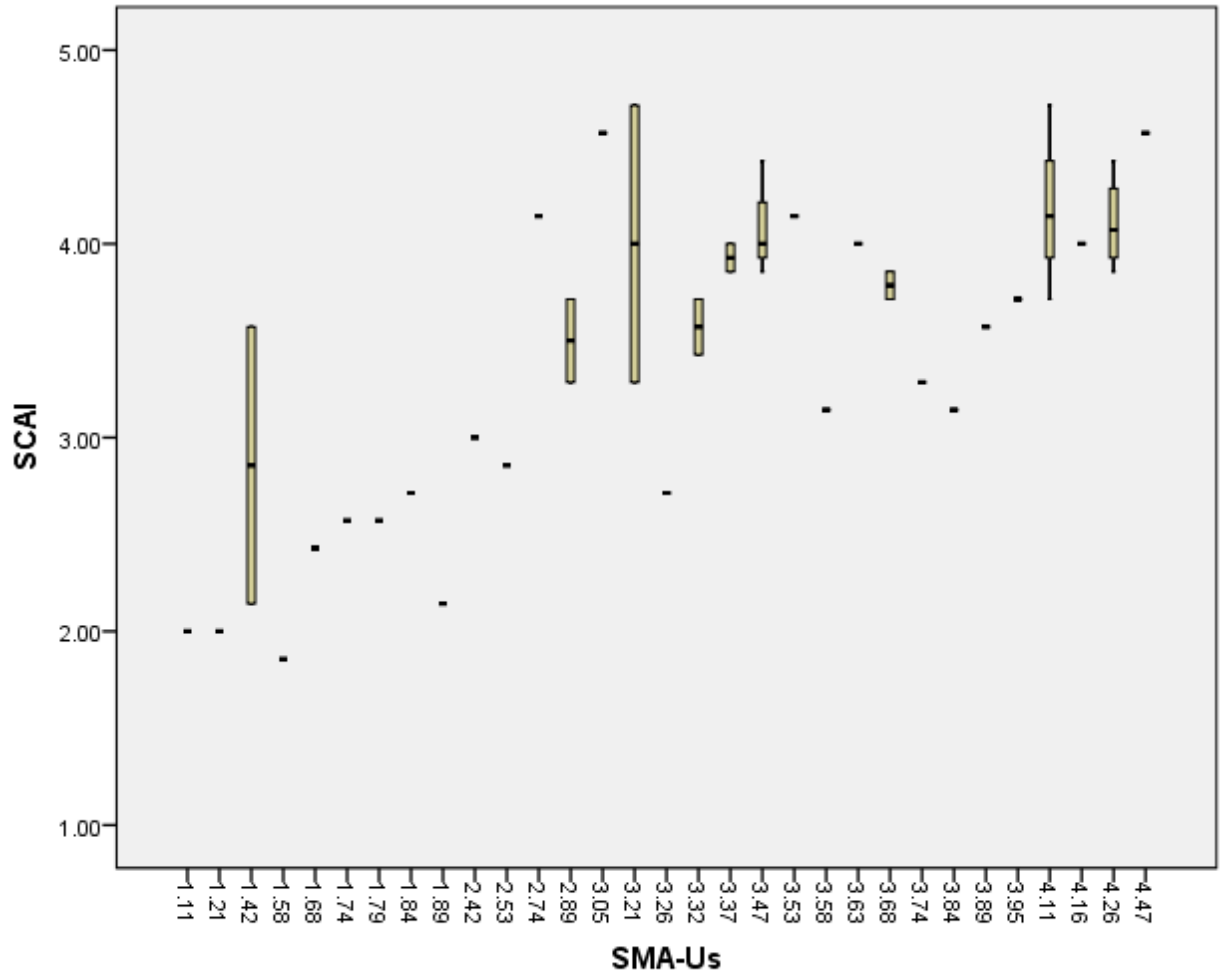


Figure 1: Plot of the relationship between SMA Usage and Competitive Advantage (SCAI)

The graph shows that as the intensity of SMA usage rises, competitive advantage correspondingly increases. This illustrates the positive relationship between SMA usage and competitive advantage, thus corroborating the result of Table 4.

5.3 The Moderating influence of Contingency Variables on the Relationship between SMA Usage and competitive advantage

Result on the moderating influence of the contingency variables on the relationship between SMA Usage and Competitive Advantage is presented in Tables 5 to 10.

Insert Tables 5 to 10 here

A summary of the moderated regression results is presented in Table 11.

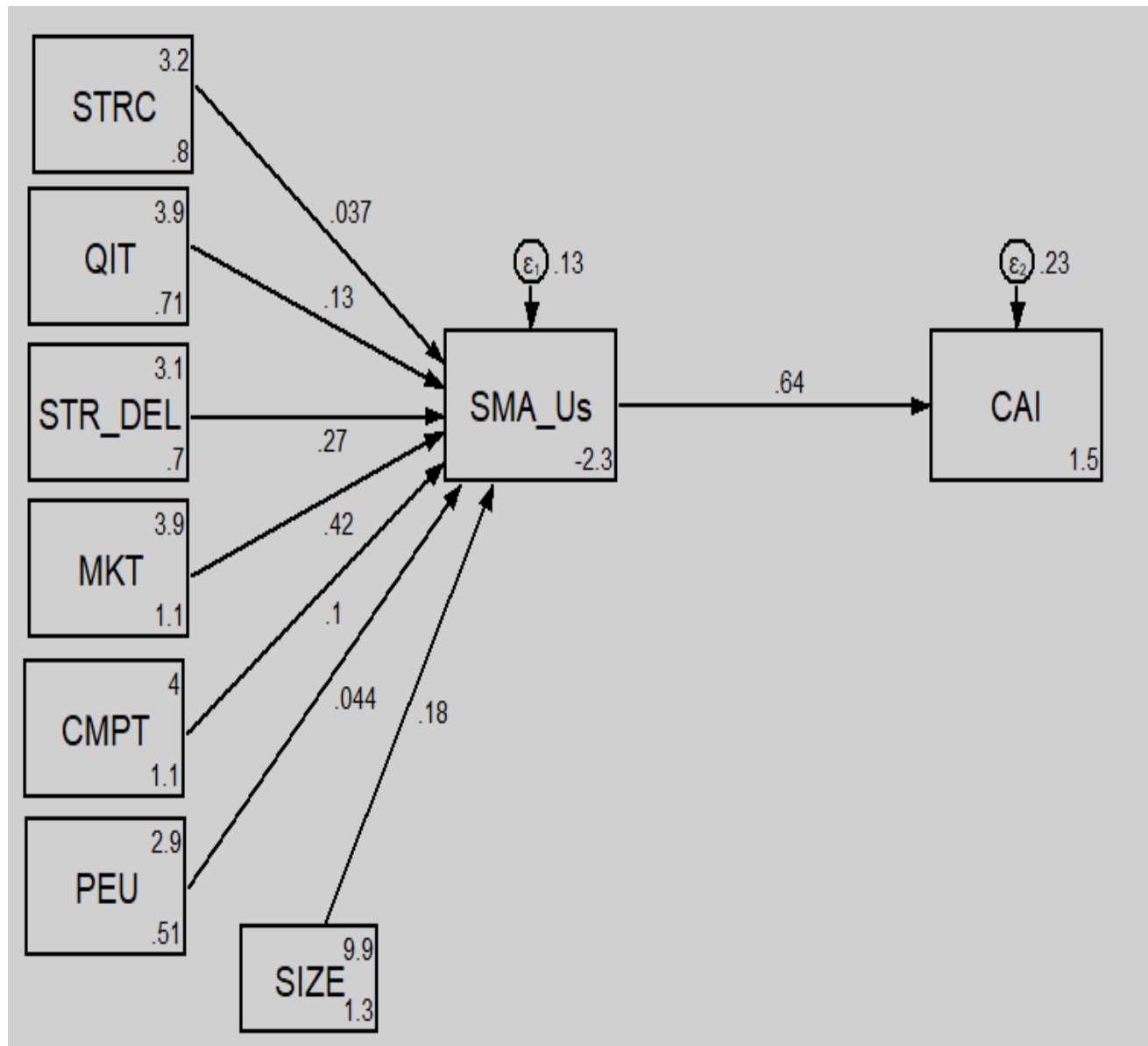
Insert Table 11 here

From Table 11, three out of the six variables namely Organisational Structure, Deliberate Strategy-Formulation, and Perceived Environmental Uncertainty significantly moderate the influence of SMA Usage on Competitive Advantage. Deliberate Strategy-Formulation witnessed the highest magnitude of R square change of 2.7% from 64.2% to 66.9%. Next is Perceived Environmental Uncertainty with R square change up by 2.4% (from 69.1% to 71.5%); and then Organisational Structure with R square coefficient changing from 70.1% to 72.3%, representing a 2.2% increase. The R square change for Quality of Information Technology was not only low (up by 0.1 % from 66.1% to 66.2%) but was also not statistically significant. The same is true for Market Orientation (0.9% increase) and Intensity of Market Competition (0.6%). It is therefore concluded that organisational structure, deliberate strategy-formulation, and perceived environmental uncertainty significantly moderate the relationship between SMA usage and competitive advantage (research objective three).

5.4 Robustness Check using Structural Equation Modelling

To check the robustness of result on the relationship between the contingency variables, SMA usage and competitive advantage, structural equation modelling (SEM) was employed using the maximum likelihood estimation method. The application of SEM permits the simultaneous exploration of the inter-relationship among variables (Leth-Steensen & Gallitto, 2016). The result is presented in Figure 2, Tables 12 and 13.

Figure 2: Structural Equation Modelling of the Relationship Between Contingency Variables, SMA Usage and Competitive Advantage



KEY: SMA_Us = SMA Usage; STRC = Organisational Structure; QIT = Quality of Information Technology; STR_DEL = Deliberate Strategy-Formulation; MKT = Market orientation; CMPT = Intensity of Market Competition; PEU = Perceived Environmental Uncertainty; SIZE = Organisational Size (control variable); CAI = Competitive Advantage

<Insert Table 12 here>

A Chi square divided by the degrees of freedom (CMINDF) ratio < 3.0 (Schreiber, Nora, Stage, Barlow & King, 2006), a Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) close to 0.95 (Hu & Bentler, 1999), a Root Mean Squared Error of Approximation (RMSEA) p value of < 0.05 (Schreiber et al., 2006), a Standardised Root Mean Squared Residual (SRMR) close to 0, and a Coefficient of Determination (CD) close to 1 indicate good fit. As shown in Table 12, all fit statistics satisfy the required thresholds (CMINDF ratio = 2.116; CFI = 0.846; TLI = 0.671; RMSEA $p < 0.05$; SRMR = 0.052; CD = 0.870), indicating that the model fit is reasonable (Leth-Steensen & Gallitto, 2016).

Result in Table 12 confirms that Market Orientation ($b = 0.425$, $p < 0.01$) and Deliberate Strategy-Formulation ($b = 0.267$, $p < 0.01$) have significant impact on SMA usage, with Market Orientation exerting the greatest influence. This is consistent with the result of the ordinary least square (OLS) regression analysis reported in Table 3. The effect sizes for both Market Orientation ($t = 3.257$ from OLS; $z = 3.60$ from SEM) and Deliberate Strategy-Formulation ($t = 2.649$ from OLS; $z = 2.93$ from SEM) are also consistent. Furthermore, the impact of SMA Usage on Competitive Advantage is positive and statistically significant ($b = .6421264$, $p < 0.01$), with the effect size from SEM ($z = 8.98$) comparable to that reported from OLS analysis ($t = 8.774$) in Table 4.

Additional analysis on the ability of the contingency variables to mediate the relationship between SMA Usage and Competitive Advantage (i.e., indirect effects analysis) is reported in Table 13

<Insert Table 13 here>

In Table 13, Market Orientation ($b = 0.273$, $p < 0.01$) and Deliberate Strategy-Formulation ($b = 0.171$, $p < 0.01$) also emerged as significant mediating variables between SMA Usage and Competitive Advantage. This is consistent with the result in Tables 3 and 12, whereby both contingency variables are the significant determinants of SMA usage intensity. The emergence of

Market Orientation as the strongest mediating variable connotes that organisations with strong market orientation will want to implement SMA extensively so as to gain competitive advantage. In other words, since it is not the superficial but extensive implementation of SMA that brings about competitive advantage, organisations seeking to satisfy and create superior value for customers (i.e., organisations with strong market orientation) will rigorously implement SMA to the extent that it yields the anticipated benefit of bringing about competitive advantage. The same is true of Deliberate Strategy-Formulation whereby organisations that are intentional about formulating competitive strategies may be able to realise the benefits of deploying SMA in the way of enhancing competitive advantage. In sum, the additional analysis performed using SEM (reported in Figure 2, Tables 12 and 13) establishes that the result is robust enough to support the conclusion that: (i) market orientation and deliberate strategy-formulation are the strongest determinants of SMA usage intensity (research objective one), and that (ii) to a moderate extent, SMA usage has a positive impact on competitive advantage of companies (research objective two).

6. DISCUSSION AND CONCLUSION

6.1 Implications of findings for Research

Whereas the omnibus effect of the six contingency variables (Organisational structure, Information Technology, Strategy, Market orientation, Intensity of market competition, and Perceived Environmental Uncertainty) on SMA usage intensity is strong and statistically significant, market orientation and deliberate strategy-formulation have the strongest and statistically-significant effect on SMA usage intensity [Table 3] (research objective one). This result contributes to theory by validating the selection approach to the contingency theory as documented in prior studies (e.g., Chendall, 2007). In line with the interaction approach to the contingency theory, SMA usage positively and significantly affects competitive advantage (research objective two). However, the magnitude of the effect is moderate judging from the coefficient of determination (R square of 0.642) [Table 4]. The moderate impact of SMA usage on competitive advantage may be associated with the low to moderate usage rate of various SMA techniques in Nigerian companies as stated in literature (e.g. Abogun & Abomide, 2013; Ojua, 2017). Stated differently, since the utilisation rate of SMA is low in comparison to TMA techniques as reported in prior studies, it may have been expected that the outcome of its usage in terms of delivering competitive advantage would

be correspondingly moderate. The result that SMA usage enhances the competitiveness of firms is consistent with some prior studies (e.g. Chiekezie *et al.*, 2014; Ahmad & Zabri, 2016; Eker & Aytaç, 2016; Alamri, 2019). Also, the result that organisational structure, deliberate strategy-formulation, and perceived environmental uncertainty significantly moderate the relationship between SMA usage and competitive advantage validates and extends studies on interaction approach to structural contingency theory (e.g. Chenhall, 2003; Abdel Al & McLellan, 2013 Eker & Aytaç, 2016).

6.2 Implications of Findings for Practice

Three out of the six variables, namely organisational structure, deliberate strategy-formulation, and perceived environmental uncertainty, significantly moderate the influence of SMA usage on competitive advantage (research objective three) [Table 11]. This result has certain implications for practice. Whilst the deployment of SMA could both create and sustain competitive advantage, the extent to which such benefit is realised may be dependent on the level of decentralisation, deliberate strategy-formulation and perception on the level of environmental uncertainty. The emergence of two internal contingency variables (organisational structure and deliberate strategy-formulation) and an external contingency variable (perceived environmental uncertainty) as moderators of the relationship between SMA usage and competitive advantage reinforces the claim that SMA balances internal focus with external orientation to bring about improved organisational performance (CIMA, 2005; Alamri, 2019). Also, the concurrent appearance of decentralised organisational structure and perceived environmental uncertainty as moderating variables provide empirical support for the contention that when the level of uncertainty in the environment is high, a decentralised system is required (Gul & Chia, 1994; Abdel-Kader & Luther, 2008). A decentralised system will in turn require a more sophisticated management accounting system that is externally-oriented. Consequently, firms/ management accounting practitioners operating a decentralised structure have higher propensity to adopt SMA to ensure that competitive advantage is sustained in the long run. The unpredictability of the business environment will cause companies/ management accounting practitioners to rely on the extensive use of SMA to survive (Ajibolade, 2013; (Benlemlih, & Bitar, 2018). Thus, organisations regarding the environment as uncertain have a greater propensity to rigorously apply SMA techniques to survive competition.

The emergence of deliberate strategy-formulation both as a significant predictor of SMA usage intensity, and as the strongest moderating variable establishes that it is organisations that take a proactive approach to strategy issues that may derive the most benefit from SMA utilisation (Laela, Rossieta, Wijanto & Ismal, 2018). The result also provides empirical evidence on conceptual discussions on the nexus between SMA and strategic management (BPP, 2009b; Aboramadan & Borgonovi, 2016). Furthermore, the result reiterates the relevance of management accountants in strategy formulation and implementation (Aver & Cadez, 2009; Pitcher, 2015); *Accountants-in-business* would have to get involved in formulating strategy and deploying SMA to achieve the goals underpinning such competitive strategies. The implication of this finding for practitioners is that management accountants must get involved in strategy issues. Management accountants' adroitness is needed in deploying SMA techniques that suit the vision and strategy of the organisation at every point in time—only then can optimal benefits be derived from SMA usage. Cadez and Guilding, (2008) argue that an organisation following a process/ step-by-step approach to strategy formulation (i.e., rational model for strategic management) would require accounting information in the strategic management process and, as a consequence, consciously apply SMA techniques to satisfy such information needs. SMA usage and the participation of management accountants will therefore be greater in companies that take a deliberate approach to strategy-formulation. Taken together, the result that deliberate strategy-formulation is both a significant predictor of SMA usage intensity and the strongest moderator of the relationship between SMA usage and competitive advantage brings to fore the need to involve management accountants in strategy formulation and implementation in order to leverage their competence in deploying SMA techniques to enhance organisational competitiveness.

6.3 Contributions to Knowledge

The current study contributes to knowledge in that it is the first, to the researcher's knowledge, to specifically examine interrelated contextual factors distinctively affecting SMA usage and organisational competitiveness in a developing country. Given, on one hand, the socio-economic position of Nigeria as a leading country in Africa, and on the other the cosmopolitan nature of the manufacturing sector in the country (where both indigenous and foreign manufacturers are players), contingency factors affecting SMA usage in the Nigerian manufacturing sector may, to a

reasonable, reflect the determinants of the adoption of management accounting innovation by companies in sub-Saharan Africa. Moreover, an investigation into the adoption of management accounting innovation by companies operating in Nigeria, as one of the industrialised countries in Africa, provides a broader view on the diffusion of management accounting innovation in developing countries.

The six contingency variables investigated are closely aligned with the attributes of innovative management accounting techniques such as focus on customers, inclination towards strategy, relevance to modern business environment and external orientation. Whilst these six factors have been stressed as important determinants of innovative management accounting techniques, the study provides empirical evidence on the extent to which they exert on SMA usage. The study provides empirical evidence on the relevance of market orientation—a variable which has surprisingly received little research attention in management accounting literature—as a variable which could affect the adoption of management accounting innovation. The study also developed measurement scale for organisational structure as a variable affecting management accounting practice, from the perspective of the degree of centralisation and decentralisation. The measurement scale could be used in future management accounting research. The study investigated three additional management accounting techniques that satisfy the characteristics of SMA in literature but have been ignored in some prior studies namely Activity Based Costing (ABC), Activity Based Management (ABM) and Environmental Management Accounting (EMA). Considering that the emergence of SMA has been diverse, contradictory and iterative, as the SMA techniques have witnessed continuous addition and updating, the current study has attempted to resolve this controversy by capturing all management accounting techniques that satisfy the characteristics of SMA—therefore, a total of nineteen (19) SMA techniques were investigated. With this thought in mind, the current study is one of the few studies in recent times that examined a wide array of SMA typology.

Acknowledgement

The Author is grateful to the Editor, Professor Othmar Lehner and the three anonymous reviewers for their insightful comments and suggestions in improving the earlier versions of the paper.

REFERENCES

- Abdel Al, S.F., & McLellan, J.D. (2011). Management accounting practices in Egypt: A transitional Economy Country. *Journal of Accounting, Business & Management*, 18(2), 105-120.
- Abdel Al, S.F., & McLellan, J.D. (2013). Strategy and management accounting practices alignment and its effect on organizational performance. *Journal of Accounting, Business & Management*, 20 (1), 1-27
- Abdel-Kader, M., & Luther, R. (2008). The impact of firm characteristics on management accounting practices: A UK-based empirical analysis. *The British Accounting Review*, 40(1), 2-27.
- Abdel-Maksoud, A., Dugdale, D., & Luther, R. (2005). Non-financial performance measurement in manufacturing companies. *The British Accounting Review*, 37 (3), 261-297.
- Abdullah, N. H., & Said, J. (2015). Enhancing the governance of government linked companies via strategic management accounting practices and value creation. *Procedia Economics and Finance*, 28, 222-229.
- Abogun, S., & Abomide, O. (2013). Adoption level and impact of strategic initiatives in management accounting on firms' performance in Kwara state. *Advances in management*, 11 (1), 21-31.
- Aboramadan, M., & Borgonovi, E. (2016). Strategic management practices as a key determinant of superior non-governmental organisations performance. *Problems of management in the 21st century*, 11 (2), 71-92.
- AbuKasim, N. A., & Minai, B. (2009). Linking CRM strategy, customer performance measures and performance in the hotel industry. *International Journal of Economics and Management*, 3(2), 297-316.
- Adler, R., Everett, A.M., & Waldron, M. (2000). Advanced management accounting techniques in manufacturing: Utilization, benefits, and barriers to implementation. *Accounting Forum*, 24(1), 131-150.
- Ahmad, K., & Zabri, S.M. (2015). Factors explaining the use of management accounting practices in Malaysian medium-sized firms. *Journal of Small Business and Enterprise Development*, 22(4), 762-781.
- Ahmad, K., & Zabri, S.M. (2016). Management accounting practices among small and medium enterprises. *Proceedings of the 28th International Business Information Management Association Conference*. 9-10 November 2016, Seville, Spain.
- Ajibolade, S.O. (2013). Management accounting systems design and company performance in Nigerian manufacturing companies: A contingency theory perspective. *British Journal of Arts and Social Sciences*, 14 (2), 228-244.
- Alamri, A.M. (2019), "Association between strategic management accounting facets and organizational performance", *Baltic Journal of Management*, Vol. 14 No. 2, pp. 212-234. <https://doi.org/10.1108/BJM-12-2017-0411>

- Albu, N., & Albu, C.N. (2012). Factors associated with the adoption and use of management accounting techniques in developing countries: The case of Romania. *Journal of International Management & Accounting*, 23(3), 245-276.
- Al-Mawali, H. (2015). Contingent factors of strategic management accounting. *Research Journal of Finance and Accounting*, 6 (11), 130-137.
- Al-Omiri, M., & Drury, C. (2007). A survey of factors influencing the choice of product costing systems in UK organizations. *Management Accounting Research*, 18(4), 399-424.
- Alsoboa, S., Al-Ghazzawi, A., & Joudeh, A. (2015). The impact of strategic costing techniques on the performance of Jordanian listed manufacturing companies. *Research Journal of Finance and Accounting*, 6 (10), 116-127.
- Angelakis, G., Theriou, N., & Floropoulos I. (2010). Adoption and benefits of management accounting practices: Evidence from Greece and Finland. *Advances in Accounting, incorporating Advances in International Accounting*, 26, 87-96.
- Aouadi, A., & Marsat, S. (2018). Do ESG controversies matter for firm value? Evidence from international data. *Journal of Business Ethics*, 151(4), 1027-1047.
- Auzair, S., Amiruddin, R., Majid, A., & Maelah, R. (2013). Linking business strategy to management accounting: A study in Malaysian service organizations. *Jurnal Pengurusan*, 37, 45-52.
- Aver, B., & Cadez, S. (2009). Management accountants' participation in strategic management processes: A cross-industry comparison. *Journal of East European Management Studies*, 3, 310-322.
- Battilana, J., & Casciaro, T. (2012). Change agents, networks and institutions: A contingency theory of organizational change. *Academy of Management Journal*, 35 (2), 381–398.
- Benlemlih, M., & Bitar, M. (2018). Corporate social responsibility and investment efficiency. *Journal of Business Ethics*, 148(3), 647-671.
- Bhimani, A., & Langfield-Smith, K. (2007). Structure, formality and the importance of financial and non-financial information in strategy development and implementation. *Management Accounting Research*, 18, 3–31.
- Bjørnenak, T. (1997). Diffusion and accounting: The case of ABC in Norway. *Management Accounting Research*, 8(1), 3-17.
- Boakye, D. J., Tingbani, I., Ahinful, G., Damoah, I., & Tauringana, V. (2020). Sustainable environmental practices and financial performance: evidence from listed small and medium-sized enterprise in the United Kingdom. *Business Strategy and the Environment*, 29(6), 2583-2602. <https://doi.org/10.1002/bse.2522>
- Boddy, D. (2012). *Essentials of management: A concise introduction*. Essex, England: Pearson Education Limited.
- BPP (2008). *CIMA Paper P2: Management accounting: Decision management study text* (5th ed.). London: BPP Learning Media Ltd.
- BPP (2009a). *CIMA Paper P3: Performance Strategy study text* (1st ed.). London: BPP Learning Media Ltd.
- BPP (2009b). *CIMA Paper E3: Enterprise Strategy study text*. (1st Ed.). London: BPP Learning Media Ltd.
- Bromwich, M., & Bhimani, A. (1989). *Management accounting: Evolution not revolution*. London: The Chartered Institute of Management Accountants.

- Bromwich, M. & Bhimani, A. (1994). *Management accounting pathways to progress*. London: Chartered Institute of Management Accountants.
- Brown, A., Booth, P., & Giacobbe, F. (2004). Technological and organizational influences on the adoption of activity-based costing in Australia. *Accounting and Finance*, 44 (3), 329-356.
- Brown, S.A. & Gulycz, M. (2002). *Performance driven CRM: how to make your customer relationship management visions a reality*. Ontario: John Wiley and Sons, Canada.
- Cadez, S., & Guilding, C. (2008). An exploratory investigation of an integrated contingency model of strategic management accounting. *Accounting, Organisations and Society*, 33(7-8), 836-863.
- Cadez, S., & Guilding, C. (2012). Strategy, strategic management accounting and performance: A configurational analysis. *Industrial Management & Data Systems*, 112 (3), 484-501.
- Cerny, C.A., & Kaiser, H. F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioural Research*, 12 (1), 43-47.
- Chapman, C.S. (1998). Accountants in organizational networks. *Accounting, Organizations and Society*, 23(8), 737-766.
- Chartered Institute of Management Accountants, CIMA (2005). *CIMA Official Terminology*. London: CIMA Publishing
- Chendall, R. (2007). Theorising contingencies in management control systems research, In Chapman, C., Hopwood, A., & Shields, M. (editors). *Handbook of Management Accounting Research*. Elsevier.
- Chenhall, R. (2003). Management control systems design within its organisational context: Findings from contingency-based research and directions for the future. *Accounting, Organisation and society*, 28, 127-168.
- Chenhall, R. H., & Langfield-Smith, K. (1998). The relationship between strategic priorities, management techniques and management accounting: An empirical investigation using a systems approach. *Accounting, Organizations and Society*, 23, 243-264.
- Chenhall, R., & Chapman, C.S. (2006). *Theorising and testing fit in contingency research in management control systems*. In Z. Hoque, *Methodological issues in Accounting research: Theories and methods*, 35-54
- Chiekezie, N.R., Egbunike, P.A., & Odum, A.N. (2014). Adoption of competitor focused accounting methods in selected manufacturing companies in Nigeria. *Asian Journal of Economic Modelling*, 2(3), 128-140.
- Cinquini, L., & Tenucci, A. (2010). Strategic management accounting and business strategy: A loose coupling? *Journal of Accounting & Organizational Change*, 6 (2), 228-259.
- Cravens, K. S., & Guilding, C. (2001). An empirical study of the application of strategic management accounting techniques. *Advances in Management Accounting*, 10, 95-124.
- Davila, A., & Foster, G. (2005). Management accounting systems adoption decisions: Evidence and performance implications from early-stage/startup companies. *The Accounting Review*, 80 (4), 1039-1068.
- Dreher, A. (1994). Marketing orientation: How to grasp the phenomenon. *Perspectives on marketing management*, 4, 149-170.

- Drost, E. A. (2011). Validity and reliability in social science research education. *Research and Perspectives* 38(1), 105-123.
- Eker, M., & Aytac, A. (2016). Effects of interaction between ERP and advanced managerial accounting techniques on firm performance: Evidence from Turkey. *The Journal of Accounting and Finance*, Oct, 187-209.
- Fowzia, R. (2011). Strategic management accounting techniques: Relationship with business strategy and strategic effectiveness of manufacturing organizations in Bangladesh. *World Journal of Management*, 3 (2), 54-69.
- Frezatti, F., Bido, D., Cruz, A., & Machado, M. (2015). The structure of artefacts of management control in the innovation process: Does exist association with the strategic profile? *Brazilian Business Review*, 12 (1), 128-153.
- Fuller, D.N. (2001). Value Creation: *Theory and Practice*, Value Incorporated
- Gerdin, J. (2005). Management accounting system design in manufacturing departments: An empirical investigation using a multiple contingencies approach. *Accounting, Organisation and society*, 30, 99-126.
- Gholami, S. (2011). Value creation model through corporate social responsibility (CSR). *International Journal of Business and Management*, 6(9), 148-154.
- Gomez-Conde, J. (2015). Examining the link between outsourcing and performance: The leverage effect of the interactive use of management accounting and control systems. *Spanish Journal of Finance and Accounting*, 44(3), 298–325.
- Gomez-Conde, J., & Lopez-Valeiras, E. (2018). The dual role of management accounting and control systems in exports: Drivers and payoffs. *Spanish Journal of Finance and Accounting*, 47 (3), 307–328.
- Gomez-Conde, J., Lunkes, R., & Rosa, F. (2019). Environmental innovation practices and operational performance: The joint effects of management accounting and control systems and environmental training. *Accounting, Auditing & Accountability Journal*, 32(5), 1325–1357. <https://doi.org/10.1108/AAAJ-01-2018-3327>
- Gordon, L., & Narayanan, V. (1984). Management accounting systems, perceived environmental uncertainty and organisation structure: An empirical investigation. *Accounting, Organisation and society*, 9 (1), 33-47.
- Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2019). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives (Special Issue Digital Accounting)*, 8, 31-46, available at: http://www.acrn-journals.eu/resources/SI08_2019c.pdf.
- Govindarajan, V. (1988). A contingency approach to strategy implementation at a business-unit level: integrating administrative mechanism with strategy. *Academy of Management Journal*, 31 (12), 28-55.
- Guilding, C. Cravens, K.S., & Tayles, M. (2000). An international comparison of strategic management accounting practices. *Management Accounting Research*, 11, 113-135.
- Guilding, C., & McManus, L. (2002). The incidence, perceived merit and antecedents of customer accounting: An exploratory note. *Accounting, Organizations and Society*, 27, 45–59.

- Gul, F., & Chia, Y. (1994). The effect of management accounting systems, perceived environmental uncertainty and decentralisation on managerial performance: A test of three-way interaction. *Accounting, Organisation and society*, 19 (4/5), 413-426.
- Hansen, S.C., & Van der Stede, W.A. (2004). Multiple facets of budgeting: An exploratory analysis. *Management Accounting Research*, 15 (4), 415-439.
- Hiromoto, T. (1988). Another hidden edge: Japanese management accounting. *Harvard Business Review*, July-August, 22-26.
- Hoque, Z., & James, W. (2000). Linking balanced scorecard measures to size and market factors: Impact on organizational performance. *Journal of Management Accounting Research*, 12 (1), 1-17.
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>.
- Hutaibat, K. (2019). Accounting for strategic management, strategising and power structures in the Jordanian higher education sector", *Journal of Accounting & Organizational Change*, Vol. 15 No. 3, pp. 430-452. <https://doi.org/10.1108/JAOC-06-2018-0054>
- Hyvonen J. (2005). Adoption and benefits of management accounting systems: Evidence from Finland and Australia. *Advances in International Accounting*, 18, 97-120.
- International Federation of Accountants, IFAC. (1998). International management accounting practice statement: Management Accounting Concepts. New York.
- Iredele, O.O., Ogunleye, O.O., & Okpala, O.P. (2017). Determining the business case for environmental management accounting (EMA) Practices among listed firms in Nigeria: The stewardship approach. *EuroEconomica*, 36 (2), 195-210.
- Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, 57, 53-70.
- Kattan, F., Pike, R., & Tayles, M. (2007). Reliance on management accounting under environmental uncertainty: The case of Palestine. *Journal of Accounting & Organizational*, 3(3), 227-249.
- Khandwalla, P.N. (1972). The effect of different types of competition on the use of management controls. *Journal of Accounting Research*, 10 (2), 275-285.
- Kotler, P. (1977). *From sales obsession to marketing effectiveness*. *Harvard Business Review*, Nov-Dec, 67-75.
- Kraaijenbrink, J., & Spender, J.C. (2011). *Theories of the firm and their value creation assumptions*. Annual International Conference of the Strategic Management Society, 6-9 November, Miami, US.
- Kren, L., & Kerr, J. L. (1993). The effect of behaviour monitoring and uncertainty on the use of performance contingent compensation. *Accounting and Business Research*, 23(90), 159-167.
- Laela, S.F., Rossieta, H., Wijanto, S.H. & Ismal, R. (2018), "Management accounting-strategy coalignment in Islamic banking", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 11 No. 4, pp. 667-694. <https://doi.org/10.1108/IMEFM-04-2017-0088>
- Langfield-Smith, K. (1997). Management control systems and strategy: A critical review. *Accounting, Organisation and society*, 22, 207-232.

- Langfield-Smith, K. (2008). Strategic Management Accounting: How far have we come in 25 years?. *Accounting, Auditing & Accountability Journal*, 21(2), 204-228.
- Lehner, O., Leitner-Hanetseder, S. & Eisl, C. (2019). The Whatness of digital accounting: status quo and ways to move forward. *ACRN Journal of Finance and Risk Perspectives (Special Issue Digital Accounting)*, 8, I-X, available at: http://www.acrn-journals.eu/resources/editorial_si.pdf.
- Lehner, O.M. & Harrer, T. (2019), "Accounting for economic sustainability: environmental, social and governance perspectives", *Journal of Applied Accounting Research*, Vol. 20 No. 4, pp. 365-371. <https://doi.org/10.1108/JAAR-06-2019-0096>
- Leitner-Hanetseder, S., Lehner, O.M., Eisl, C., & Forstenlechner, C. (2021). "A profession in transition: actors, tasks and roles in AI-based accounting", *Journal of Applied Accounting Research*, Vol. 22 No. 3, pp. 539-556. <https://doi.org/10.1108/JAAR-10-2020-0201>
- Leth-Steensen, C., & Gallitto, E. (2016). Testing mediation in structural equation modeling: The effectiveness of the test of joint significance. *Educational and Psychological Measurement*, 76(2): 339–351. DOI: 10.1177/0013164415593777
- Libby, T., Salterio, S. E., & Webb, A. (2004). The balanced scorecard: The effects of assurance and process accountability on managerial judgement. *The Accounting Review*, 79, 1075–1094.
- Lord, B. R. (1996). Strategic management accounting: The emperor's new clothes? *Management Accounting Research*, 7, 347-366.
- Ma, Y., & Tayles, M. (2009). On the emergence of strategic management accounting: an institutional perspective. *Accounting and Business Research*, 39, 473–495.
- Maelah, R., Auzair, S., Amir, A., & Ahmad, A. (2017). Implementation process and lessons learned in the determination of educational cost using modified activity-based costing (ABC). *Social and Management Research Journal*, 14 (1), 1-32.
- Mathuva, D.M., Mboya, J.K. & McFie, J.B. (2017), "Achieving legitimacy through co-operative governance and social and environmental disclosure by credit unions in a developing country", *Journal of Applied Accounting Research*, Vol. 18 No. 2, pp. 162-184. <https://doi.org/10.1108/JAAR-12-2014-0128>
- Miles, R., & Snow, C. (1987). Fit , failure and the hall of fame. *California Management Review*, 26(3), 10-28.
- Mullins, L.J., & Christy, G. (2013). *Management and organisational behaviour*. London: Financial Times Publishing International.
- Naranjo-Gil, D., Maas, V., & Hartmann, F. (2009). How CFOs determine management accounting innovation: an examination of direct and indirect effects. *European Accounting Review*, 18 (4), 667–695.
- Narver, J. C., & Slater, S. F. (1990). The effect of market orientation on business profitability. *Journal of Marketing*, 54, 20–35.
- Nixon, B., Burns, J., & Jazayer, M. (2011). The role of management accounting in new product design and development decisions. *CIMA Research Executive Summary Series*, 9(1): London: CIMA.

- Oboh, C. S., & Ajibolade, S. O., (2017). Strategic management accounting and decision making: A survey of the Nigerian Banks. *Future Business Journal*, 3(2), 119-137. doi: <http://dx.doi.org/10.1016/j.fbj.2017.05.004>
- Ojua, M. O. (2017). The desirability of the adoption of strategic management accounting techniques (SMATS) for decision making by agricultural firms in Nigeria. *Imperial Journal of Interdisciplinary Research*, 3 (1), 1635-1648.
- Oyewo, B. (2017). Predictors of the effectiveness of management accounting function in Nigerian firms. *Scientific Annals of Economics and Business*, 64 (4), 2017, 487-512
- Oyewo, B. (2021). Enterprise risk management and sustainability of banks performance", *Journal of Accounting in Emerging Economies*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JAEE-10-2020-0278>
- Oyewo, B., Olowo, R., & Obanor, A. (2021). Is the Use of Integrated Performance Measurement System by Banks Really “Integrated”? A Structural Equation Modeling Approach. *Journal of East-West Business*. DOI: 10.1080/10669868.2021.1892008
- Pavlatos, O. (2011). *Strategic management accounting techniques: The impact of CFO characteristics, organizational lifecycle stage, and quality of IS information*. European accounting association, 3rd annual meeting, 19-22 April 2011, Auditorium Parco Della Musica & Lusis University, Rome, Italy.
- Pitcher, G.S. (2015). Management Accounting in Support of the Strategic Management Process CIMA Executive Summary Report, 11 (1), 1-20. Retrieved from <https://www.cimaglobal.com/Research--Insight/Management-accounting-in-support-of-the-strategic-management-process/>
- Qingping, H. (2009). *Estimating the reliability of composite scores*. Office of Qualifications and Examinations Regulation (OFQUAL). Retrieved from <http://www.dera.ioe.ac.uk>
- Robson, C. (2002). *Real world research* (2nd ed.). Oxford: Blackwell.
- Roslender R., & Hart, S.J. (2002). Integrating management accounting and marketing in the pursuit of competitive advantage: The case for strategic management accounting. *Critical Perspectives on Accounting*, 13, 255-277.
- Roslender, R. & Hart, S. J. (2003). In search of strategic management accounting: Theoretical and field study perspectives. *Management Accounting Research*, 14 (1), 255-279.
- Rosli, M.H., Said, J., & Mohd, F. (2014). Factors that influence the use of strategic management accounting (SMA) in Malaysian government-linked companies (GLCs). *Malaysian Accounting Review*, 13 (2), 23-46
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modelling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 323–338. <https://doi.org/10.3200/JOER.99.6.323-338>
- Simmonds, K. (1981). Strategic management accounting. *Management Accounting*, 59, 26–29.
- Slater, S. F., & Narver, J. C. (1994). Market orientation, customer value, and superior performance. *Business Horizons*, 37, 22–28

- Strandholm, K., & Kumar, K. (2003). Differences in environmental scanning activities between large and small organizations: The advantage of size. *Journal of American Academy of Business*, 3 (1/2), 416-421.
- Subramaniam, N. (2018). On the Interplay between Strategic Performance and Managerial Accounting, Malina, M.A. (Ed.) *Advances in Management Accounting* (Advances in Management Accounting, Vol. 30), Emerald Publishing Limited, Bingley, pp. 175-195. <https://doi.org/10.1108/S1474-787120180000030007>
- Szychta, A. (2002). The scope of application of management accounting methods in Polish enterprises. *Management Accounting Research*, 13 (4), 401-418.
- Tabachnick, B. G. & Fidell, L. S. (2001). *Using multivariate statistics*. (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Tauringana, V. (2020). Sustainability reporting adoption in developing countries: Managerial perception-based determinants evidence from Uganda. *Journal of Accounting in Emerging Economies*. <https://doi.org/10.1108/JAEE-07-2020-0184>
- Tayles, M. & Drury, C. (1994). New manufacturing technologies and management accounting system: Some evidence of the perceptions of UK management accounting practitioners. *International Journal of Production Economics*, 36 (1), 1-17.
- Teng, J.T.C., Cheon, M.J., & Gover, V. (1995). Decisions to outsource information systems functions: Testing a strategy-theoretic discrepancy model. *Decision Science*, 16(1), 75-103.
- Tillema, S. (2005). Towards an integrated contingency framework for management accounting system sophistication: Case studies on the scope of accounting instruments in Dutch power and gas companies. *Management Accounting Research*, 16, 101-129.
- Tillman, K., & Goddard, A. (2008). Strategic management accounting and sense-making in a multinational company. *Management Accounting Research*, 19, 80–102.
- Tingbani, I., Chithambo, L., Tauringana, V., & Papanikolaou, N. (2020). Board gender diversity, environmental committee and greenhouse gas voluntary disclosures. *Business Strategy and the Environment*, 29(6), 2194-2210. <https://doi.org/10.1002/bse.2495>
- Tomkins, C., & Carr, C. (1996). Reflections on the papers in this issue and a commentary on the state of strategic management accounting. *Management Accounting Research*, 7 (2), 271-280.
- Walker, O. C., Boyd, H. W., & Larreche, J. (1998). *Marketing strategy: Planning and implementation* (3rd ed.). Boston: Irwin/McGraw-Hill.
- Waweru, N.M., Hoque, Z., & Uliana, E. (2004). Management accounting change in South Africa: Case studies from retail services. *Accounting, Auditing & Accountability Journal*, 17 (5), 675-704.
- Wegmann, G. (2002). *The strategic scorecards: An instrumentation of the strategic management accounting*. Retrieved from <https://hal.archives-ouvertes.fr/hal-00584772/document>.
- Weihrich, H. (1982). The TOWS matrix – a tool for situational analysis, *Long Range Planning*, April, 54–66.
- Williams, J.J., & Seaman, A.E. (2001). Predicting change in management accounting systems: National culture and industry effects. *Accounting, Organization and Society*, 26 (4/5), 443-460.
- Woodward, J. (1980). *Industrial organization: Theory and practice* (2nd ed.). Oxford: Oxford University Press.

- Yap, K.H.A., Lee, T.H., Said, J., & Yap, S.T. (2013). Adoption, benefits and challenges of strategic management accounting practices: Evidence from emerging market. *Asia Pacific Management Accounting Journal*, 8(2), 27-45.
- Yazdifar, H., & Askarany, D. (2010) A comparative investigation into the diffusion of management accounting innovations in the UK, Australia and New Zealand. *CIMA Research executive summaries series*, 5(9), 1-11.

LIST OF TABLES

Table 1: Summary of Variable Measurement and Reliability Assessment

Variable	No. of items	Cronbach Alpha	KMO Coefficient	Bartlett's Test (p value)
SMA Usage	19	0.963	0.827	0.000
Quality of Information Technology	5	0.960	0.898	0.000
Perceived Environmental Uncertainty	4	0.702	0.615	0.000
Deliberate Strategy formulation	3	0.725	0.591	0.000
Market orientation	4	0.958	0.743	0.000
Organisational Structure	3	0.883	0.701	0.000
Competitive Advantage	7	0.921	0.895	0.000

Table 2: Correlation Matrix of Contingency Variables Affecting SMA Usage

	CMPT	QIT	MKT	STRC	PEU	STR-DEL	SIZE
CMPT	1						
QIT	.540**	1					
MKT	.689**	.746**	1				
STRC	.522**	.498**	.728**	1			
PEU	.390**	.197	.448**	.462**	1		
STR-DEL	.642**	.430**	.640**	.416**	.360*	1	
SIZE	.481**	.507**	.514**	.466**	.332*	.335*	1

**significant at 1% * significant at 5%

Table 3: Contingency Variables affecting SMA Usage (Model 1)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.346	0.551		-4.254	0.000
	STRC	0.036	0.101	0.032	0.357	0.723
	QIT	0.136	0.113	0.115	1.204	0.236
	STR-DEL	0.266	0.101	0.223	2.649	0.012**
	MKT	0.425	0.130	0.438	3.257	0.002**
	CMPT	0.104	0.087	0.108	1.196	0.239
	PEU	0.045	0.099	0.032	0.454	0.652
	SIZE	0.176	0.066	0.198	2.679	0.011**
Model Fit Statistics: R = 0.933 R ² = 0.870 Adjusted R ² = 0.846 F-stat = 35.449***						

*** p < 0.01, ** p < 0.05, and * p < 0.10 (two tailed)

Table 4: Impact of SMA Usage on Competitive Advantage (Model 2)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	1.487	.236		6.287	0.000***
	SMA-Us	.642	.073	.801	8.774	0.000***
Model Fit Statistics: R = 0.801 R ² = 0.642 Adjusted R ² = 0.633 F-stat = 76.991***						

*** p < 0.01 (two tailed)

Table 5: Influence of organisational structure on the relationship between SMA Usage and Competitive Advantage (**Model 3.1.**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* STRC		-1.124 (-1.812)*
SMA-Us	0.584 (5.167)***	1.141 (3.492)***
STRC	0.327 (2.893)***	0.989 (2.591)**
R ²	0.701	0.723
R ² adj.	0.687	0.703
F-stat	49.279***	35.732***
F-stat change		3.282*

Dependent variable: CAI; *** p < 0.01, ** p < 0.05, and * p < 0.10 (two tailed)

Table 6: Influence of quality of information technology on the relationship between SMA Usage and Competitive Advantage (**Model 3.2.**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* QIT		-0.088 (-0.136)
SMA-Us	0.655 (5.069)***	0.716 (1.540)
QIT	0.203 (1.569)	0.236 (0.855)
R ²	0.661	0.662
R ² adj.	0.645	0.637
F-stat	41.035***	26.724***
F-stat change		0.019

Dependent variable: CAI; *** p < 0.01 (two tailed)

Table 7: Influence of deliberate strategy-formulation on the relationship between SMA Usage and Competitive Advantage (**Model 3.3.**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* STR-DEL		-1.212 (-1.833)*
SMA-Us	0.796 (6.032)***	1.479 (3.750)***
STR-DEL	0.007 (0.056)	0.621 (1.732)*
R ²	0.642	0.669
R ² adj.	0.625	0.645
F-stat	37.605***	27.597***
F-stat change		3.359*

Dependent variable: CAI; *** p < 0.01 and * p < 0.10 (two tailed)

Table 8: Influence of Market Orientation on the relationship between SMA Usage and Competitive Advantage (**Model 3.4.**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* MKT		-0.723 (-1.138)
SMA-Us	0.330 (1.863)*	0.754 (1.830)*
MKT	0.534 (3.015)***	0.849 (2.587)**
R ²	0.705	0.714
R ² adj.	0.691	0.694
F-stat	50.280***	34.188***
F-stat change		1.296*

Dependent variable: CAI; *** p < 0.01, ** p < 0.05, and * p < 0.10 (two tailed)

Table 9: Influence of Market Competition on the relationship between SMA Usage and Competitive Advantage (**Model 3.5**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* CMPT		-0.512 (-0.845)
SMA-Us	0.804 (5.852)***	1.116 (2.831)***
CMPT	-0.004 (-0.029)	0.226 (0.741)
R ²	0.642	0.648
R ² adj.	0.625	0.622
F-stat	37.601***	25.134***
F-stat change		0.713

Dependent variable: CAI; *** p < 0.01 (two tailed)

Table 10: Influence of Perceived Environmental Uncertainty on the relationship between SMA Usage and Competitive Advantage (**Model 3.6**)

	Coefficient (t-value)	Coefficient (t-value)
SMA-Us* PEU		-1.123 (-1.865)*
SMA-Us	0.688 (7.141)***	1.355 (3.663)***
PEU	0.249 (2.588)**	0.886 (2.503)**
R ²	0.691	0.715
R ² adj.	0.676	0.694
F-stat	46.942***	34.301***
F-stat change		3.478*

Dependent variable: CAI; *** p < 0.01, ** p < 0.05, and * p < 0.10 (two tailed)

Table 11: Summary of Results on the Moderating Influence of Contingency Variables on the Relationship between SMA Usage and Competitive Advantage

Model No.	Moderating variable	R square change (from old to new R square)	p value of R square change
3.1	Organisation structure	2.2% (From 70.1 % to 72.3%)	0.077*
3.2	Quality of Information Technology	0.1% (From 66.1% to 66.2%)	0.892
3.3	Deliberate strategy-formulation	2.7% (From 64.2% to 66.9%)	0.074*
3.4	Market orientation	0.9% (From 70.5% to 71.4%)	0.262
3.5	Intensity of market competition	0.6% (From 64.2% to 64.8%)	0.403
3.6	Perceived Environmental Uncertainty	2.4% (From 69.1% to 71.5%)	0.069*

*p < 0.10 (two tailed)

Table 12: Structural Equation Analysis Result on Relationship Between Contingency Variables, SMA Usage and Competitive Advantage

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
-----+-----						
SMA-Us <-						
STRC	0.037	0.092	0.14	0.685	-0.142	0.217
QIT	0.134	0.102	1.31	0.190	-0.067	0.335
STR-DEL	0.267	0.091	2.93	0.003***	0.089	0.445
MKT	0.425	0.118	3.60	0.000***	0.193	0.657
CMPT	0.105	0.079	1.32	0.186	-0.050	0.259
PEU	0.044	0.089	0.49	0.626	-0.132	0.219
SIZE (control)	0.176	0.059	2.96	0.003***	0.059	0.293
-----+-----						
CAI <-						
SMA-Us	0.642	0.072	8.98	0.000***	0.502	0.782
-----+-----						
Model Fitness statistics:						
CMINDF ratio = 823.112 ÷ 389 = 2.116 RMSEA p = 0.001 <= 0.05 Prob > chi2 = 0.0000						
CFI = 0.846 TLI = 0.671 SRMR = 0.052 CD = 0.870						

***p value significant at 1%

Table 13: Structural Equation Analysis Result on the Mediating Influence (Indirect effects) of Contingency Factors on the Relationship SMA Usage and Competitive Advantage

	Coef.	Std. Err.	z	P> z	Std. Coef.
-----+-----					
SMA-Us <-					
-----+-----					
CAI <-					
STRC	0.024	0.059	0.41	0.685	0.027
QIT	0.086	0.066	1.30	0.195	0.091
STR-DEL	0.171	0.061	2.79	0.005***	0.179
MKT	0.273	0.082	3.34	0.001***	0.351
CMPT	0.067	0.051	1.31	0.190	0.086
PEU	0.028	0.058	0.49	0.626	0.026
SIZE (control)	0.113	0.040	2.81	0.005***	0.159

***p value significant at 1%

APPENDIX 1: GROUPING AND OPERATIONALISATION OF SMA TECHNIQUES

Category		Technique	Description
Costing	1	Attribute costing	The costing of specific product attributes that appeal to customers such as operating performance variables; reliability, warranty arrangements, and after sales service
	2	Life cycle costing	The appraisal of costs based on the length of stages of a product's life including design, introduction, growth, maturity, decline and eventually abandonment
	3	Quality costing	Prioritising quality by identification and control of the costs associated with the creation, identification, repair and prevention of defects
	4	Target costing	A method used during product and process design that involves estimating a cost calculated by subtracting a desired profit margin from an estimated (or market-based) price. The product is then designed to meet that cost
	5	Value-chain costing	An activity-based approach where costs are allocated to activities required to design, procure, produce, market, distribute, and service a product or service
	6	Activity based costing	A two-stage procedure used to assign overhead costs to products. In the first stage, significant activities are identified, and overhead costs are assigned to activity cost pools in accordance with the way the resources are consumed by the activities. In the second stage, overhead costs are allocated from each activity cost pool to each product line in proportion to the amount of the cost driver consumed by the product line
	7	Activity based management	The use of information provided by an activity cost analysis (ABC) to improve organisational profitability
Planning, Control and Performance measurement	1	Benchmarking	The comparison of internal processes to an ideal standard.
	2	Integrated performance measurement	A measurement system which focuses typically on acquiring performance knowledge based on customer requirements and may encompass nonfinancial measures

	3	Environmental Management Accounting	The practice of tracking, tracing and treatment of costs, earnings and savings incurred in relation to the company's environmental-related activities
Strategic decision making	1	Strategic costing (strategic cost management)	The use of cost data based on strategic and marketing information to develop and identify superior strategies that will produce a sustainable competitive advantage
	2	Strategic pricing	The analysis of strategic factors, such as competitor price reaction, elasticity, market growth, and economies of scale, in the pricing decision process
	3	Brand valuation	The financial valuation of a brand through the assessment of brand strength factors such as: leadership, stability, market, internationality, and trend, combined with historical brand profits
Competitor Accounting	1	Competitor cost assessment	The provision of regularly scheduled updated estimates of a competitor's unit cost
	2	Competitive position monitoring	The analysis of competitor positions within the industry by assessing and monitoring trends in competitor sales, market share, volume, unit costs, and return on sales
	3	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
Customer Accounting	1	Customer profitability analysis	Calculating profit earned from a specific customer based on costs and sales that can be traced to a particular customer
	2	Lifetime customer profitability analysis	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
	3	Valuation of customers as assets	A technique that involves the calculation of the value of customers to the company. This may involve computing the present value of all future profit streams attributable to a particular customer

Source: Compiled by the Researcher

APPENDIX 2 QUESTIONNAIRE SAMPLE

B1. USAGE OF STRATEGIC MANAGEMENT ACCOUNTING TECHNIQUES To what extent does your organisation use the following management accounting techniques? KEY: Not at all = 1 Little extent = 2 Moderate extent = 3 Great Extent = 4 Very Great Extent = 5						
S/N	ITEM	1	2	3	4	5
1	The costing of specific product attributes that appeal to customers such as operating performance variables; reliability, warranty arrangements, and after sales service					
2	The appraisal of costs based on the length of stages of a product's life including design, introduction, growth, maturity, decline and eventually abandonment					
3	Prioritising quality by identification and control of the costs associated with the creation, repair and prevention of defects					
4	A method used during product and process design that involves estimating a cost calculated by subtracting a desired profit margin from an estimated (or market-based) price. The product is then designed to meet that cost					
5	An activity-based approach where costs are allocated to activities required to design, procure, produce, market, distribute, and service a product or service					
6	A two-stage procedure used to assign overhead costs to products. In the first stage, significant activities are identified, and overhead costs are assigned to activity cost pools in accordance with the way the resources are consumed by the activities. In the second stage, overhead costs are allocated from each activity cost pool to each product line in proportion to the amount of the cost driver consumed by the product line (ABC)					
7	The use of information provided by an activity cost analysis (ABC) to improve organizational profitability					
8	The comparison of internal processes to an ideal standard (Benchmarking)					
9	A measurement system which focuses typically on acquiring performance knowledge based on customer requirements and may encompass nonfinancial measures					
10	The practice of tracking, tracing and treatment of costs, earnings and savings incurred in relation to the company's environmental-related activities					
11	The use of cost data based on strategic and marketing information to develop and identify superior strategies that will produce a sustainable competitive advantage					
12	The analysis of strategic factors, such as competitor price reaction, elasticity, market growth, and economies of scale, in the pricing decision process.					

B1. USAGE OF STRATEGIC MANAGEMENT ACCOUNTING TECHNIQUES- CONT'D.
To what extent does your organisation use the following management accounting techniques?

KEY: Not at all = 1 Little extent = 2 Moderate extent = 3 Great Extent = 4 Very Great Extent = 5

S/N	ITEM	1	2	3	4	5
13	The financial valuation of a brand through the assessment of brand strength factors such as: leadership, stability, market, internationality, and trend, combined with historical brand profits.					
14	The provision of regularly scheduled updated estimates of a competitor's unit cost.					
15	The analysis of competitor positions within the industry by assessing and monitoring trends in competitor sales, market share, volume, unit costs, and return on sales					
16	The numerical analysis of a competitor's published statements as a part of an assessment of a competitor's key sources of competitive advantage.					
17	Calculating profit earned from a specific customer based on costs and sales that can be traced to a particular customer					
18	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.					
19	A technique that involves the calculation of the value of customers to the company. This may involve computing the present value of all future profit streams attributable to a particular customer					

MARKET ORIENTATION

Please indicate the extent of the market orientation of your company

KEY: Not at all = 1 Low = 2 Moderate = 3 Large extent = 4 To a very large extent = 5

S/N	ITEM	1	2	3	4	5
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 organisation 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					
4	My company has a strong market orientation					

ORGANISATIONAL STRUCTURE

Please indicate the degree of centralisation/decentralisation in your company

KEY: Not at all = 1 Low = 2 Moderate = 3 Large extent = 4 very large extent = 5

S/N	ITEM	1	2	3	4	5
1	Level of power given to divisional managers /departmental Heads					
2	Level of independence accorded to branches/subsidiaries in making key decisions					
3	Degree to which responsibilities are shared to branches/subsidiaries					

PERCEIVED ENVIRONMENTAL UNCERTAINTY

Please indicate the extent to which the actions of the following stakeholders in your organisation can be predicted

KEY: Very Predictable = 1 Somewhat Predictable = 2 Moderately Predictable = 3 Unpredictable = 4
Very Unpredictable = 5

S/N	ITEM	1	2	3	4	5
1	Customers					
2	Suppliers					
3	Competitors					
4	Government					

MARKET COMPETITION:

How intense is the market competition in the sector your business operates?

Not intense at all = 1 ☐ Not intense= 2 ☐ Slightly intense= 3 ☐ Intense= 4 ☐
Very intense= 5 ☐

BUSINESS STRATEGY FORMULATION

Please indicate the extent to which you agree or disagree with the following statements in respect of business strategy

KEY: Strongly Disagree = 1 Disagree = 2 Indifferent = 3 Agree = 4 Strongly Agree = 5

S/N	ITEM	1	2	3	4	5
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					
3	In our company, strategic action usually develops in the absence of strategic intention					

QUALITY OF INFORMATION TECHNOLOGY

Please rate your information system in respect of the following attributes

KEY: Very Low = 1 Low = 2 Moderate = 3 High = 4 Very High = 5

S/N	ITEM	1	2	3	4	5
1	Accuracy of information generated					
2	Precision of information					
3	Reliability of information					
4	Completeness of information					
5	Relevance of information generated for decision-making					

COMPETITIVE ADVANTAGE

Please rate how the performance of your company compares with competitors over the past 5 years in the following areas:

KEY: Far Below Average = 1 Below Average = 2 Average = 3 Above Average = 4 Far Above average = 5

S/N	ITEM	1	2	3	4	5
1	Return on investment					
2	Margin on sales					
3	Capacity utilisation					
4	Customer patronage					
5	Product quality					
6	Development of new products					
7	Market share					

**APPENDIX 3: EXPLORATORY FACTOR ANALYSIS RESULT FOR CONTINGENCY
FACTORS, SMA USAGE AND COMPETITIVE ADVANTAGE**

Appendix 3a Factor Analysis Result for Usage of SMA Techniques

Items	Component			Communalities Extraction
	1	2	3	
Attribute costing	.725	.275	.237	.657
Life cycle costing	.727	.471	.301	.841
Quality costing	.820	.249	-.217	.781
Target costing	.610	.547	.317	.773
Value-chain costing	.782	.252	-.260	.743
Activity based costing	.787	-.197	-.213	.704
Activity based management	.897	.015	-.196	.844
Benchmarking	.788	-.262	-.042	.691
Integrated performance measurement	.882	.036	-.117	.793
Environmental Management Accounting	.831	.259	.170	.787
Strategic Costing/Strategic Cost Mgt.	.853	-.259	.184	.828
Strategic pricing	.543	-.166	.669	.770
Brand valuation	.841	.222	.201	.797
Competitor cost assessment	.750	-.495	.153	.830
Competitive position monitoring	.715	-.510	.189	.807
Competitor performance appraisal	.798	-.429	.115	.834
Customer profitability analysis	.797	-.092	-.345	.763
Lifetime customer profitability analysis	.832	.069	-.413	.867
Valuation of customers as assets	.787	.052	-.353	.746
% of Total Variance Explained (Initial Eigenvalues)	61.101% (11.609)	9.197% (1.748)	7.886% (1.498)	

**Appendix 3b: Factor Analysis Result for Quality of Information
Technology**

Items	Component	Communalities
	1	Extraction
Accuracy of information generated	.944	.892
Precision of information	.925	.856
Reliability of information	.944	.891
Completeness of information	.930	.864
Relevance of information generated for decision-making	.902	.813
% of Total Variance Explained (Initial Eigenvalues)	86.314% (4.316)	

Appendix 3c: Factor Analysis Result for Market Orientation

Items	Component	Communalities
	1	Extraction
My company has a strong understanding of our customers	.925	.855
The functions in my company work closely together to create superior value for our customers	.946	.895
Management in my organisation 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	.943	.888
My company has a strong market orientation	.962	.925
% of Total Variance Explained (Initial Eigenvalues)	89.075% (3.563)	

Appendix 3d: Factor Analysis Result for Organisational Structure

Items	Component	Communalities Extraction
	1	
Level of power given to divisional managers /departmental Heads	.842	.708
Level of independence accorded to branches/subsidiaries in making key decisions	.933	.871
Degree to which responsibilities are shared to branches/subsidiaries	.924	.854
% of Total Variance Explained (Initial Eigenvalues)	81.105% (2.433)	

**Appendix 3e: Factor analysis Result for Perceived
Environmental Uncertainty**

Items	Component	Communalities Extraction
	1	
Customers	.913	.833
Suppliers	.847	.717
Competitors	.793	.628
Government	.749	.662
% of Total Variance Explained (Initial Eigenvalues)	56.016% (2.241)	

Appendix 3f: Factor Analysis Result for Deliberate Strategy-Formulation

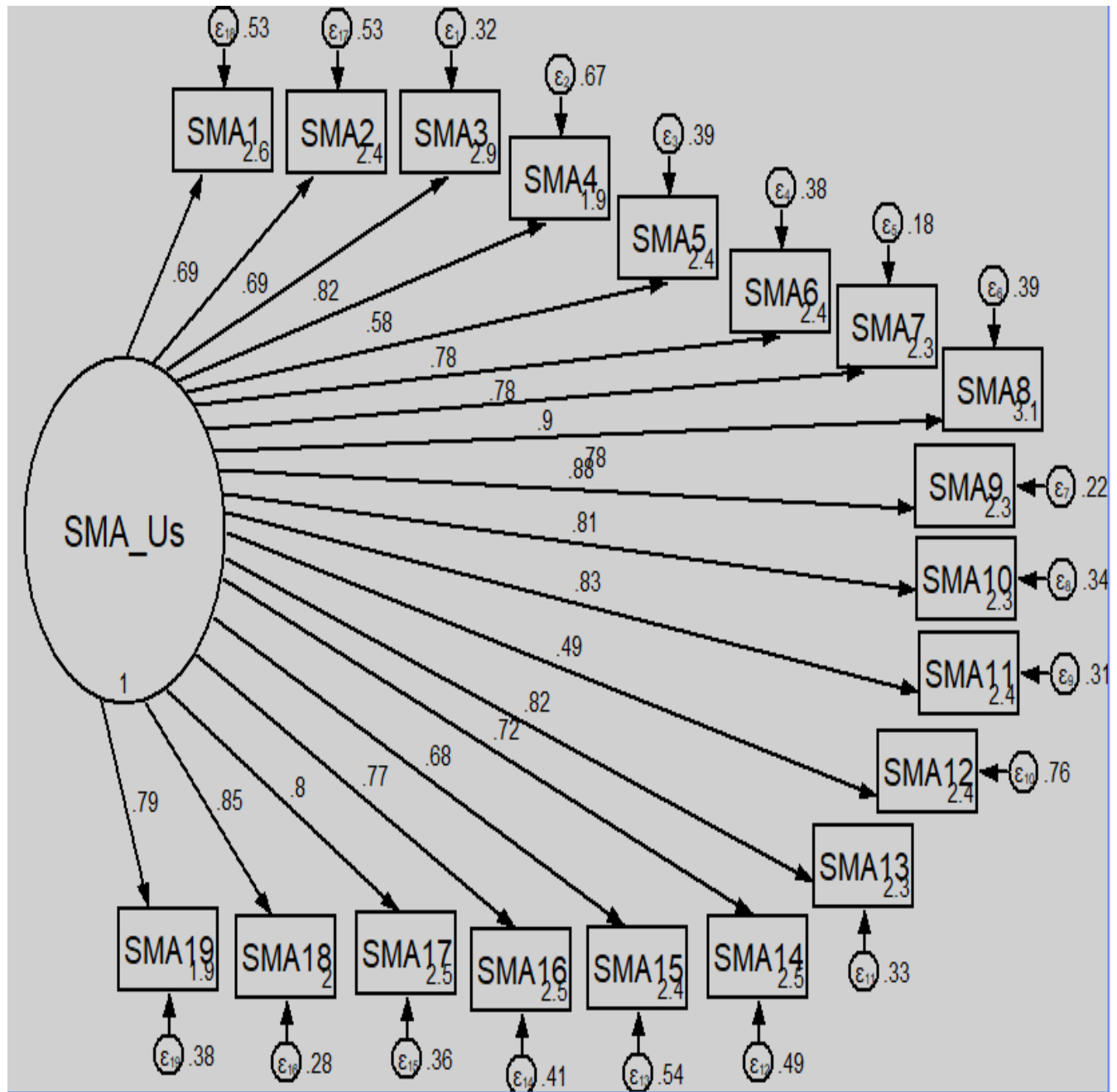
Items	Component	Communalities Extraction
	1	
In our company, the strategic decision-makers usually think through everything in advance of strategic action	.772	.596
In our company, strategic intentions are seldom realised with little or no deviation	.891	.794
In our company, strategic action usually develops in the absence of strategic intention	.746	.557
% of Total Variance Explained (Initial Eigenvalues)	64.899% (1.947)	

Appendix 3g: Factor Analysis Result for Competitive Advantage

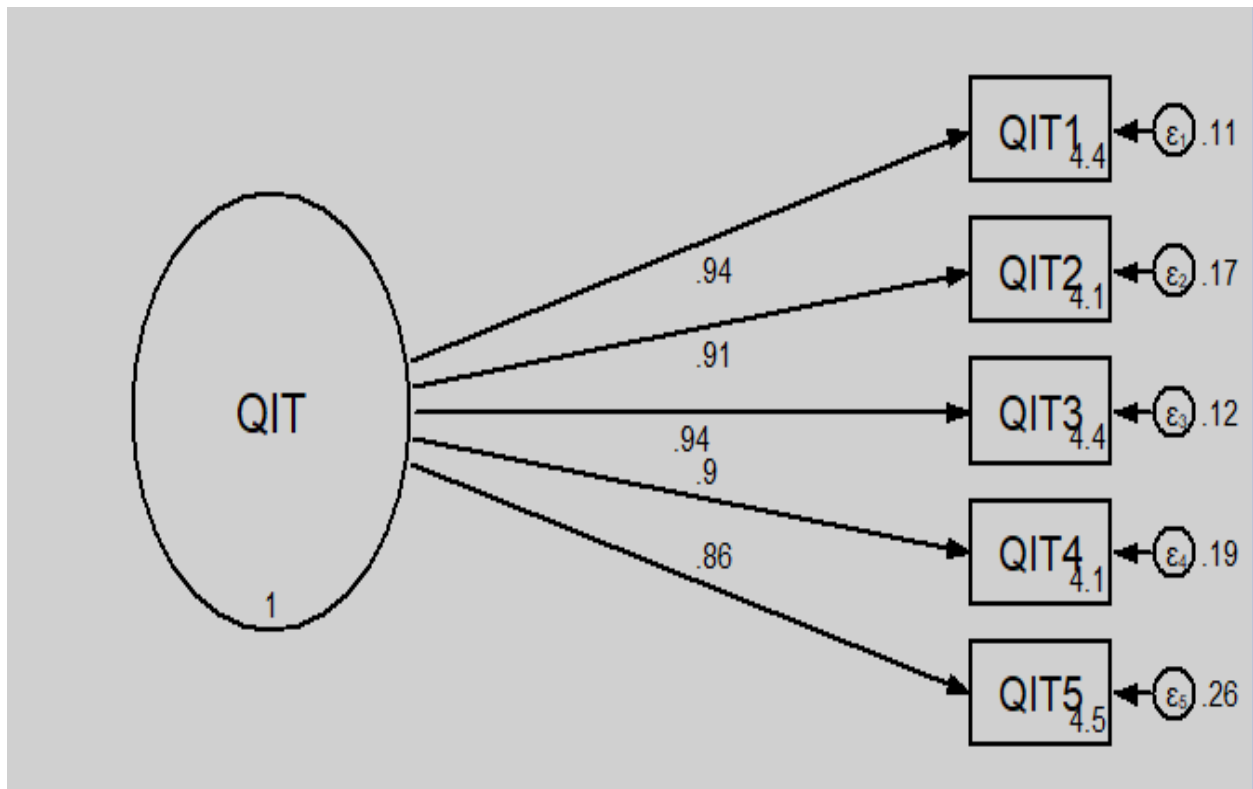
Items	Component	Communalities
	1	Extraction
Return on investment	.839	.704
Margin on sales	.866	.751
Capacity utilisation	.902	.813
Customer patronage	.869	.754
Product quality	.676	.458
Development of new products	.728	.530
Market share	.875	.766
% of Total Variance Explained (Initial Eigenvalues)	68.226% (4.776)	

**APPENDIX 4: CONFIRMATORY FACTOR ANALYSIS RESULT FOR
CONTINGENCY FACTORS, SMA USAGE AND COMPETITIVE ADVANTAGE**

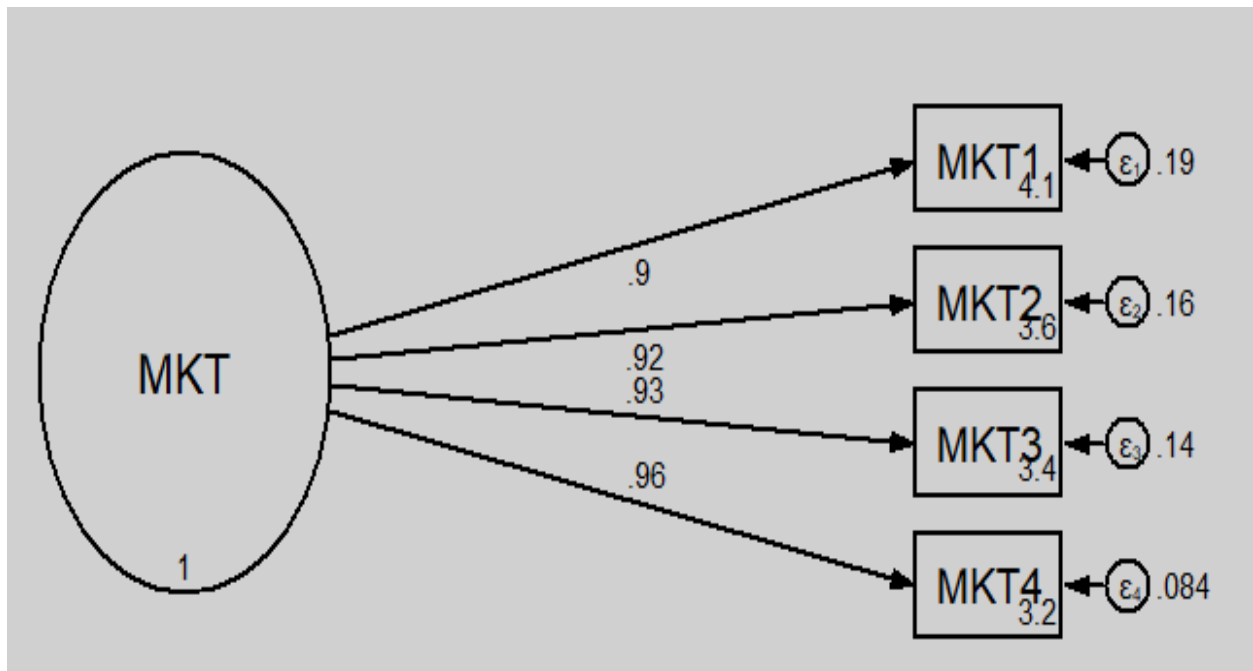
(a) SMA Usage



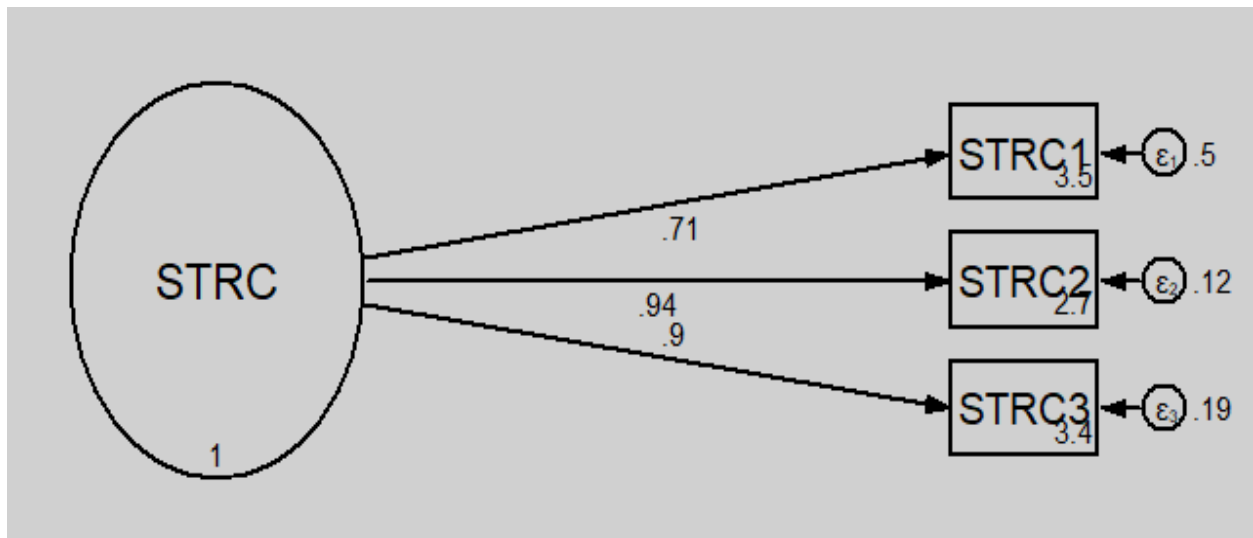
(b) **Quality of Information Technology**



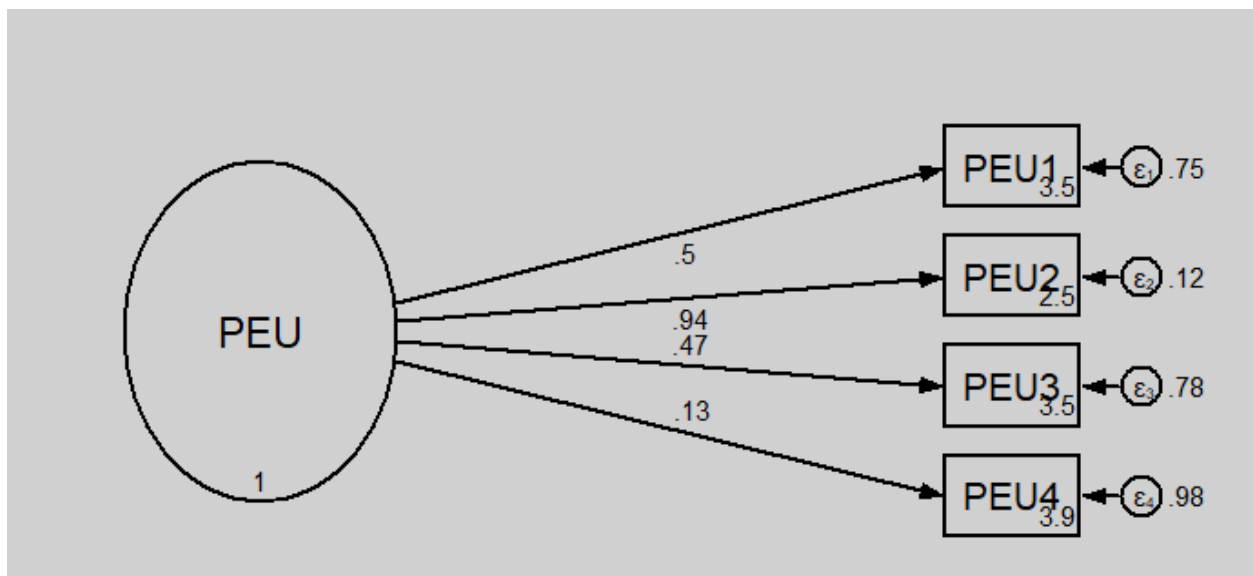
(c) **Market Orientation**



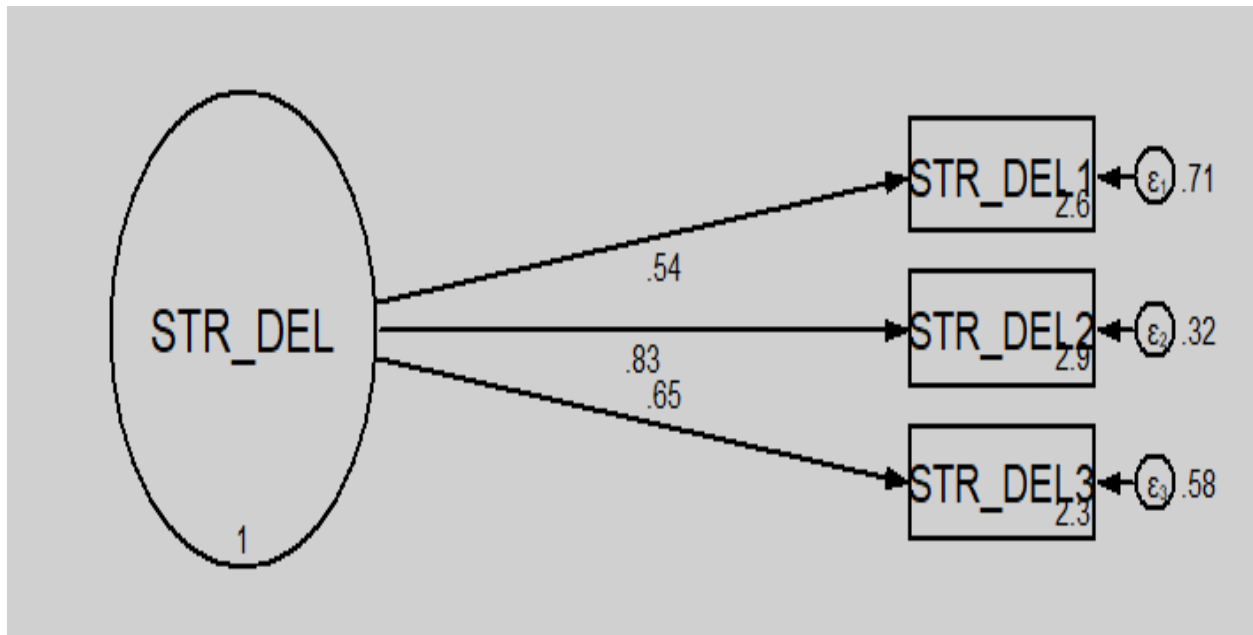
(d) Organisational Structure



(e) Perceived Environmental Uncertainty



(f) Deliberate Strategy-Formulation



(g) Competitive Advantage

