

**Strategic management accounting practices,
contingency factors and performance
implications: evidence from China**

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Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date 6 September 2024.....

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used the extent and nature of the correction is clearly marked in a footnote(s). Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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STATEMENT 2

I hereby give consent for my thesis, if accepted, to be available for deposit in the University's digital repository.

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Date 6 September 2024.....

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Abstract

The purpose of this study is to investigate the current status of strategic management accounting (SMA) practice in Chinese listed organisations, the key factors associated with SMA practice, and its relationship with organisational performance. Taking a contingency perspective, this research explores these factors using a quantitative methodology. Data were collected through online questionnaires distributed to finance executives of listed organisations in both the Shanghai and Shenzhen stock markets. A total of 346 valid responses were obtained for analysis.

The findings show that Chinese listed organisations have adopted various SMA techniques (strategic decision-making, competitor accounting, and customer accounting) to different extents. Further analysis indicates that SMA practice is associated with several contingency factors. Environmental uncertainty, particularly the dimension of market turbulence, exhibits a significant positive relationship with SMA practice. Moreover, a decentralised organisational structure and advanced technology are also significantly positively associated with SMA practice, and the adoption of SMA techniques is greater in organisations that pursue a prospector strategy.

Regression analysis shows that the adoption of SMA techniques is significantly positively associated with both financial and non-financial performance. This strong correlation provides empirical support for the potential contribution of SMA practices across diverse performance metrics. The study offers evidence to enhance understanding of the application of strategic management accounting in developing

economies and supports the relevance of contingency theory, particularly the contingency-based (strategic) management accounting (CBMA) model.

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List of Abbreviations and Acronyms

Abbreviation	Term
SMA	Strategic Management Accounting
SCM	Strategic Cost Management
MCS	Management Control System
CBMA	Contingency-based Management Accounting
MAS	Management Accounting System
BSC	Balanced Scorecard
ABC	Activity-Based Costing
PEU	Perceived Environmental Uncertainty
CompInt	Competitive Intensity
MktTurb	Market Turbulence
Tech	Technology
OrgStr-Form	Organisational Structure - Formalisation
OrgStr-DCent	Organisational Structure - Decentralisation
OrgPerf-Fin	Financial performance
OrgPerf-NonFin	Non-Financial performance
SSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange

Chapter 1 Introduction:

Strategic Management Accounting: Importance and Research Justification

1.1 Importance of Strategic Management Accounting (SMA): An Introduction

Research on strategic management accounting (SMA) has increased significantly over the past few decades (e.g., Ma et al., 2022; Ojra, Opute and Alsolm, 2021; Cadez and Guilding, 2012; Langfield-Smith, 2008), reflecting the growing importance of SMA in aligning management control systems with the strategic objectives of businesses in a rapidly changing global economy (e.g., Nik Abdullah et al., 2022; Ojra, Opute and Alsaqer, 2023). SMA was introduced with a strategic focus to address the inadequacy of traditional management accounting (e.g., Nik Abdullah et al., 2022; Ojra, Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2020; Ojra, 2014; Langfield-Smith, 2008). As a collection of techniques that provide strategic management accounting information for steering management decision-making and organisational performance (e.g., Nik Abdullah et al., 2022; Ojra, Opute and Alsaqer, 2023), SMA has been widely adopted in different industries and countries (Ojra, Opute and Alsaqer, 2023; Yasir et al., 2020; Pasch, 2019; Cadez and Guilding, 2008; Cinquini and Tenucci, 2010). Thus, scholars argue that the effective adoption of SMA techniques would boost organisational performance (Nik Abdullah et al., 2022; Ojra,

Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2020).

Accounting plays a critical role in providing information to enable effective decision-making (e.g., Ojra, Opute and Alsolm, 2021; Pavlatos and Kostakis, 2018; Cadez and Guilding, 2008; Ojra, Opute and Alsaqer, 2023). In turn, this critical role in supporting appropriate and effective strategic management decisions is linked to organisational performance (e.g., Ojra, Opute and Alsaqer, 2023; Abdel-Maksoud et al., 2015; Pollanen et al., 2017; Cadez and Guilding, 2008). As marketplace competition intensifies, effective decision-making is becoming more crucial for organisations that aim to stay competitive. Management accounting information, as a formalised management tool that enables optimal decision-making, has been criticised for decades for its failure to provide external information relevant to strategic decision-making (Rashid, Ali and Hossain, 2020; Langfield-Smith, 2008). This led to management accounting innovations (Ax and Greve, 2017). As one of the more prominent streams of this innovation, SMA has emerged as a core strategic approach to accounting aimed at driving strategic orientation in organisations and optimising organisational performance (e.g., Matsuoka, 2020; Ojra, Opute and Alsolm, 2021; Turner et al., 2017; Ojra, Opute and Alsaqer, 2023).

Four decades after Simmonds (1981) proposed the concept of SMA, its importance has been re-echoed in the literature (e.g., Langfield-Smith, 2008; Matsuoka, 2020; Ojra, Opute and Alsolm, 2021; Turner et al., 2017; Ojra, Opute and Alsaqer, 2023; Cadez and Guilding, 2007). While this increasing research attention underscores the importance of the topic, recent literature (e.g., Rashid, Ali and Hossain, 2020; Ojra,

Opute and Alsaqer, 2023) has lamented the imbalance in the literature – most studies relate to developed countries and the Western context. There is a need for more understanding of strategic management accounting practice and the contingencies surrounding its nature and benefits for organisations (Ojra, 2014; Ojra, Opute and Alsolm, 2021; Turner et al., 2017; Ojra, Opute and Alsaqer, 2023). This study seeks to contribute to filling the existing gap in the literature and responds to the call for research that sheds light on strategic management accounting practices and contextual features (e.g., Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023).

Despite being the world's second-largest economy, China is categorised as a developing economy (International Monetary Fund, 2018). The literature on strategic management accounting practices in the Chinese context is limited (Matsuoka, 2020). More broadly, research also highlights that management accounting studies in China have been sparse and relatively late in developing (He, 2020). As emphasised further by He (2020), management accounting studies were not popular in China until 2013 due to the rise of information technology. However, these studies have focused mainly on management accounting, financial accounting, and financial management integration (Zhang, 2024; Zhang, 2023); management accounting innovation in the context of information technology expansion (Zhu, 2023; Mo, 2023); and management accounting's function in corporate operations (Cao, 2023; Zhou, 2021). There is limited knowledge about the practice of SMA in the Chinese context, and a more systematic and quantifiable investigation is needed.

Therefore, this research aims to contribute to filling the gap in understanding SMA and its performance implications from the perspective of mainland China. In addition, in the era of hyper-globalisation, companies are facing more challenges in an increasingly complex market environment (Wang and Asia, 2023). Hence, a core aim of this research is also to understand the performance implications of SMA practices in turbulent market situations.

1.2 Rationale for this Study

The marketing landscape is becoming increasingly competitive, particularly in the post-COVID-19 period (e.g., Opute, Jawad and Jiang, 2022; Opute et al., 2020). The strategic management accounting (SMA) theoretical domain is of contemporary importance, and the thesis of this research is that organisations that embrace and effectively align SMA practice can achieve enhanced performance. In explaining the rationale for this study, three steps are outlined. First, the importance of SMA is emphasised in section 1.2.1. Thereafter, the discourse on SMA is presented with the aim of highlighting the core debates that justify the theoretical premise considered in this study (section 1.2.2). To fully achieve the target in section 1.2.2, management accounting in mainland China is presented in section 1.2.3, illustrating the need for SMA research in that domain. The specification of the research is then outlined in section 1.2.4, with the aim of identifying core research gaps that underpin the research aim and objectives of this study.

1.2.1 Importance of SMA

SMA emerged due to the loss of relevance between the information provided by management accounting (MA) and managerial decision-making requirements (Chenhall and Langfield-Smith, 2007; Johnson and Kaplan, 1987; Bromwich, 1990; Roslender and Hart, 2002, 2003, 2010; Shank, 1996; Shank and Govindarajan, 1992; Simmonds, 1982). Thus, a need arose for management accounting to be strategically contextualised to provide management-relevant information to support a more strategic orientation and performance enhancement. Given its importance, SMA discourse has relatively intensified in the past few decades (e.g., Langfield-Smith, 2008; Tillmann and Goddard, 2008; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023; Matsuoka, 2020; Cadez and Guilding, 2008; Carlsson-Wall, Kraus and Lind, 2015; Cescon, Costantini and Grassetti, 2019; Guilding, Cravens and Tayles, 2000; Hadid and Al-Sayed, 2021; Henri, Boiral and Roy, 2016; Hutaibat, 2019; Lapsley and Rekers, 2017; Pavlatos and Kostakis, 2018). This discourse suggests that SMA techniques can be implemented as an advancement of traditional management accounting, addressing the issue of irrelevance by providing market- and future-oriented information to assist in strategic decision-making (e.g., Guilding, Cravens and Tayles, 2000; Cadez and Guilding, 2008; Pasch, 2019; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsaqer, 2023).

To drive the strategic orientation of organisations and boost performance, SMA is conceptualised to provide critical information on the core aspects of accounting, such as costing; planning, control and performance measurement; strategic

decision-making; competitor accounting; and customer accounting. Consequently, studies have underscored the performance impact of such strategic management accounting practices (e.g., Cadez and Guilding, 2008; Aykan and Aksoylu, 2013; Ojra, Opute and Alsaqer, 2023; McManus, 2013; Matsuoka, 2020). In the SMA discourse, scholars have emphasised the fit logic, which suggests that optimising the organisational performance gains of SMA hinges on the effective alignment of the practice and operational dynamics of the organisation. Thus, according to the fit logic, the performance benefits of adopting SMA practice depend on ensuring its effective alignment with organisational operations.

1.2.2 SMA, Core Debates and Theoretical Premise in this Study

Strategic management accounting has become a critical theoretical domain in the contemporary business landscape and has attracted substantial scholarly attention in recent decades (e.g., Pires, Alves, and Rodrigues, 2024; Pavlatos and Kostakis, 2018; Cinquini and Tenucci, 2010; Langfield-Smith, 2008; Cadez and Guilding, 2008; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023; Matsuoka, 2020). A common view in the domain discourse is the notion that, if effectively implemented, SMA will boost organisational performance. While that notion is valid, research contends that the nature and optimisation of the alignment would depend on the nature of organisational activity (e.g., Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023; Phornlaphatrachakorn, 2018). Furthermore, literature suggests that alignment effectiveness could also be influenced by the setting and the key features

that regulate the setting (e.g., Ojra, Opute and Alsolm, 2021; Matsuoka, 2020). Also, scholars suggest that the nature (financial and/or non-financial) and extent of performance impact may depend on the operational dynamics and explored context (e.g., Ojra, Opute and Alsolm, 2021; Cadez and Guilding, 2008; Phornlaphatrachakorn, 2018).

In the SMA discourse, one core perspective that has been documented in the literature from the point of the fit logic relates to the contingency perspective. In that perspective, core organisation aspects that have been considered relate to organisational/business strategy (e.g., Turner *et al.*, 2017; Cinquini and Tenucci, 2007; 2010; Ojra, Opute and Alsaqer, 2023), organisational structure – formalisation (e.g., Ojra, Opute and Alsaqer, 2023; Chen and Wang, 2019; Kim and Shin, 2019), organisational structure – decentralisation/centralisation (e.g., Ojra, Opute and Alsaqer, 2023; Kim and Shin, 2019; Hwang, 2005), company size (e.g., Ojra, Opute and Alsaqer, 2023; Pasch, 2019; Cadez and Guilding, 2008), technology (e.g., Ojra, Opute and Alsaqer, 2023; Oyewo, 2022), environmental uncertainty – competitive intensity (e.g., Ojra, Opute and Alsaqer, 2023; Guilding and McManus, 2002; Cescon, Costantini and Grassetti, 2018) and environmental uncertainty – market turbulence (e.g., Ojra, Opute and Alsaqer, 2023; Cadez and Guilding, 2008; Aykan and Aksoylu, 2013; Turner *et al.*, 2017).

In particular, the contingency perspective has been widely advocated in order to gain a deeper insight into SMA practices in organisations (Ojra, Opute and Alsaqer, 2023; Pires and Alves, 2022; Alamri, 2019; Guilding, Cravens and Tayles, 2000). However,

while significant progress has been made in understanding SMA (Pires, Alves, and Rodrigues, 2024; Pavlatos and Kostakis, 2018; Cinquini and Tenucci, 2010; Langfield-Smith, 2008; Cadez and Guilding, 2008), more research effort is still needed to understand its practice, contingency factors and organisational performance implications (Ojra, Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2021; Ojra, Opute and Alsaqer, 2023).

There is a need for more illumination of SMA theory, and the chaos caused by COVID-19 around the world has created several difficulties and complexities for individuals, organisations and the global economy (Guerra *et al.*, 2021; Opute *et al.*, 2020), a development that has further underlined the pertinence for organisations to have appropriate strategies for responding to crises. Accounting, by playing its strategic role, can enable an effective response in organisations. While the impact of the pandemic is diminishing, the turbulent market in the aftermath continues to jeopardise the survival of businesses. Effectively responding to environmental uncertainty and market turbulence is a core element of contingency focus in SMA research. More research on SMA is required, and this research responds to that call (e.g., Ojra, Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsaqer, 2023; Pires, Alves and Rodrigues, 2024; Nik Abdullah *et al.*, 2022).

In that effort, this research explores the Chinese context, a context that is relatively under-explored. Also, China has been experiencing economic transition since the state-owned enterprise (SOE) reform policy was first proposed in 1978. SOEs, according to Lee (2001), are encouraged to restructure themselves from a

“quasi-government agency” into a “profit-oriented corporation”. The practice of management control systems has also altered, “from the cash-based Soviet style fund accounting to the accrual-based Western Style financial accounting” (Lee, 2001, p. 673), in order to enhance the economic performance of SOEs (O’Connor, Chow and Wu, 2004).

The report of the 20th National Congress of the Chinese Communist Party (2022) proposes to deepen the reform of state-owned capital and SOEs, accelerate the optimisation of the state-owned economy’s layout and structural adjustment, promote state-owned capital and SOEs to become stronger, and enhance the core competitiveness of enterprises (People’s Daily, 2023). This means that China’s economic transition is continuing and deepening. It affects not only the survival of SOEs, which constitute approximately 30 per cent of China’s listed companies, but also the business environment of private enterprises. According to the newly issued *Outline of the Fourteenth Five-Year Plan for Accounting Reform and Development*, article 8 of the main tasks, “Strengthening research on accounting theories and practices”, states that the theoretical research on accounting should be “focused on the key tasks of accounting reform and development, and carry out forward-looking and strategic research” (Ministry of Finance of China, 2021, p. 24).

Given these developments, exploring SMA in the Chinese context is important and would contribute to the understanding of SMA practice by investigating China’s turbulent and developing market from a contingency perspective. Section 1.2.3 describes management accounting development in China towards further

underscoring the importance of exploring that setting in this study.

1.2.3 Management Accounting in Mainland China

The evolution of accounting practices in China has gone through many stages from ancient times to the present, and its development is closely related to the country's economic policies and market environment (Lennox and Wu, 2022). Early accounting practices can be traced back to the Shang Dynasty, when a single-entry bookkeeping system was mainly used for government administration (Chow, Duh and Xiao, 2006). Until 1949, business management accounting practices did not develop significantly due to the turbulent environment. After the founding of New China, especially between 1949 and 1978, management accounting practices were mainly modelled on the Soviet Union's central planning model to meet the needs of a centrally planned economy (Chow, Duh and Xiao, 2006; Duh, Xiao and Chow, 2008).

The implementation of the reform and opening-up policy marked a turning point in Chinese accounting practice (Lennox and Wu, 2022), particularly in the field of management accounting (Duh, Xiao and Chow, 2008; Chow, Duh and Xiao, 2006). After 1978, China's management accounting practice entered a period of rapid change, which has been classified by He (2020) into three phases: introduction (1978-1992), adaptation (1993-2002), and innovation (2003-present). In the introduction phase, organisations began to explore incorporating Western management accounting techniques and methods, even though the market characteristics were not yet significant (He, 2020). In the second phase, Chinese organisations started to employ

Western MA theories and adjust them to tailor their own situations (O'Connor, Chow and Wu, 2004) and further developed their own theories (He, 2020). Thus, some scholars focused mainly on researching areas of management accounting that fit the characteristics of a socialist market economy to improve corporate productivity. Entering the 21st century, the rapid development of information technology has promoted the innovation of management accounting practices, such as the application of activity-based costing, strategic costing and other techniques (He, 2020).

The importance of management accounting and its research cannot be ignored. As China's economy continues to develop, the optimisation of management accounting practices plays a key role in promoting a fairer, more efficient and sustainable economy (Lennox and Wu, 2022). The *Guidance on Fully Promoting the Construction of Management Accounting Systems* issued by the Chinese Ministry of Finance in 2014 and ACCA's research on *Management Accounting Practices in Chinese Enterprises* in 2015 emphasise the central position of management accounting in modern enterprise management. However, the practice of management accounting still faces many challenges, such as insufficient development of the theoretical system, lack of high-level talents, and insufficient innovation and use of management accounting techniques (He, 2020; ACCA, 2015). The existence of these problems highlights the urgency of conducting in-depth research on management accounting practice, promoting its convergence with international standards, and strengthening management accounting education and talent training (Islam and Kantor, 2005; Ma *et al.*, 2022). Through these measures, the quality of management

accounting practice can be further enhanced to contribute to the long-term development of enterprises and the country.

Strategic management accounting research in China started late, with initial studies mainly introducing and describing Western SMA theories. Qiao's (1986) study first introduced the Western concept of strategic management accounting into China, which marked the beginning of SMA research in China. However, the progress of the initial research was slow, and only a few papers were published in the last decade (CNKI, 2024). With the acceleration of globalisation and the privatisation of state-owned enterprises, Chinese enterprises are faced with increasingly complex external environments and diversified business models, which have led to an increase in the number and depth of SMA research (Gong, 2020; Wu, 2019; Jin, 2017). The Chinese Ministry of Finance has accordingly issued a number of policies to promote the development of management accounting theory and practice in a strategic direction, such as the *Basic Guidelines for Management Accounting* (2016) and the *Outline of the 14th Five-Year Plan for Accounting Reform and Development* (2021).

In recent years, research on SMA in China has grown significantly. According to China National Knowledge Infrastructure (CNKI, 2024), more than 20 research papers on SMA were published each year between 2000 and 2020. However, they were publications in Chinese, and the proportion of empirical research is relatively limited (Cheng, Hail and Yu, 2022). The focus of research has also shifted from initial theoretical introductions and discussions to analyses of SMA applications in different industries and fields in China (Qu, Li and Yan, 2009), involving electronic enterprises

(Ding, 2023; Zhuo, 2023), financial services (Li, 2023; Liu, 2020) and e-commerce (Wang and Lv, 2022). This shift not only indicates the continued attention and in-depth exploration of SMA by Chinese academics but also reflects the gradual maturation of the practical application of SMA theory and practice in China.

Despite the progress made in SMA research in China, much still needs to be done towards understanding SMA in mainland China. Current research focuses on cost management (Wei, 2024; Zhao, 2023; Liu et al., 2020; Zhai, 2021; Liu, 2022) and performance measurement (Liu, Jin and Zhou, 2024; Sun, 2019; Yang and He, 2017; Yang, 2022; Yang and He, 2017), while topics such as strategic decision-making, customer accounting and competitor accounting are less explored (Ma et al., 2022). In addition, quantitative analyses of overall SMA practices are particularly scarce (Cheng, Hail and Yu, 2022). Therefore, future research needs to explore these areas more extensively in order to comprehensively enhance the theoretical foundation and practical application of SMA in China.

Also, while Chinese firms and academics are equally aware of the importance of SMA, there has been limited research on it from a contingency perspective (CNKI, 2024). Considering that costing and performance measurement are well-explored SMA categories in Chinese domestic MA research (Ma et al., 2022; Wei, 2024; Zhao, 2023; Liu et al., 2020; Sun, 2019; Yang and He, 2017), the current research focuses on strategic decision-making, competitor accounting, and customer accounting techniques of SMA. Furthermore, along with the emergence of e-commerce platforms and the dramatic change in the marketing model, traditional organisations face more

intensive competition and a changing market environment. Thus, organisations in the Chinese marketplace need to implement customer-oriented approaches (Guilding and McManus, 2002; Aykan and Aksoylu, 2013; Pavlatos and Kostakis, 2018; Ojra, Opute and Alsaqer, 2023), as well as enhance the awareness of competitors' actions and intentions (Cravens and Guilding, 2001; Cinquini and Tenucci, 2010; Pavlatos and Kostakis, 2018), in order to form proper strategic decision-making procedures to cope with the uncertain environments (Cadez and Guilding, 2008; Karlsson et al., 2019).

1.2.4 Motivation and Research Gaps

The motivation for this study arose primarily from an exploration of the complex relationship between management accounting theory and practice. Scapens (1984) noticed a clear gap between materials in textbooks and management accountants' actual practice. He attributes this gap to the time lag between the development of theory and practice, or the failure of practitioners to recognise so-called best practice. However, he still advocated that researchers should not concentrate too much on comparing MA practice with theoretical "ideals" (Scapens, 1994, p. 301). Instead, they should be more concerned with the study of management accounting practice itself (Scapens, 1994). Lucas and Rafferty (2008) found that many observed MA practices are not reconciled with prior-constrained optimisation. This finding is also proved by Tucker and Lowe (2014), who claim that the research-practice gap was real and significant. Moreover, they find that practitioners do not see this as a problem and are too busy with their day-to-day work to consider it. The same thing is happening in

China, and extensive journal articles address the gap between MA theory and practice (Du, 2017; Hu, 2017; Tan and Zhang, 2021). Although the theory of SMA was also introduced to China in the 1980s, its practice seems to differ more from theory, due to the fact that the practice of management accounting developed late in mainland China enterprises. This study is therefore essential towards enhancing the understanding of SMA practice in Chinese listed organisations.

This study is also inspired by the literature on the issue of the relevance of management accounting information, i.e. what management accounting information is relevant to what managerial decision-making. It is believed that the MA systems that are heavily focused on financial indicators do not provide adequate information for managerial decision-making (Shank, 1989; Ezzamel, Hoskin and Macve, 1990). There is substantial evidence on this point of view (Chenhall and Langfield-Smith, 2007; Langfield-Smith, 2008; Rashid, Ali and Hossain, 2020). As a consequence, scholars are urged to seek ways to enhance the relevance (Fischer, 2016; Johnson, 1994) by making innovations in MA techniques (Zawawi and Hoque, 2010). It is in this regard that strategic management accounting was proposed by Simmonds (1981). The theory is widely accepted because many scholars believe that embracing the strategic perspective would be the new direction for management accounting practice (Shank, 2007; Bromwich, 1990; Bromwich and Bhimani, 1994).

Despite its importance, since the SMA theory was proposed, its acceptance in business practice was not as optimistic as Simmonds predicted (Guilding, Cravens and Tayles, 2000; Shank, 2007; Langfield-Smith, 2008). After more than 40 years of

development, numerous studies have highlighted the importance of SMA across different countries. However, scholars have continued to emphasise its significance and have repeatedly called for further research. With regard to the Chinese context, quantitative insights about the current status of SMA application in Chinese organisations are very rare. In addition, the performance implication in existing SMA research has concentrated on financial performance (Turner et al., 2017), and research on non-financial performance is relatively sparse (Ojra, Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2020; Ojra, 2014). There is a need to illuminate the Chinese setting towards understanding the nature of SMA practice in China, and its influence on both financial and non-financial performance. This study, therefore, attempts to fill the gap in the current literature's understanding of management accounting practices in China by further exploring the current state of strategic management accounting (SMA) application and its effect on organisational performance in Chinese listed firms.

A central notion driving the SMA discourse is that organisations would achieve higher performance if SMA is effectively used. The association of SMA practice on organisational performance is also considered in this study. Previous research has explored the financial performance implications of SMA (Ojra, 2014; Turner et al., 2017; Pavlatos and Kostakis, 2018; Alamri, 2019). To contribute to the understanding of that association, this study draws from that foundation and seeks to provide insights from mainland China. Also, heeding the call in previous research (Aykan and Aksoylu, 2013; Ojra, 2014; Alamri, 2019; Ojra, Opute and Alsolm, 2021; Ojra, Opute and

Alsaqer, 2023), this study would also examine the association of SMA practice to non-financial performance. The underlying problems for this research are further pinpointed in section 1.3.

1.3 Research Problem

One of the distinctive features of the Chinese market is the high proportion of state-owned enterprises (SOEs). As the reform of SOEs has progressed, by the end of 2021, there were 1,317 state-controlled listed companies with a total market capitalisation of RMB 33.54 trillion, accounting for 28.26% of all domestically and Hong Kong-listed companies (Xinhua, 2022). The remaining firms are younger organisations that were established and have grown in response to China's reform and opening-up. Chinese organisations, therefore, are still in the process of exploring their own approaches to business operations and the establishment of management control systems.

Not surprising therefore that Xian and Meng-Lewis suggested that “Western-originated knowledge may not be applicable” (2018, p. 4), a viewpoint that somehow finds support in the view of Easterby-Smith et al. (2021, p. 110) that the theory of market behaviour developed during the US-dominated era now has to be rewritten as emerging economies like China and India rise to become global economic forces. Even though the academic field of MA in China is growing rapidly, and the number of studies on the Chinese MA practice is rising, it is also pointed out that empirical research remains simple and descriptive, and more quality studies are

needed (Cooke, 2009; Xian and Meng-Lewis, 2018; Cheng, Hail and Yu, 2022). Hence, it is important to know the Chinese top managers' view on the SMA techniques, their implementing environment and influence on performance.

1.4 Aims and Objectives

The central aim of this study is to understand SMA nature and the factors that influence the implementation of SMA within organisations, as well as the impact of SMA on the performance of firms in mainland China, an area that is currently under-researched (Duh, Xiao and Chow, 2008). Simmonds' investigation of competition monitoring and appraisal represents a significant milestone in the development of management accounting procedures as compared to traditional internal information collecting and analysis (Cadez and Guilding, 2008). Since then, numerous scholars have been drawn to this topic to improve management information systems by combining strategic perspective with management accounting (Bromwich, 1990; Langfield-Smith, 2008; Cadez and Guilding, 2012; Alamri, 2019).

Although some scholars (Lord, 1996; Langfield-Smith, 2008; Roslender and Hart, 2010; Rashid, Ali and Hossain, 2020) have questioned the practicality of SMA theory, empirical evidence suggests that organisations should embrace SMA to improve their performance (Cinquini and Tenucci, 2010; Zamecnik and Rajnoha, 2015; Turner *et al.*, 2017; Mohammed, Maelah and Amir, 2019; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). Building on this performance-oriented focus, scholars have increasingly emphasised the need for deeper examination of SMA practices to

understand not only their characteristics but also their fit within organisational contexts (e.g., Ojra, 2014; Turner *et al.*, 2017; Mohammed, Maelah and Amir, 2019; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023).

Research efforts have therefore sought to understand in varying conceptualisations the various SMA techniques (costing; planning, control and performance measurement; strategic decision-making; competitor accounting; and customer accounting) and contextual relevance (e.g., Cadez and Guilding, 2002; McManus, 2012; Ojra, 2014; Ojra, Opute and Alsaqer, 2023). Equally emphasised in the SMA fit discourse is the contingency perspective.

In the study of SMA, the contingency theory has been numerously utilised (Ojra, Opute and Alsolm, 2021; Cinquini and Tenucci, 2010; Nuhu, Baird and Bala Appuhamilage, 2007 and Pasch, 2019). Other theories, such as upper echelons theory and role theory (Pavlatos and Kostakis, 2018), and agency theory (Arunruangsirilert and Chonglertham, 2017), have also been utilised to understand SMA in organisations.

Despite increased research efforts, more is required to enhance the understanding of strategic management accounting practice and performance implications (e.g., Ojra, Opute and Alsaqer, 2023; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021). Especially with the changing business environment caused by the fourth industrial revolution and the epidemics, there are calls for more research on the SMA practice in the changing environment (Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). Recently, insights on SMA from

developing economies have been documented in the literature (Abofazl Amanollah et al., 2017; Arunruangsirilert and Chonglertham, 2017; and Alamri, 2019). However, these scholars, among many others (Ojra, 2014; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023), have emphasised the need for further research to shed light on SMA from the perspective of developing economies. Exploring the nature and extent of SMA and implementation in developing countries is a critical research domain (Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). Inspired by evident gaps in the literature, this study seeks to contribute to filling the gaps in the literature on SMA and organisational performance impact in a developing economy setting. Guided by the fit logic, this study adopts a contingency perspective and aims to explore the nature of SMA usage, the contingency factors influencing it, and the implications for organisational performance in the Chinese context.

To achieve that aim, this study has three main objectives:

Objective 1: Examine the extent of SMA adoption in Chinese organisations

Objective 2: Examine the contingency factors of SMA practices in Chinese organisations.

Objective 3: Investigate the performance implications of SMA practice in Chinese firms.

Within the aim of this study, the focus is on understanding from a developing economy perspective the nature and extent of SMA techniques adoption, the critical contingency factors that influence the implementation of these techniques, as well as

the performance impact of SMA usage. Further on the organisational performance impact point, a further target is to heed increasing research call (e.g., Ojra, 2014; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023) and explore not only financial but also non-financial aspects of the SMA impact on organisational performance in Chinese firms.

1.5 Research Questions

Based on the stated objectives, this study addresses the following research questions:

1. To what extent are different types of strategic management accounting (SMA) techniques adopted by Chinese listed companies?
2. What is the relationship between contingency factors and the adoption of SMA techniques?
3. What is the relationship between the adoption of SMA techniques and organisational performance in Chinese listed companies?

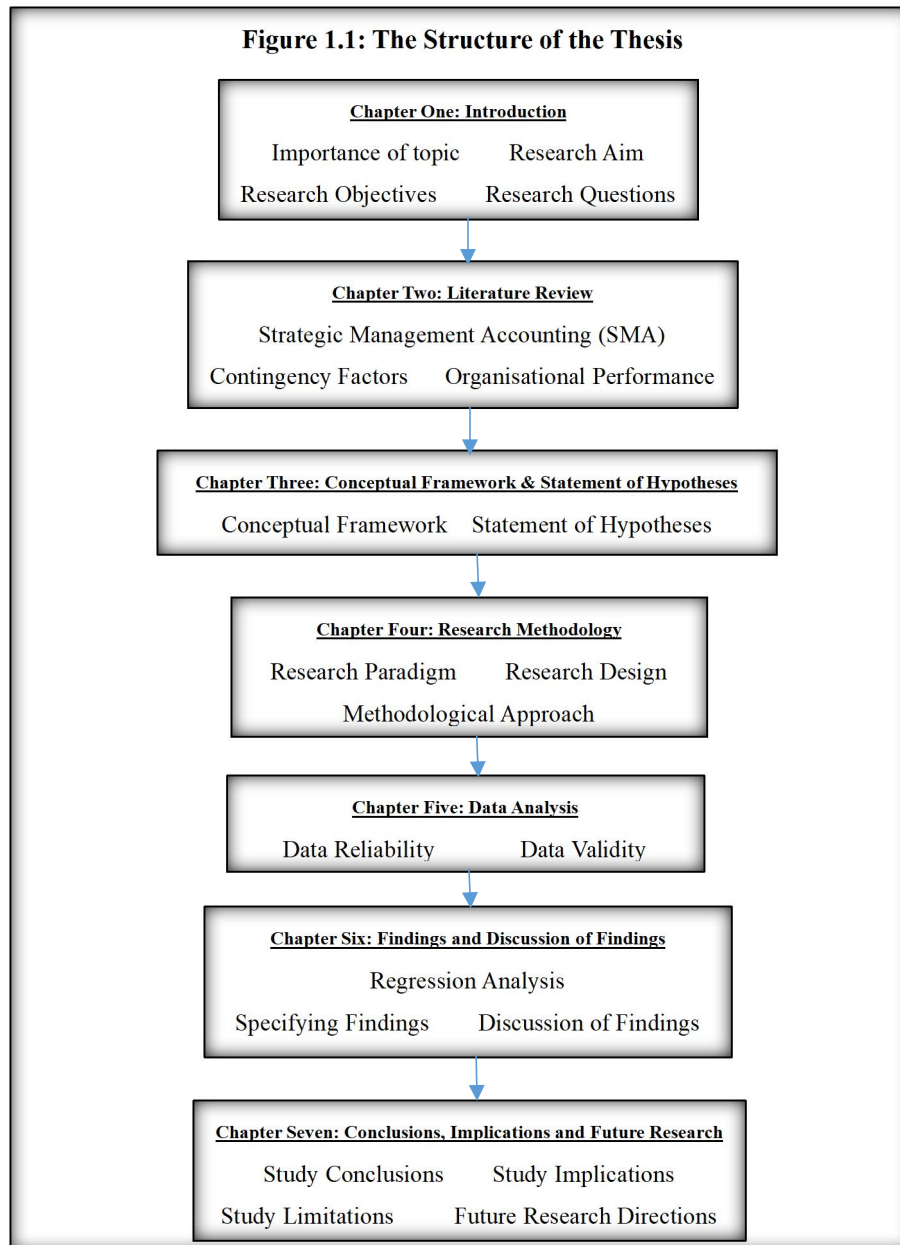
1.6 Structure of the Thesis

The structure of this thesis is summarised in Figure 1.1 below.

As shown in the Figure, this Chapter (one) presents the “Introduction” to this research. Specifically, this chapter provides the justification for this research, flagging the core gaps in the literature that justify the conceptual premise covered in this research. In that focus, the central aim of this research and related objectives, as well as research questions, are specified. In doing the above, the justification for focusing this research

on the mainland China context was also explained.

Chapter 2 reviews literature relating to SMA, including the streams and development of the SMA concept, classification and practice. In line with the gaps identified in the literature and the specified aim and objectives of the study, literature is also reviewed on the contingency factors of SMA usage as well as the performance implications of SMA practice.



Building on the theoretical foundation in both contingency and SMA literature presented in Chapter 2, Chapter 3 developed the conceptual framework for this research as well as justified and specified the hypotheses explored in this study.

Chapter 4 details out the research methodology used in this study. In doing that, literature was reviewed on the research paradigm leading to the justification of the philosophical premise of this study. The reasons for adopting a positivist philosophical stance are firstly discussed, and on this basis, a quantitative research

methodology was chosen. Following that, the quantitative approach for this study was explained, providing details on the implementation of this approach. The design of the data collection using an online questionnaire is specified, including the steps of the selection of the study population, sample and industry, the pilot test and the actual survey.

In Chapter 5, the analytical process followed in this research was explained. In doing that, the measures taken to ensure the reliability and validity of data in this study, as well as to examine the conceptualised hypotheses, are also explained.

Based on the analytical evidence in Chapter 5, Chapter 6 presents the results from this study, showing clearly whether the hypotheses were supported or not. In that chapter, too, the results from this study are compared with previous research.

Chapter 7 concludes this research. In chapter seven, the core conclusions from this study are underlined. Also, the theoretical and practitioner implications of this study are pinpointed in this chapter. The chapter is concluded with the limitations of the study acknowledged and future research directions pinpointed towards further developing this theoretical domain of SMA.

Chapter 2 Literature Review

2.1 Introduction

As stated in the previous chapter, this research sought to understand SMA practice in the Chinese context from a contingency perspective. A condition for optimising organisational performance, according to contingency theory, is the fitness between the organisation and its environment (e.g., Ojra, Opute and Alsaqer, 2023; Oyewo, 2022; Pires and Alves, 2022; Ojra, Opute and Alsolm, 2021; Volberda et al., 2012; Donaldson, 2001; Venkatraman, 1989; 2018). The relevance of conventional management accounting was questioned due to the business environment change at the end of the last century (Nik Abdullah et al., 2022; Rashid, Ali and Hossain, 2020; Cadez and Guilding, 2008; Johnson and Kaplan, 1987). Based on the existing literature on SMA practice, the adoption of strategic management accounting techniques can enhance managerial decisions, which may improve the outcome of organisations (Nik Abdullah et al. 2022; Alamr, 2019; Turner et al, 2017; Cadez and Guilding, 2008; 2012, Ojra, 2014). However, such improvement can only be achieved through the fitness between an organisation and its context (Ojra, Opute and Alsaqer, 2023; Hamann, 2017; Boyd et al, 2012; Drazin and Van de Ven, 1985). Hence, the contingency perspective is forwarded in this research.

The focus of this chapter (2) is to review relevant literature towards explaining the theoretical premise for this study. The review of literature is organised as shown below:

1. Strategic management accounting (SMA) techniques (Section 2.2),
2. The contingency theory and contingency perspective for this study (Section 2.3),
3. SMA and Organisational Performance (Section 2.4),
4. Management Accounting in mainland China (Section 2.5), and
5. Conclusion to the chapter (Section 2.6).

2.2 Why Strategic Management Accounting

Introduced into organisational practice as an advancement of cost accounting, Management Accounting (MA) is considered to be key to organisational management efficiency and success (Shah, Malik and Malik, 2011; Ojra, 2014; Ojra, Opute and Alsaqer, 2023). Explaining the role of management accounting in supporting strategic management processes, CIMA states that:

“...a key role of management accounting is to provide support for decision making and thus incorporates the typical elements of information gathering and analysis, generation of options, choice, implementation, monitoring and evaluation.”

(CIMA, 2016, p. 4)

However, the development of the global economic society and the business environment has created a gap between the information provided by traditional management accounting and the information required by management for decision-making (Nik Abdullah *et al.*, 2022; Langfield-Smith, 2008). Management accounting was criticised as being “too late, too aggregated and too distorted” (Johnson and Kaplan, 1987, p. 1). More specifically, three major defects were identified in traditional management accounting practice:

- a) It focuses on segmented annual and internal financial information, and normally fails to capture comprehensive information that reflects competitors and consumers that assists managerial decision-making (Baines and Langfield-Smith, 2003);
- b) The form of aggregation makes accounting information less useful for management decision-making (Shah, Malik and Malik, 2011); and
- c) Influenced by financial accountants, whitewashed accounting information would be more attractive for external users but less reliable for making decisions (Shah, Malik and Malik, 2011).

Besides the above limitations, critics have also noted that not only does the practice of management accounting have little support in strategic management (Cooper, 1996), but it also did not take advantage of the innovative techniques in the management field to evolve (Shah, Malik and Malik, 2011). Roslender and Hart (2006) stated that the discipline has not given enough attention to strategic brand management. To address these limitations, extensive literature indicates that SMA is the future direction of conventional management accounting (Langfield-Smith, 2008; Shah, Malik and Malik, 2011). In Section 2.2.1, the development of SMA's theory and practice is discussed.

2.2.1 Strategic Management Accounting

Environmental change, including technological advancements and the emergence of new business models, prompted the management accounting revolution in more than

one continent at the end of the last century (Langfield-Smith, 2008; Nik Abdullah et al., 2022). Even though extensive studies have suggested that the process of providing cost and management accounting information should include a strategic perspective (Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Langfield-Smith, 2008), the directions and the emphasis on developing the theory were taken differently (Simmonds, 1981; Shank and Govindarajan, 1994; Roslender and Hart, 2002).

To provide more decision-making relevant information that aligns with the organisation's strategy, Simmonds (1981, p. 26) introduced the phrase "strategic management accounting" to reflect "the provision and analysis of management accounting data about a business and its competitors, for use in developing and monitoring business strategy."

Since the theory of SMA was advocated, it has triggered debates among academics over the years. The consensus of the academic community is that the innovation of management accounting should integrate strategy and marketing aspects (Shah, Malik and Malik, 2011; Matsuoka, 2020), but the details of how to approach this integration have been advocated by different scholars. Three core directions have featured as the most influential perspectives.

The first one is Shank's Strategic Cost Management (SCM). A well-known direction for developing management accounting is strategic cost management suggested by John Shank (2007). The concept was originally refined from previous MA practice and proposed by Shank and Govindarajan (1994), and it proposes that cost data can be

utilised in strategic decision-making. Based on the practice in the United States, Shank supported the view that financially-focused management accounting systems and costing techniques at that stage have lost their relevance to operations management (Chenhall and Langfield-Smith, 2007; Johnson and Kaplan, 1987). By admitting Simmonds' contribution to the management accounting discipline, Shank believes that SCM will be the future of management accounting practice.

Another prominent direction that is advocated by Bromwich and Bhimani has contributed to the development of SMA theory. Contrary to Shank's point, Bromwich (1990) has supported SMA from economic theories. To face global product market competition, he proposed that other than being restricted to internal manufacturing activities, management accounting should focus on business value-added associated with competitors. Based on the findings of surveys in the early stage of SMA research, Bromwich and Bhimani (1994) concluded that although the adoption of SMA techniques at that time was at a low level, adopters generally found SMA techniques were useful and there was a clear indication of future adoption of particular techniques such as Activity-Based Costing (ABC). Hence, it was suggested that wider employment of SMA techniques was just a matter of time (Bromwich and Bhimani, 1994; Shank, 2007).

The third direction is Roslender and Hart's marketing direction. Taking a sociological perspective, Roslender and Hart (2002) provided a marketing direction for management accounting practice. After reviewing the literature on SMA development and summarising its critiques, Roslender indicates that many critiques of SMA

concentrate on its threads (Roslender, 1996; Langfield-Smith, 2007). In response to these critiques and to develop the theory of SMA, Roslender and Hart (2002) have developed a framework to leverage the advantages of SMA by bringing management accounting and marketing together, a perspective that has been recognised in the growing research on accounting-marketing working relationship (e.g., Opute, 2009; Opute and Madichie, 2016; Opute, Dedoussis and Tzokas, 2013; Opute and Madichie, 2017).

Compared to the approach of integrating MA with marketing, weaknesses could generally be found in the approach of integrating MA with strategy (Roslender and Hart, 2002). The first weakness is found in quantitative research that studies the connection (mainly contingency relationship) between strategy and management control system (MCS) (Simons, 1987). Roslender and Hart (2002) pointed out that this kind of research merely provides MA with a more strategically informed approach. In the other two streams of SMA study, research on the balanced scorecard (BSC) (Kaplan and Norton, 1996) and SCM (Shank and Govindarajan, 1989), Roslender and Hart (2002) have identified the changing role of management accountants, and the need for expanding accounting function in organisational practice. Hence, they suggest that the advanced SMA practice needs to abandon discipline-centric thinking to have better inter-functional co-ordination, and develop into strategic marketing management accounting.

After reviewing the literature from 1982 to 2022, the definition of SMA is still not unified (Langfield-Smith, 2008; Nik Abdullah *et al.*, 2022). With awareness of the

dispute on the developing path of MA and the conceptualisation of SMA, based on the existing practice and previous literature, CIMA (2005, 2016) proposed a definition to capture the concept of strategic management accounting, which is:

“...a form of management accounting where the emphasis is placed on information which relates to factors external to the entity, as well as non-financial information and internally generated information.”

(CIMA, 2016, p. 5)

2.2.1.1 Studies of SMA Literature

Since the concept of SMA was introduced, the field has been receiving a lot of attention and has accumulated a large body of literature (Bromwich, 1990; Coad, 1996; Roslender and Hart, 2002; and 2003; Langfield-Smith, 2008; Zawawi and Hoque, 2010; Nixon and Burns, 2012). According to Rashid, Ali, and Hossain (2020), the number of SMA studies published in 23 leading accounting journals between 2008 and 2019 has shown considerable volatility throughout the time period, with no apparent long-term period of stability. In particular, the number of studies decreased significantly after 2017. However, since 2020, several review articles on SMA have appeared (e.g., Rashid, Ali, and Hossain, 2020; 2021; Ojra, Opute, and Alsolm, 2021; Nik Abdullah et al., 2022; Pires, Alves, and Rodrigues, 2024). Are these literature studies that have emerged in recent years merely coincidental, or has the turbulence of the global business environment in the aftermath of the epidemic prompted scholars to reassess the role and value of SMA in an uncertain environment? Given that these reviews provide comprehensive different perspectives of past SMA research, the

researcher of the current study believes that a comparative analysis of these articles is essential to enrich the discussion of the literature review in this chapter.

Rashid, Ali and Hossain have published two articles on SMA literature in 2020 and 2021. The first one, *Revisiting the Relevance of Strategic Management Accounting Research*, attempts to uncover trends in SMA research. The study not only provided statistics on the annual number of research articles published on SMA between 2008 and 2019, but also provided detailed statistics and analyses in six aspects, including the topic focus of the research, settings, and the theories applied, etc. In addition to finding a large body of SMA and related research focused on exploring the factors influencing techniques adoption and their multifaceted impact on firm and employee performance, this study reveals innovations in SMA techniques in past literature (Zawawi and Hoque, 2010). Furthermore, the tendency to incorporate strategic management theories into SMA studies has also increased (Rashid, Ali and Hossain, 2020).

In their second published review, Rashid, Ali and Hossain (2021) have concentrated on SMA empirical works. The study found that varied levels of adoption of various SMA techniques were exhibited in the regions and economies explored. In several developed countries, techniques like competitor accounting, strategic pricing, benchmarking and customer accounting have been moderately to highly adopted. Additionally, significant differences exist between developed and developing economies in the adoption and application of SMA practices. In those developed economies that have more deeply integrated SMA practices, SMA practices have a

significant positive impact on organisational performance. In contrast, SMA adoption and its impact on performance in developing economies are difficult to compare intensively and accurately due to the lack of sufficient empirical research and systematic data support. This situation suggests the need for more in-depth studies specific to these regions to better understand the effects and impact of SMA practices in different economies.

Also in the same year, Ojra, Opute and Alsolm (2021) published a research article exploring the use of SMA and its impact on organisational performance. Their research findings were centred on three core themes: strategic management accounting techniques, factors that condition the use of SMA techniques, and the impact of SMA use on organisational performance. The study identifies a variety of SMA techniques that organisations can employ to improve decision making and organisational performance, such as strategic cost management, planning, control, performance measurement, strategic decision-making, competitor accounting and customer accounting. In addition, the study highlights the importance of specific conditions for the adoption of SMA techniques within the framework of the contingency theory, noting that the effectiveness of SMA practices may vary significantly depending on the organisational and environmental context. The findings suggest that effective use of SMA techniques can promote better strategic alignment and performance outcomes.

Attempt to identify the motivation for adopting SMA practices, evidence of SMA usage, and the impacts of SMA on business goals, Nik Abdullah *et al.* (2022)

employed a systematic review approach to find knowledge gaps in current literature.

The key findings of this review are concentrated on the following areas: SMA techniques and Decision-Making; impact on Performance; adoption motivations and challenges; strategic and external orientation and technology.

Implementing a bibliometric analysis approach to review SMA articles over the past 40 years, Pires, Alves, and Rodrigues (2024) have explored the conceptual structure of SMA research and revealed research trends. Through bibliometric and co-word analysis, this study reveals four main research clusters in the SMA literature:

Cluster 1: investigating how SMA practices can provide companies with a competitive advantage in different markets.

Cluster 2: examining how organisations can implement and benefit from SMA techniques to enhance strategic decision-making and performance evaluation.

Cluster 3: exploring the conditions and circumstances under which SMA has been adopted and its different applications in different industries and regions.

Cluster 4: studying how SMA can be integrated into an organisation's wider strategic management process.

Table 2.1: Studies of SMA literature after 2020

Author(s)	Research Objective	Research Methodology	Scope	Findings
Rashid, Ali and Hossain (2020)	Uncover the trend and relevance of SMA research after 2008	Reviewed 23 leading accounting journals from 2008 to 2019	136 SMA and related techniques articles	SMA research has focused on the contingencies influencing SMA adoption; the effects on various aspects of firm and employee performance; the renovation and modification of existing practices to match with contexts.
Rashid, Ali and Hossain (2021)	Review empirical studies of SMA practices, analyzing application and effectiveness.	Literature comparison and analysis	19 empirical studies	Identified differences in SMA adoption and effectiveness across developed and developing economies; SMA practices enhance strategic alignment.
Ojra, Opute and Alsolm (2021)	Explore the application and impact of SMA on organizational performance.	Systematic literature review	Not explicitly mentioned	SMA practices have significant implications for organizational performance; effectiveness varies based on organizational and environmental factors.
Nik Abdullah et al. (2022)	Critically review literature on SMA practices, motivations for adoption, and its impact on business goals.	Systematic literature review with bibliometric analysis	174 articles (1982 - 2022) on SCOPUS and WoS	SMA enhances decision-making and performance, with technological advancements enabling its implementation. Identified gaps in non-manufacturing sectors.
Pires, Alves, and Rodrigues (2024)	Examine 40 years of SMA research to identify trends and provide insights into its conceptual structure and future research directions.	Bibliometric analysis and co-word analysis	326 articles on SCOPUS and WoS	Identified four main research clusters: competitive advantage, performance measurement, SMA adoption context, and role in strategic management. Highlighted emerging topics like sustainability integration.

Having analysed the differences between the above studies in the literature, the researchers also noted some commonalities. Since these studies were published fairly close to each other, the environmental contexts in which the authors were situated

(including the context of business operations, the level of research progress in SMA, etc.) were consistent. The studies show consistency in focusing on the practice, rather than the theory, of SMA, and all point out that there are still unexplored research gaps in the field of SMA.

In particular, two studies published in the same year by Ojra, Opute, and Alsolm (2021) and Rashid, Ali, and Hossain (2021) demonstrate greater similarities. For instance, they both explore insights into the applicability and impact of SMA practices in different organisational contexts. However, there are also significant differences between the two studies: the former focuses on exploring the application of SMA and its impact on organisational performance using a literature review, with a focus on theoretical integration and literature analysis, while the latter emphasising the need for empirical research to address gaps in how SMA's practice and effectiveness is perceived in varied economic conditions, providing a broad perspective on SMA practices across regions. Despite the differences in research methodology and focus, both studies identify the influencing factors and performance impacts of SMA application under the framework of contingency theory, suggesting that an academic consensus is emerging in the field. This may signal that future SMA research will continue to explore how SMA techniques can be optimised to suit different strategic and environmental conditions.

2.2.2 SMA Taxonomy and Practice

It has been stated that strategic management accounting is “an emerging field whose boundaries are loose and, as yet, there is no unified view of what it is or how it might develop” (Coad, 1996, p. 392). The literature in this area has been described as scattered and inconsistent up until recently (Nik Abdullah et al. 2022), and the research stream on SMA practice is much more so. However, expanding on structural contingency theory, researchers have begun to focus on the factors that influence the adoption of SMA techniques and the relationship between SMA use and organisational performance (Guilding, 1999; Cadez and Guilding, 2008; Turner et al., 2017; Alamri, 2019; Oyewo, 2022). This study stream investigates the use of SMA by identifying management approaches with strategic related aspects and assessing their use as well as their performance effects on businesses.

Academic consensus on linking and categorising specific techniques is lacking as a result of the lack of agreement on the definition of the SMA concept. Techniques like value-chain analysis and cost-driver analysis are seen as more strategy-related and as belonging to the theory of SCM in the early stages of SMA practice research. From a marketing standpoint, Roslender and Hart (2002) believed that target costing provided a strong foundation for SMA and added “brand management accounting” as a new dimension. The SMA taxonomy is presented in section 2.2.2.1.

2.2.2.1 SMA Taxonomy

To distinguish SMA techniques from conventional ones, different criteria are developed. A well-adopted one that is followed by many researchers (e.g. Pasch, 2019; Cescon, Costantini and Grasseti, 2018; Abofazl Amanollah et al, 2017; Cadez and Guilding, 2008, etc.) was developed by Guilding, Cravens and Tayles (2000), and suggests that an SMA technique should have one or more following features: market/environment oriented, competitor focused, long-term oriented and forward-looking.

According to literature, there are almost 20 SMA techniques reflecting life-cycle costing (LCC), benchmarking, strategic pricing, competitor position monitoring (CPM) and customer accounting aspects (Cadez and Guilding, 2008; Tayles, 2011). The mainstream research in the area has included 16 techniques that are generally divided into the following five categories (Cadez and Guilding, 2008; 2012; Nixon and Burns, 2012; Ojra, 2014; Arunruangsirilert and Chonglertham, 2017; Oyewo, 2022; Ojra, Opute and Alsaqer, 2023):

- a) Costing;
- b) Planning Control and Performance Measurement;
- c) Strategic Decision-Making;
- d) Competitor Accounting; and
- e) Customer Accounting.

Based on a review done across 150 pieces of literature about SMA techniques that are published between 2008 and 2019, techniques in *Costing* and *Planning, Control and*

Performance Measurement themes (eg, balanced scorecard, activity-based costing and target costing) attract the researchers the most (Rashid, Ali and Hossain, 2020). Specific SMA technique research on the latter three categories is relatively less, hence, responding to research call (e.g., Matsuoka, 2020; Ojra, 2014; Ojra, Opute and Alsaqer, 2023; Ojra, Opute and Alsolm, 2021), this study focuses on these three aspects of SMA practice.

Thus, the focus of this research is to understand the application of SMA in Chinese listed firms. Facing more intensive competition, these listed organisations need to enhance their awareness of competitors' actions and intentions (Cravens and Guilding, 2001; Cinquini and Tenucci, 2010; Pavlatos and Kostakis, 2018). To pursue competitive advantage, the contemporary practice of management accounting is forced to take a more customer-oriented direction (Guilding and McManus, 2002; Aykan and Aksoylu, 2013; Pavlatos and Kostakis, 2018; Ojra, Opute and Alsaqer, 2023). Especially, in the post-pandemic context, ensuring suitable strategic decision-making procedures is vital in dynamic and uncertain environments (Cadez and Guilding, 2008; Karlsson, Hersinger and Kurkkio, 2019; Opute et al, 2020).

Given the above, this research focuses on the SMA practice of the latter three themes, i.e. *Strategic Decision-Making*, *Competitor Accounting* and *Customer Accounting*, and literature on these SMA techniques is reviewed next in sections 2.2.2.1.1. (Strategic Decision-Making), 2.2.2.1.2 (Competitor Accounting) and 2.2.2.1.3 (Customer Accounting).

2.2.2.1.1 Strategic Decision-Making

Based on the categorisations specified in the literature, the literature review on strategic decision-making is organised thus: strategic costing (section 2.2.2.1.1.1), strategic pricing (section 2.2.2.1.1.2), and brand valuation (section 2.2.2.1.1.3).

2.2.2.1.1.1 Strategic Costing

Strategic costing, also referred to as strategic cost management (SCM) (Taylor, 2021), is defined as “deliberate decision making aimed at aligning the firm’s cost structure with its strategy and with the managing the enactment of the strategy” (Anderson and Dekker, 2009, p. 202; Anderson, 2007; Ojra, 2014; Ojra, Opute and Alsolm, 2021). The framework of SCM incorporates three themes: value chain analysis, strategic positioning analysis and cost driver analysis (Taylor, 2021). This technique is concerned with the alignment of the value chain, cost structure and behaviour of a firm with its generic strategy.

To gain a competitive advantage, strategic aspects should be taken into consideration in the cost analysis process (Shank and Govindarajan, 1988). Shank (1996) used the Mavis case to demonstrate how traditional standard financial analysis is limited in its ability to evaluate technology investment options, whereas the strategic cost management framework may provide a thorough means of studying investment opportunities against a strategic backdrop. It is also pointed out that strategic excellence can be achieved by using strategic and marketing information in the cost analysis process (Shank and Govindarajan, 1988; Guilding, 1999). After decades of implementation in different business sections, academic research has found extensive

evidence that SCM improves supply chain responsiveness, product performance, and other factors (Ellram and Stanley, 2008).

Despite increasing attention on the strategic costing practice research, there are also studies with conflicting results, and limitations have been pointed out within the stream of research, notably the research on components of SCM is not rationally distributed. Building on the previous research of Shank and Govindarajan (1994) and Tomkins and Carr (1996), Anderson (2007) characterised the form of SCM, including executional and structural cost management. Researchers like Henri, Boiral and Roy (2016) argue that existing research emphasises more on executional cost management than structural cost management, and the connection between the components and their association with performance is insufficient. Therefore, in their empirical work with a sample of 319 Canadian manufacturing firms, they found a positive connection between the use of executional and structural cost management and business performance (Henri, Boiral and Roy, 2016). It encourages more detailed research in strategic costing studies, such as proposing quality assessment models for corporate SCM systems (Petrov and Minina, 2020) and studying the practice of modern costing techniques in specific industries (Srbinska et al., 2020; Cescon and Garlatti, 2020; and Santana, Diehl and Martins, 2020). Each of these studies has contributed to the development of the practice of MA techniques and provided new evidence to support the link between them and organisational performance.

2.2.2.1.1.2 Strategic Pricing

According to Guilding (1999, p. 585), strategic pricing is “the analysis of strategic factors in the pricing decision process”. In strategic pricing, factors such as market expansion, pricing elasticity, economies of scale, and rival price response can be evaluated (Cadez and Guilding, 2008; Ojra, 2014; Ojra, Opute and Alsolm, 2021). Early studies have shown that, as with strategic costing, a price decision process which adopts a strategic viewpoint (i.e. market-oriented and forward-looking) can produce superior results (Simmonds, 1982; Foster and Gupta, 1994).

More recent studies in strategic pricing focus on the practice in specific types of organisations, markets, and under different situations. For example, there is research about influential factors of strategic pricing adoption in SMEs (Zuhroh and Sukanti, 2019); practice in specific industries like the Spanish power market (Bohland and Schwenen, 2022); and particular strategic pricing problems under different strategy choices (non-cooperative and cooperative strategy) (Zhong, Zhou and Leng, 2021).

2.2.2.1.1.3 Brand Valuation

According to Cravens and Guilding (1999), “*brand valuation quantifies the benefit of brand equity to the owner of the brand*” (p. 55). The significance of brand valuation was emphasised by Srivastava, Shervani and Fahey in their research on market-based assets and shareholder value (1998). They argue that measuring valuable assets such as brands is necessary and more relevant to determine shareholder value as compared to more traditional measures such as market share and sales volume. Additionally, brand valuation can be a useful tool for assessing financial performance and for

establishing shared objectives in order to pursue strategic goals (Cravens and Guilding, 1999).

Taken from a marketing perspective, brand loyalty, name awareness and even competitive advantage created by brand valuation, etc., can be combined to create brand equity (Aaker, 1991, 2009). The value of the brand has evolved into a crucial indicator in the financial report as a significant component of corporate performance (Veselinova and Samonikov, 2018). The best practice strategy for brand valuation, according to Veselinova and Samonikov (2018), comprises five essential steps: market segmentation, financial analysis, brand impact, discount rate, and brand value calculation.

As the practice of brand valuation matured, the methodologies were categorised and investigated to determine their suitability for the circumstances (Salinas and Ambler, 2009). The methods used in social media brand equity (Sadyk, 2020) and brand equity in the retail coffee business (Trigeorgis, Baldi and Katsikeas, 2021) are two examples of recent academic studies on brand valuation. In addition, marketing-finance interface research contends that there is a clear correlation between brand value and business value (Kumar et al., 2020).

2.2.2.1.2 Competitor Accounting

Guilding (1999) first identified five competitor-focused accounting (CFA) techniques, i.e. *competitor cost assessment*, *competitive position monitoring*, *competitor appraisal based on published financial statements*, *strategic costing*, and *strategic pricing*, used to examine the implementation, practitioners' perceptions, and the contingency factors

that affect both the implementation and perception of competitor accounting. This classification has been developed and altered in his later research with Cadez (2008) on SMA techniques, where only the first three were categorised. Strategic pricing and strategic costing were included in the strategic decision-making theme (Cadez and Guilding, 2008) and discussed in the above section. The three aspects covered in this study are explained next: competitor cost assessment (Section 2.2.2.1.2.1), competitor position monitoring (Section 2.2.2.1.2.2) and competitor performance appraisal (Section 2.2.2.1.2.3).

2.2.2.1.2.1 Competitor Cost Assessment (CCA)

As a “provision of a regularly updated estimate of a competitor’s unit cost” (Guilding, 1999, p. 584), competitor cost assessment is the most frequently mentioned in CFA practice. The increased focus on competitor cost assessment could be due to the “technologically-advanced investments” (Guilding, 1999, p. 584). Given that this type of investment requires long-term commitment (Jones, 1988), foreknowledge of competitors’ costs would help to strengthen competitive positioning (Guilding, 1999). Existing literature shows that there are limited empirical studies focused on CFA independently (Lord, 1996; Heinen and Hoffjan, 2005). Despite decades of practice, there hasn't been much research done lately that especially examines CCA. Evidence in the literature shows a growing research interest in this area (e.g., Arunruangsirilert and Chonglertham, 2017; Cescon, Costantini and Grassetti, 2018; Pavlatos and Kostakis, 2018; Amanollah Nejad Kalkhouran, Hossein Nezhad Nedaei and Abdul

Rasid, 2017) from the point of SMA practice in different countries, and this present study seeks to contribute to that knowledge development effort.

2.2.2.1.2.2 Competitor Position Monitoring

Competitor position monitoring is a more comprehensive model that Simmonds (1986) proposed initially to analyse the position of competitors other than just the unit cost (sales, market share, volume, etc.) of major competitors. Simmonds argues that knowing the unit cost of competitors is not enough. To form an overall understanding of a competitor's strategy, an organisation should also analyse its competitor's comprehensive position within the industry by appraising and tracking its sales, market share, volume, unit costs, and return on sales (Guilding, 1999).

2.2.2.1.2.3 Competitor Performance Appraisal

Another CFA technique within the competitor accounting categorisation relates to appraising competitors' performance based on their published financial statements (Moon and Bates, 1993). Compared to the other two approaches, the data used to analyse the competitors' performance is more accessible and akin to traditional accounting analysis. It can track financial performance like net profit and debt ratio change, etc. (Guilding, 1999).

2.2.2.1.3 Customer Accounting

It is believed that more firms include customer-specific proclamations in their mission statements, which indicates that organisations start to pursue competitive advantage by applying customer-focused strategies (Kaplan and Norton, 1992; Guilding and McManus, 2002). As businesses face increasing challenges in retaining customers,

naturally, they emphasise customer-focused strategies (Ojra, Opute and Alsaqer, 2023). With the emergence of the digital economy, data about customers has become more accessible (Matsuoka, 2020). Its importance to organisational performance measurement makes customer accounting a vital facet of SMA. More specifically, evidence suggests that the disclosure of customer metrics could reduce the variance in earnings forecast and stock return and not negatively affect the company's future financial performance (Bayer, Tuli and Skeira, 2017).

Guinding and McManus (2002) have made their contribution by being the first to examine the relationship between customer accounting adoption and contingency factors like competitive intensity. They defined the term as “accounting practices directed towards appraising profit, sales, or present value of earnings relating to a customer or group of customers” (p. 48). Five customer-oriented management techniques were examined: customer profitability analysis, customer segment profitability analysis, lifetime customer profitability analysis, valuation of customers or customer groups as assets, and customer accounting. Positive associations were found in their research on market orientation, competitive intensity and customer accounting usage.

In a later study, McManus (2013) classified customer-focused accounting into a series of analyses involving customer revenue analysis, market share analysis and customer loyalty analysis, etc. The research found that decentralised hotels have a higher level of customer accounting practice. In addition, organisations with a prospector-type strategy are positively associated with customer-focused accounting adoption. This

result is consistent with the findings of Ojra, Opute and Alsaqer's (2023) study, which shows that customer accounting practice is higher in prospectors in Kuwaiti financial service organisations.

Adopting Guilding and McManus's (2002) classification, this study focuses on three customer accounting techniques (see sections 2.2.2.1.3.1, 2.2.2.1.3.2 and 2.2.2.1.3.3). As noted by them, customer segment profitability analysis is the same as customer profitability analysis in different application scenarios, and the fifth dimension, customer accounting, is merely "the holistic dimension, i.e. the over-arching construct" of all customer-related accounting practice (2002, p. 48).

2.2.2.1.3.1 Customer Profitability Analysis

The term customer profitability analysis (also known as customer account profitability) refers to the process of determining the profit generated from a specific customer and calls for the ability to link the pertinent data (costs and sales) used to calculate the profit to the specific customer (Guilding and McManus, 2002). Customer profitability analysis, which evolved from activity-based costing, frequently emphasises cost analysis rather than revenue analysis (Matsuoka, 2020). Customer segment profitability analysis can be used to examine the profit of a group of customers when it is impossible to calculate and analyse the profit of a single client (Guilding and McManus, 2002). Due to the structure and business dynamics of banks, it is less practical to trace costs and sales back to individual customers, hence, this method may have application in industry analysis of the banking sector (Cambra-Fierro et al., 2018).

According to Petersen et al. (2017) and Matsuoka (2020), Customer profitability analysis has been shown to be more compatible with financial service and B2B contexts with the advancement of information technology. Additionally, evidence suggests that B2C businesses, such as online shops, can apply this strategy because of the vast amounts of customer data they possess (Allen, Dholakia and Basuroy, 2016). Moreover, a significant relation is found between the adoption of this technique and organisational performance in the hotel business in Malaysia (Yasir et al., 2020).

In a recent study on the sophistication of customer profitability analysis models, Holm and Ax (2020) propose that “the least sophisticated model applies where customer profitability is approximated by sales or gross profits only” (p. 3). Sophistication is added by broadening the scope of expenses to include selling, general, and administrative (SG&A) costs related to customers. Assigning more cost pools and cost drivers to the process of allocating indirect SG&A costs to customers contributes to the sophistication as well. Their findings indicate that when customer service competition is high (poor), competition intensity is positively (negatively) associated with the sophistication customer profitability analysis model (2020).

2.2.2.1.3.2 Lifetime Customer Profitability Analysis (LCPA)

Lifetime customer profitability analysis is a technique that is underexplored in the accounting academic field (Guilding and McManus, 2002; McManus and Guilding, 2008; Casas-Arce, Martinez-Jerez and Narayanan, 2017). Other than collecting customers’ transaction information to calculate their profit from the past, this technique requires management accountants to predict the lifetime accumulated future

profitability of the customer's trading relationship. This technique also refers to customer lifetime value (Jain and Singh, 2002), which indicates the calculation of discounting future income stream associated with dealing with customers (Gupta, Lehmann and Stuart, 2004; Matsuoka, 2020). Besides the future potential customer-related costs and revenue, it also involves the prediction of customers' future behaviour (Al-Mawali, Zainuddin and Nasir Kader Ali, 2012). Influenced by marketing theory, customer lifetime value tends to emphasise maximising the profitability of long-term customer relationships over one-time transactions (Matsuoka, 2020).

According to Foster and Gupta (1994), LCPA widens the field of time analysis to include past and future years to enrich data input. By identifying the long-term nature of customer relationships and incorporating the lifetime value of customers, this approach evaluates customers from a lifetime perspective, and according to Yasir *et al.* (2020), it has been developed to adapt to the changing business environment for management accounting purposes. While LCPA demonstrates that the availability of customer information and data is essential in examining customer relationships, the application of this technique in organisations is relatively rare in comparison to other customer accounting techniques (Yasir *et al.* 2020).

There is, however, some literature that shows the suitability of this technique for application in some specific industries. This technique has been often used in the insurance industry (Foster and Gupta, 1994) and individual loan analysis (Cooper and Kaplan, 1991). Evidence indicates that this technique can be adopted in industries

with readily available customer data, such as financial services (Csikosova, Aulkova and Janoskova, 2016), online retailing (Dahana, Miwa and Morisada, 2019) and subscription-based businesses (Ben Rhouma and Zaccour, 2018).

2.2.2.1.3.3 Valuation of Customers as Assets

Building on earlier research by Edeling and Fischer (2016), Edeling and Himme (2018) argue that customer assets have a greater impact on an organisation's financial performance than market share and brand assets. The valuation of customers as assets technique was originally proposed by Foster, Gupta and Sjoblom (1996). Taken from a marketing perspective, even though customer relationship has not been listed on balance sheets, scholars in relationship marketing argue that customer relationship ought to be valued and identified as an asset (Christopher et al., 1991; Guilding and McManus, 2002; Opute, Jawad and Jiang, 2022). There are scholars who suggest valuing customers based on future cash flows and profit streams (Wayland and Cole, 1994), and according to Guilding and McManus (2002), a systematic outline for calculating the value specifically should be established. In an empirical study in Malaysia, the adoption of this technique is associated with customer knowledge of organisations and significantly affects performance (Yasir et al., 2020).

Although overall, the findings on the above nine SMA techniques considered in this study suggest direct and indirect positive relevance with the operation and performance of organisations, there are still mixed results that suggest fit rationality. SMA has been the focus of many studies for decades. Most of the research has been conducted from a marketing perspective and integrated with marketing theory

(McManus and Guilding, 2008; Casas-Arce, Martinez-Jerez and Narayanan, 2017; Matsuoka, 2020). Therefore, to narrow the gap, there is a need for more research on the practice of specific SMA techniques from an accounting perspective.

2.2.2.2 SMA Practice Research

When the term strategic management accounting was first introduced, Simmonds (1981) asserted that the adoption of SMA had already gained significant traction and management accountants were “spending a significant proportion of their time and effort” in strategic data collecting and analysing (p. 26). Roslender and Hart also believed that the practice of SMA techniques in business operations has been spread even without necessarily recognising the term (2003). However, several scholars argued that the practice of SMA was not widely spread (e.g. Lord, 1996; Guilding, Cravens and Tayles, 2000; Shank, 2007). Until recently, research on the adoption of SMA techniques in underdeveloped countries was scarce, and there is literature demonstrating that these approaches are more prevalent in developed countries (Rashid, Ali and Hossain, 2020).

Bromwich and Bhimani (1994) proffered some reasons why SMA techniques were not being widely employed. According to them, management accounting technique innovation within organisations tends to face resistance due to the negative impacts it may bring to the short-term performance, capital market perception, as well as the employee’s performance report.

To meet one of the fundamental assumptions and basic goals of organisations, the going concern, accounting information and accountants naturally play significant roles in the decision-making process (Atkinson et al, 2011; Holm and Ax, 2020). However, as the conventional management accounting that mostly concentrates on internal information collecting, organising and analysing was becoming less relevant to forecasting the incoming situation and making plans to avoid fatal risks, a revolution in management accounting took place almost simultaneously on both sides of the Atlantic after the SMA was introduced (Rashid, Ali and Hossain, 2021). Research on the practice of SMA in the last two decades is quite extensive, from listed companies to public sectors in different industries, economics and cultural backgrounds.

Even though some scholars, including Lord (1996) and Cooper (1996), have questioned the practicality of SMA theory, there is empirical evidence from various nations and cultural backgrounds that suggests organisations should adopt SMA to boost performance (Cinquini and Tenucci, 2010; Zamecnik and Rajnoha, 2015; Turner et al, 2017; Mohammed, Maelah and Amir, 2019). Besides the research on specific SMA techniques implementation (such as LCC, CPM, etc.), one significant stream of empirical studies on SMA practice is to investigate SMA techniques adoption as a package (Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021). This stream is mainly focusing on investigating the adoption status and the perception of SMA techniques as a whole (Guilding, Cravens and Tayles, 2000; Cinquini and Tenucci, 2010); the factors that impact the implementation in organisations (Guilding,

1999; Nuhu, Baird and Bala Appuhamilage, 2017; Pasch, 2019); and whether the SMA adoption has influenced organisational performance (Cadez and Guilding, 2008; Turner et al, 2017; Alamri, 2019).

2.3 Contingency Theory and Contingency Perspective of SMA

2.3.1 Contingency Theory

Contingency theory traces its roots to organisational science in the 1960s and has grown more significant in other business administration fields (Hamann, 2017). To explore and explain the variety of management accounting practices, the contingency approach started to develop in the accounting field in the 1970s (Otley, 2016), and became the “dominant paradigm” in management accounting research (Cadez and Guilding, 2008, p. 837). Gordon and Miller (1976) made the first attempt to study accounting information systems from a contingency perspective. Their basic framework illustrates that the design of accounting information systems is contingent on the environment, organisation and decision-making style. This model was developed by Otley (1980) in his research on the contingency theory of management accounting. He repeatedly stressed that in this stream of MA research: “a contingency theory must identify specific aspects of an accounting system which are associated with certain defined circumstances and demonstrate an appropriate matching.” (Otley, 1980, p. 413; 2016, p. 46). The contingency variables in the new model include

technology, environment and organisational form and the interrelationship between them. After decades of development, more measures are created to capture the features of each variable and contribute to the sophistication of the framework (Chenhall, 2007).

To answer the question about why one firm performs better than another, contingency theory is employed to identify the connection between firms' performance and specific factors within their systems (Chenhall, 2003; Turner et al, 2017; Oyewo, 2022; Ojra, Opute and Alsolm, 2021). Contrary to the "one best way" solution proposed by the deterministic approach, contingency theory responds to strategic management research questions by saying "it depends" (Boyd et al., 2011). The fundamental notion of contingency theory is that the fitness between the organisation and its environment is the essence of good performance (Donaldson, 2001; Volberda et al., 2012; Venkatraman, 1989; Turner et al, 2017; Oyewo, 2022). Furthermore, the contingency-based management approach advocates that the congruence between factors (organisational structure, size, technology and strategy, etc.) leads to different organisational performance (Alamri, 2019; Aykan and Aksoylu, 2013; Cadez and Guilding, 2008; 2012; Ojra, Opute and Alsaqer, 2023). Hence, this theory has been adopted by numerous researchers for decades to identify the features that might improve business performance in various organisational and management studies (Turner et al, 2017; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023).

One of the objectives of this research is to investigate the validity of the contingency-based management accounting (CBMA) framework in the Chinese context. Like many other theories, contingency theory has also been criticised by scholars since its emergence. The criticisms are mainly from the following three aspects: its ambiguity of certain key factors' concepts (Tosi and Slocum, 1984), the lack of precision within the study in strategic management (Venkatraman, 1989), and improper analysis of hypotheses (Boyd et al., 2012). After decades of development, the theory has been gradually modified and improved, and it has been employed to build hypotheses as a foundation in various research (Boyd et al., 2012; Deng and Smyth, 2013).

Being a division of contingency theory in business administration, structural contingency theory studies the three contingency factors, uncertainty, task interdependence and size, and their connections with organisational structure and effectiveness (Donaldson, 2001; Hamann, 2017). The framework of CBMA is also derived from this division. Compared to contingency earlier studies, the refined structural contingency theory addresses two limitations emphasised by scholars: unrelated context factors and relationships (Hamann, 2017), and failure to identify crucial variables like managerial choice (Miles and Snow, 1978).

According to the fundamental notion of contingency theory, the fitness between the organisation and its environment is essential to strategic management and organisational research. Scholars believe that superior performance can be achieved when organisations fit their business environment (Drazin and Van de Ven, 1985;

Boyd et al, 2012; Hamann, 2017). Hence, pursuing the fitness between the organisation and its changing environment is the path that the contingency-based management research stream proposes to take to achieve better organisational performance.

Based on previous studies, it is evident that strategic management accounting research that adopts a contingency perspective evaluates the relationship between variables. According to Boyd et al. (2012), more often than not, the association between two variables can be affected by other variables. The fitness between the organisation and its environment depends on the nature of that environment (Burns and Stalkers, 1961; Boyd et al, 2012). A mechanistic organisational structure would be more effective when the environment is relatively steady and predictable. Otherwise, organic structures that provide flexibility would be more suitable for a rapidly changing environment (Burns and Stalkers, 1961).

As an important theoretical foundation of empirical research in the strategic management field and organisational research, contingency theory has been employed to examine corporate financial reporting systems (Thomas, 1991), the design of corporate planning systems (Kaissi and Begun, 2008; Hamann, 2017), and quality management (McAdam et al., 2019) etc. in the context of their environments. Since the 1970s, contingency theory has been used in management accounting research (Otley, 2016). Over time, this theory has evolved into a branch of study known as contingency-based management accounting (CBMA), which is an approach to studying management accounting that aims to understand that the operation and

effects of MA are not universal, but rather contingent on its operating context (Hall, 2016; Granlund and Lukka, 2017). It is believed that the ongoing worldwide study into the application of SMA techniques was stimulated by the development of the contingency theory and CBMA approach (Cadez and Guilding, 2008; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021).

2.3.1.1 Contingency-Based Management Accounting Model

Inheriting the core argument of contingency theory, the fit logic, one of the core philosophies of CBMA that many scholars believe is that management accounting systems are not static, but are dynamically adjusted in response to changes in the environment (Hall, 2016; Otley, 2016; Granlund and Lukka, 2017). This adaptability reflects how organisations can flexibly adjust their management accounting systems to remain competitive and achieve organisational goals when facing complex internal and external environments (Otley, 2016).

As a “highly established research paradigm”, according to Granlund and Lukka (2017, p. 63), contingency-based management accounting (CBMA) models have been applied in various contexts, and certain specific theoretical constructs (e.g. uncertainty) and measuring instruments have become so widely accepted and employed without questioning their validity.

Based on this phenomenon, they commented:

“In fact, their usage seems to be regarded as a necessary feature in CBMA research that addresses uncertainty. Currently, it is standard practice to explicitly justify employing established constructs largely based on the fact that they have

previously been successfully employed by others. While this can be regarded as exemplifying the well-known functional effects of paradigms – it certainly fosters efficiency in academe – it simultaneously also demonstrates its downside as researchers potentially overlook the potential problems of institutionalised research procedures.”

Granlund and Lukka (2017, p. 64)

A contingency-based management accounting study, as is defined by Hall (2016, p. 63), attempts to “understand how the operation and effects of management accounting practices are not ‘universal’ - they depend on the different contexts within which those practices operate.” Scholars generally acknowledge some of the strengths of the CBMA model, namely its broad applicability and flexibility to help explain accounting system design and performance in different organisations (Otley, 2016; Hall, 2016). Scholars generally acknowledge some of the strengths of the CBMA model, namely its broad applicability and flexibility to help explain accounting system design and performance in different organisations. However, it has evolved to a stage where there is a need to recognise its modelled application in practical research and to rethink its contribution to the field of management accounting (Granlund and Lukka, 2017).

Hall (2016) has noticed three types of models that are employed to illustrate the CBMA research, which include two single-level models and one cross-level model:

- a. In a single organisation-level model, contingent variables and management accounting variables interplay to influence the outcomes of the organisation.

- b. In a single individual-level model, managerial (individual) variables influence certain psychological states, thereby influencing the outcomes of an individual.
- c. Cross-level model analyses from both the organisational and individual levels. The model explains how management accounting impacts variously on individual outcomes, combined with personal differences that cause them to react differently to the same management accounting information, which then affects organisational outcomes.

However, the existing literature concentrates mainly on the first two models, while little research has been done related to the third model.

According to the classification proposed by Hall, the model employed by this research is a single organisation-level model, and is demonstrated in Figure 2.1 below:

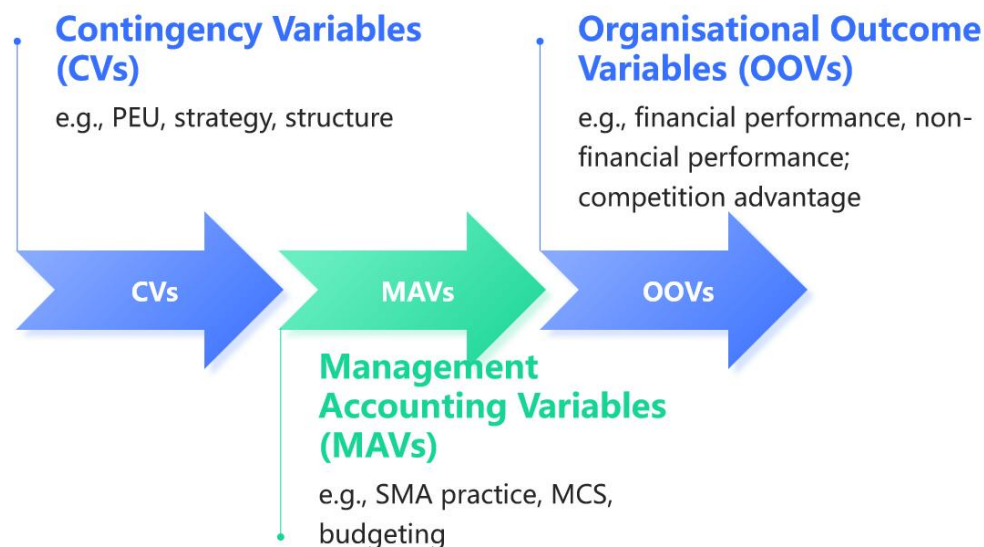


Figure 2.1: contingency-based management accounting model: the flow of influence (developed from Hall's (2016, p68) Model forms in psychology-based contingency research in management accounting)

Granlund and Lukka (2017) further argue that CBMA relies too much on established constructs and tools, ignoring the limitations of these tools in different contexts. Researchers often rationalise the choice of constructs based on previous successful use and lack in-depth exploration of their practical applicability. Otley (2016) suggests that CBMA models at this stage are progressively being oversimplified, ignoring the complexities regarding the measurement of fitness.

Granlund and Lukka (2017) therefore suggest that it is possible to combine emic and etic perspectives. Emic perspectives help to reveal the complexity of uncertainty in the daily operations of organisations, while etic perspectives are used to theorise these organisational behaviours from the outside. This combination could provide a more enriching understanding of CBMA research.

Despite some theoretical limitations of the CBMA model, scholars point out that its flexibility and efficiency remain its main strengths, especially in research on management accounting (MA) applications in specific contexts. Chinese management accounting (MA) application research landscape as a whole is still at a preliminary stage, therefore, a broad-scale quantitative study utilising the CBMA model is valid indeed, especially for the exploration of strategic management accounting (SMA) applications. Such a model can provide a clear path and framework for areas that have not yet been developed in depth.

Since the proposal of the contingency approach, the examination of variable connections has undergone several iterations. In the preliminary stage of the inquiry (Otley, 2016), which is the first analytical level of CBMA, only one dependent and

one independent variable were considered. However, the interaction between various contingent and control factors must be captured, according to Fisher (1995), in order to fully comprehend the success of a management control system. As a result, this study applies the second level of the CBMA analysis, which investigates the multiple influences that different contingency factors have on the dependent variable(s).

The independent variables that are most frequently investigated in CBMA research are normally studied separately as internal variables (such as firm size, structure, strategy, information system, accountant participation, etc.) and external variables (like technology, environmental uncertainty, culture, etc.). The dependent variables that appear in CBMA research most commonly include MCS design and use, organisational performance, effectiveness, product innovation, etc. (Otley, 2016).

Extensive empirical research has shown that the adoption of SMA can result in better management decisions and thus improved organisational outcomes (Donaldson, 2001; Cadez and Guilding, 2008; 2012; Volberda et al., 2012; Venkatraman, 1989; 2018; Alamri, 2019; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). The fundamental notion of contingency theory, the fit logic, indicates that such enhancement will, however, depend on the context of the organisation. To serve the purpose of this research better, organisational performance will be the dependent variable. To provide insights about mainland China, where relatively very little empirical work has been done on SMA adoption, the independent variables considered in this study include firm size, organisational structure (decentralisation and formalisation), business strategy, and environmental uncertainty (competitive

intensity and market turbulence). The literature review for the contingency factors explored in this study is organised in the sub-sections of Section 2.3.2.

2.3.1.2 Theoretical Propositions Based on the Contingency Framework

Drawing upon the CBMA model and the core logic of contingency theory, this study posits that the adoption and performance implications of strategic management accounting (SMA) practices are not universal but context-dependent. The theoretical propositions underlying this research are structured around the fit logic, which suggests that organisational outcomes are enhanced when management accounting systems are appropriately aligned with contextual factors, both internal and external (Otley, 2016; Hall, 2016; Granlund and Lukka, 2017).

First, external environmental variables such as competitive intensity and market turbulence are expected to influence the extent to which firms adopt SMA techniques. In uncertain or rapidly changing environments, SMA tools may offer strategic flexibility and future-oriented insights, thus facilitating better strategic responses (Ojra, 2014; Ojra, Opute and Alsaqer, 2023).

Second, internal organisational factors, including business strategy, firm size, and organisational structure, are also theorised to shape SMA adoption. For instance, firms with a prospector strategy or larger scale may have more incentives and resources to implement sophisticated accounting tools, while decentralised and

formalised structures may offer the operational conditions that enable effective SMA usage (Cadez and Guilding, 2008; Chenhall, 2007).

Third, and central to the CBMA logic, it is proposed that SMA practices serve as a mediating mechanism through which contextual factors exert influence on organisational performance. This implies that the effectiveness of SMA is not only determined by its design but also by its alignment with the organisational context. Hence, both financial and non-financial performance outcomes are expected to be positively associated with the appropriate adoption of SMA techniques (Cadez and Guilding, 2008; Ojra, Opute and Alsaqer, 2023).

These theoretical propositions form the logical basis for the hypotheses developed in Chapter 3 and guide the empirical model of this study.

2.3.2 Contingency Perspective of SMA

Empirical SMA studies, such as Guilding (1999) and Guilding and McManus (2002), played a seminal role in establishing the use of perception-based survey data within quantitative modelling. Their combination of validated perceptual measures and multiple regression analysis laid the foundation for a methodological approach that has since been widely adopted in subsequent SMA research.

Following the fundamental hypothesis of the contingency approach, understanding how organisations can achieve a suitable fit to adapt to their environment in their SMA practice is the central focus in the contingency-based SMA research (Gerdin and Greve, 2004; Hall, 2016). As noted in the CBMA approach, identifying the

contingency factors that are associated with the organisational system is crucial (Donaldson, 2001; Hamann, 2017). According to Donaldson (2001), the structural contingency framework initially investigated the relationship between organisational structure, contingency factors (such as uncertainty, task interdependence, and size), and performance. The system might alter when the contingency factors change, claims Donaldson (2001). Thus, Hamann (2017) contends that only those contextual factors that “moderate the relationship between an organisational system and its performance” are considered contingency factors (p. 234).

Hence, acknowledging the nature and complexity of each factor is important to understanding the relationship in SMA research. One particular example would be organisational strategy. As an antecedent of SMA practice research, organisational strategy can be influenced by external factors like competitive intensity (Cadez and Guilding, 2008; Cescon, Costantini and Grassetti, 2018). These external factors will engage with the main components of the organisational structure (e.g. accounting system), which will eventually impact the corporate value (Zimmerman, 2017).

The contingency factors that have been explored by mainstream SMA study includes business strategy (Cadez and Guilding, 2008; Ojra, Opute and Alsaqer, 2023), company size (Guilding and McManus, 2002; Cinquini and Tenucci, 2007; 2010; Ojra, Opute and Alsaqer, 2023), market orientation (Guilding and McManus, 2002), industry (Guilding, 1999; Cinquini and Tenucci, 2007), environmental uncertainty (Cescon, Costantini and Grassetti, 2018; Pavlatos and Kostakis, 2018), competitive intensity (Guilding and McManus, 2002; Ojra, Opute and Alsaqer, 2023), market

turbulence (Ojra, 2014; Ojra, Opote and Alsaqer, 2023) and CEO education (Amanollah Nejad Kalkhouran, Hossein Nezhad Nedaei and Abdul Rasid, 2017) etc.

Previous literature finds that the industry variation impact is mixed (Cinquini and Tenucci, 2007; Rashid, Ali and Hossain, 2020) and not significant (Guilding, 1999), thus, is not examined in this study. Given that the measure of environmental uncertainty is diversified, only market turbulence and competitive intensity are considered in this study. Because of the multiplicity it exhibits, technology will be investigated separately as an individual variable, not part of the environmental uncertainty. Therefore, building on the previous contingency-based studies in management accounting, the current research will investigate the business environment (the context) from both internal and external aspects, and it consists of the following independent variables:

Internal variables: firm size, organisational structure (formalisation and decentralisation), strategy, and technology; and External variables: environmental uncertainty

The dependent variables are SMA practice/usage and organisational performance. SMA Practice is both a dependent and independent variable in this research: it is a dependent variable to the contingency factors on the one hand, as well as an independent variable to organisational performance on the other hand. Because the non-financial performance indicators also play an important role in the analysis process in Chinese listed firms these days, this study also considered the effect of the

independent variable on both the financial and non-financial performance of organisations.

2.3.2.1 Environmental Uncertainty

Facing increasing global volatility, organisations are required to develop their management accounting system to prepare themselves to cope with threats caused by environmental uncertainty (Abu Afifa and Saleh, 2021; Ojra, Opute and Alsolm, 2021). Environmental uncertainty has been proven to have impacts on organisational structure (Burns and Stalkers, 1961; Lawrence and Lorsch, 1967), strategy (Miles and Snow, 1978; Hoque, 2004), MCS design and use (Hoque, 2004; Chenhall, 2007), and the implementation of SMA techniques (Ojra, 2014; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023), and consequently, it will affect the performance of organisations (Ojra, Opute and Alsolm, 2021).

According to Cescon, Costantini, and Grassetti (2018), the frameworks for evaluating the external environment that are suggested in strategic literature can be broadly separated into three levels: competitors and markets, industry, and the macro-environment. One of the most significant components of the macro-environment study is examining the impact that environmental uncertainty has on organisations. Inflation rate, exchange rate, business cycle, and other variables have all been examined in terms of the environmental uncertainty factor. For practitioners and academics alike, it is vital to understand how these variables affect the organisation, its market, and its industry (Cescon, Costantini, and Grassetti, 2018).

To enable firms to adapt their activities to the macro-environment, as one of the key contingency factors (Cescon, Costantini, and Grassetti, 2018), management should take environmental uncertainty into account in the strategic decision-making process (Milliken, 1987). However, according to Milliken (1987), environmental uncertainty is a perceptual phenomenon and differences occur when specifying the nature of experienced uncertainty. Milliken (1987) distinguished three categories of environmental uncertainty: state uncertainty, effect uncertainty, and response uncertainty. It illustrates how unpredictable factors, impacts, and an organisation's response to its environment are. Accordingly, the inability to make strategic decisions due to a lack of information is related to environmental uncertainty (Duncan, 1972; Milliken, 1987). The level of perceived environmental uncertainty (PEU) will decrease as a result of acquiring more strategy-related (external environmental) information, which will ultimately aid in strategic decision-making (Chenhall and Morris, 1986).

Despite the limitation mentioned above, many researchers still contend that environmental uncertainty can be measured as a perceptual phenomenon (Child, 1972; Gul and Chia, 1994; Cescon, Costantini, and Grassetti, 2018; Pavlatos and Kostakis, 2018). After reviewing the role of environmental uncertainty in MCS research, Tymon, Stout and Shaw recommended that the measure should involve top managers' perception of the external environment (1998). Furthermore, Daft and Weick (1984) explained that organisations' responses to the environment are interpreted by decision-makers, and managers' decisions and actions would not be influenced by

unperceived environmental characteristics (Peters, Gudergan and Booth, 2019). Due to the influence on strategic choice and performance, perceived environmental uncertainty is valued and investigated in accounting literature (Tymon, Stout and Shaw, 1998; Pavlatos and Kostakis, 2018; Abu Afifa and Saleh, 2021).

As a contextual variable, PEU is related to broad management accounting whose activities include providing information about both the internal and external environment, analysing both financial and non-financial information, and the analysis should be both historical and forward-looking (Chong and Chong, 1997). This is in tune with the advocacy of SMA. There is evidence that providing a more sophisticated and broader scope of accounting information can reduce the level of PEU, assist decision-making and improve performance (Gul and Chia, 1994; Agbejule, 2005).

In agreement with strategic literature, accounting researchers also proposed that with comparing to actual uncertainty, management decisions are more likely to be affected by the perception of environmental uncertainty in practice (Gul and Chia, 1994). Given the role PEU plays in strategic decision-making, several points need to be considered when identifying the PEU factor:

*“...it refers to the external environment of an organisation;
it refers to perceptions of that environment;
a degree of uncertainty results from the perceptions; and
the relevant perceptions are those of top managers.”*

(Tymon, Stout and Shaw, 1998, P. 26)

The practice of accounting was not considered when investigating the association between PEU and business strategy in the early stage of research that took a

contingency approach (Cescon, Costantini, and Grassetti, 2018). According to previous literature, being a generally accepted fundamental contingency variable, PEU is proven to have impacts on the design and implementation of management control systems (Costantini and Zanin, 2017). With the increasing interest in taking a strategic perspective in accounting research, there is published evidence that PEU is associated with strategic management accounting (Gul and Chia, 1994; Chenhall, 2003; Otley, 2016).

In a recent study conducted by Cescon, Costantini, and Grassetti (2018), logit model estimation was used to investigate the relationship between PEU and SMA technique adoption. The regression result suggests that environmental uncertainty is positively associated with the adoption of SMA techniques such as strategic pricing. The instrument used to measure the perceived environmental uncertainty was developed by Gordon and Narayanan (1984). Participants were invited to rank from 1 (not at all) to 7 (to a large degree) against only one generalised question: “How dynamic/uncertain is the external environment facing your firm?”

Although the general measure of PEU is still adopted in recent SMA empirical research (Cescon, Costantini, and Grassetti, 2018; Pavlatos and Kostakis, 2018), inconsistencies were found in the results of PEU-related accounting research (Sharma, 2002). It is believed that such inconsistencies can be reduced by the correct conceptualisation and operation of PEU in accounting research (Tyron, Stout and Shaw, 1998). This view is consistent with the proposition from organisational theory research that PEU is a multi-dimensional construct (Sharma, 2002). To understand the

role of PEU and reduce the inconsistencies in findings, the construct needs to be decomposed (Milliken, 1987; Downey, Hellriegel and Slocum Jr, 1975). Later, PEU was conceptualised as a multi-dimensional construct that consists of environmental turbulence, environmental predictability, competition intensity and environmental complexity (Sharma, 2002).

Nonetheless, there is still no consensus in the academic field on the conceptualisation of environmental uncertainty. For instance, according to Jaworski and Kohli (1993), market turbulence, competitive intensity and technology turbulence are the three characteristics of environmental context. This is a widely adopted characterisation that is used in many environmental uncertainty related empirical studies (Bodlaj and Čater, 2019; Tsai and Yang, 2013), which is also applied in this study. However, keeping in mind that technology is a complex factor that influences both the external environment and internal operation of organisations, it is investigated as a separate variable in this research. Following recent conceptualisation in SMA research (e.g., Ojra, Opute and Alsaqer, 2023; Ojra, Opute and Alsolm, 2021), environmental uncertainty is a two-dimensional factor that includes market turbulence and competitive intensity. Relevant literature for these two dimensions is reviewed next in sections 2.3.2.1.1 (for the later) and 2.3.2.1.2 (for the former).

2.3.2.1.1 Competitive Intensity

As one of the external factors, competitive intensity has been investigated from different angles. Marketing research indicated that the level of market competitive intensity can impact organisations' behaviour (Gaur, Hari and Gaur, 2011) and

performance (Taoketao et al., 2018; Feng et al., 2019). Competitive intensity is an important variable that refers to the extent of competition in the market (Feng et al., 2019). In an intensely competitive market, the survival and performance of the business are threatened (Bao, Chen and Zhou, 2012). Firms should be focusing on the long-term goal and external-oriented information. It is indicated that more competitors might be in a highly competitive market (Eldor, 2020), and an organisation's external knowledge integration can be stimulated by the intensity of competition (Lyu et al., 2022).

On the other hand, when firms face less competition, their business performance targets can be achieved without constantly adjusting their strategy (Taoketao et al., 2018). In this situation, businesses can carry out their regular operations without wasting resources in detecting information from the unpredictable external market. Hence, the intensity of competition can affect the behaviour of the business in aspects like production, customer service, organisational learning and strategy forming.

Previous research suggests that product markets with intense competition tend to have unanticipated changes, hence, to compete in a fierce business environment, companies are compelled to re-evaluate and modify their operations (Ang, 2008). When under competition pressure, companies need to be adaptable and responsive to avoid being replaced (Chahal, Gupta and Lonial, 2018). More specifically, organisations tend to accelerate product updates and iterations to defeat competitive pressure (Lyu et al., 2022).

In the meantime, engaging closely with customers to meet their needs can provide firms with more options for competing (Feng et al., 2019; Opute, Jawad and Jiang, 2022). When customers are provided with more options in a fierce market, closely monitoring their needs could be beneficial for adjusting operation procedures (Lyu et al., 2022), and increasing the level of customer profitability.

From an organisational learning perspective, firms operating in highly competitive markets often possess more compatible knowledge (Chiambaretto et al., 2020). In such contexts, competitors communicate directly or via intermediaries to acquire additional information (Lyu et al., 2022). These dynamics demand higher levels of managerial competence and encourage firms to develop knowledge integration systems (Alexiev, Volberda, and Van Den Bosch, 2016), which, in turn, facilitate the adoption of SMA techniques.

In dealing with competitive pressure, organisations should be sensitive to price changes and product promotion events in the market (Lyu et al., 2022). As this kind of information in a fierce market often changes and is outdated rapidly, as a result, previous competitive advantages could be neutralised by the intensity of competition (Chen et al., 2015; Lyu et al., 2022). In this kind of situation, a first-to-market or product differentiation strategy might be more appropriate for gaining competitive advantages (Yang and Yang, 2019).

Organisational research proposes that contingencies should be considered in the decision-making process (Lee and Kim, 2016), and competitive intensity is a contingent factor that cannot be neglected due to its influences on organisations (Ang,

2008; Feng et al., 2019; Yang and Yang, 2019). The reasons have been explained in the early works in both the marketing and accounting fields. An intensive competitive market stimulates the firm's demand for understanding customer desires towards creating customer value to improve performance (Kohli and Jaworski, 1990). Moreover, organisations intend to employ multiple performance measures (such as BSC) to deal with the high intensity of competition (Kaplan and Norton, 1992). The above evidence resonates with the perspective of a positive association between the sophistication of management accounting systems (MAS) and competitive intensity (Khandwalla, 1972).

The impact of competition intensity on SMA adoption has been investigated in accounting research (Guilding and McManus, 2002; Cescon, Costantini and Grassetti, 2018; Ojra, Opute and Alsaqer, 2023; Ojra, Opute and Alsolm, 2021). In a less competitive market, the need to adopt certain SMA techniques (such as competitor accounting) is limited. Further, limited bargaining power on the customer end and fixed prices would mean that the benefit of analysing customers will be insignificant (Guilding and McManus, 2002). When organisations operate in a highly competitive environment, they are more motivated to differentiate their products and services. This will lead to more products and service lines and increase the need to analyse their customers (Guilding and McManus, 2002). As certain SMA techniques have been proven to be particularly suitable for organisations facing highly competitive environments (Foster and Gupta, 1994; Guilding and McManus, 2002), the intensity

of competition is also an important variable that this research investigates as one of the environmental factors (Feng et al., 2019).

2.3.2.1.2 Market Turbulence

The role of environmental moderators in business performance has been examined in contingency and management accounting research (Otley, 2016). Empirical studies suggest that SMA adoption is related to organisational performance (Cadez and Guilding, 2008; Aykan and Aksoylu, 2013; Turner et al., 2017), and external environmental variables could affect this relationship (Wong and Ellis, 2007). Market turbulence is one of the external environmental factors that are being investigated in performance implication research (Harris, 2001; Wang et al., 2015).

The definitions of turbulence among researchers are varied. The term is used to describe the change and volatility of organisations' external environment (Child, 1972; Smart and Vertinsky, 1984). It is also defined as environmental dynamism with fast and unexpected changes in sub-dimensions of the environment (Vorhies, 1998). A turbulent or dynamic market indicates that the components in the market are in a state of constant change (Smart and Vertinsky, 1984).

From a marketing perspective, turbulence relates to the dynamism of customer preference (Kohli and Jaworski, 1990; Harris, 2001) and the changing rate of customer composition (Jaworski and Kohli, 1993). A market is turbulent when customer preferences are constantly changing and new customers are being introduced to the market continuously (Jaworski and Kohli, 1993; Wong and Ellis, 2007). Also, compared to sales revenue, the costs of changing marketing operations

rise dramatically when in a turbulent market (Greenley, 1995). Extensive studies suggest that when the market is turbulent, the performance of an organisation depends on the competence to handle strategic change (Teece, 2007; Peters, Gudergan and Booth, 2019). Hence, in a turbulent market, SMA techniques are more required to optimise the operation and improve business performance.

From a dynamic capabilities perspective, market turbulence is divided into three areas according to the perception of external environment change: low-, moderate-, and hyper market turbulence (Eisenhardt and Martin, 2000; Peters, Gudergan and Booth, 2019). The distinction between the three classes is the extent of environmental unpredictability. Generally, managers' perception of the external environment would be more unpredictable when market turbulence is high. Firms' potential for value-creating could be diminished when market turbulence increases, and business performance would be more dependent on dynamic capabilities (Teece, 2007; Peters, Gudergan and Booth, 2019).

Moreover, when market turbulence heightens, greater organisational flexibility is needed to overcome organisational rigidity (Teece, 2007). To maintain organisational adaptability in a highly turbulent market environment, the knowledge-creating processes are required to be more than just refining the existing business model, but need to stimulate the formation of a new one (Eisenhardt and Martin, 2000). Capability gaps are easy to appear within organisations in such a highly turbulent market. To respond to such gaps, risks might occur when organisations make

decisions and take action. Hence, businesses are required to be more flexible in coping with such situations (Peters, Gudergan and Booth, 2019).

In the literature, the measures of turbulence have varied. Jaworski and Kohli's (1993) scale is widely used to measure the market turbulence variable. The items of this scale are used to evaluate the degree to which a firm's customer composition and preferences have changed over time. Based on Volberda's theory (1996), market turbulence is also measured by considering technology, customer and competitors in the market using a three-dimensional approach: unpredictability, dynamism and complexity. Employing this measure, a positive marginal effect was found in MCS research (Peters, Gudergan and Booth, 2019). It is believed by the authors that the positive effects of interactive profit-planning systems can be strengthened in a turbulent market, which enhances the business performance (Peters, Gudergan and Booth, 2019).

Although market turbulence is associated with more advanced and sophisticated control systems (Chenhall, 2007), this relationship has received less research in the field of SMA. Drawing on previous research in accounting, Ojra (2014) proposed the hypothesis that the application of SMA is positively related to market turbulence. However, the empirical findings of his study suggest a negative correlation between the two variables. This finding not only challenges the traditional assumptions but is also mentioned in Ojra, Opute and Alsolm's (2021) review of literature, further emphasising the complexity and diversity of the relationship between market turbulence and the implementation of SMA.

The research on the association between market turbulence and SMA implementation is still limited. According to Chenhall (2007), management control systems are understudied in hyper market turbulence context. More illumination of the influence of market turbulence on SMA usage is essential (e.g., Ojra, 2014; Ojra, Opute and Alsaqer, 2023; Ojra, Opute and Alsolm, 2021), and this study seeks to contribute in that regard by exploring the Chinese context.

2.3.2.2 Business Strategy

Ensuring effective strategic management is critical for organisational well-being (e.g., Chenhall, 2007; Eisenhardt and Martin, 2000; Opute et al, 2020). Strategy relates to the decision-making process that ensures a firm achieves a long-term, competitive advantage over its competitors (Eisenhardt and Martin, 2000). Competitive strategy involves embracing a unique range of activities to deliver exceptional customer value (Porter and Donthu, 2008). Ensuring effective strategy requires that organisations analyse their internal resources and capabilities and also the macro-environment and competitive environment, to respond adequately to their environments and gain a competitive advantage over their competitors in the industry (David, 2011; Porter, 1980).

In prior empirical research of management accounting practice, strategy is a crucial variable used in the contingency understanding of MCS and SMA implementation (Cadez and Guilding, 2008; Chenhall, 2007; Ojra, Opute and Alsaqer, 2023). However, the role of strategy within organisational operations is considered to differ

from other factors as it can be used to impact the external and other internal aspects of the organisation (Chenhall, 2007). Therefore, scholars have proposed different ways to capture the features of strategy to assist in understanding the concept.

Mintzberg explains strategy as a pattern of an organisation's future-oriented decisions (1978). This concept can be realised and adopted through the structure and process of organisations (Miles and Snow, 1978). Another way of understanding this concept is that strategic decision-making is integrated throughout the entire management activities (Johnson, 1987). Strategy-related decisions are associated with organisations' long-term development. Hence, strategic decision-making can occur within activities like adjusting organisational operations to adapt to its environment and resource capability, internal resource allocation, and dealing with stakeholders (Langfield-Smith, 2007).

Accounting research on the role of strategy in organisational operation from the contingency angle is rich. It mainly includes the investigation of the relationship between strategy implementation and management control system elements (Simons, 1987; Chenhall and Langfield-Smith, 1998a); the connections among management control system, performance and strategy (Simons, 1987; Chenhall and Langfield-Smith, 1998a); also, the role of strategy in accounting system design (Dent, 1990; Chapman, 1997; Langfield-Smith, 1997, 2005; Chenhall, 2005a).

To reflect the fundamental notion of contingency theory in accounting practice research, comprehending the association with strategy is crucially important (Chapman, 1997). It is advocated that properly integrating strategy is the core of

management control system design (Chenhall, 2003; Langfield-Smith, 2007). Even though there is evidence to support the connection between different aspects of MCS and strategy in general, more empirical works study the relationship with strategic typologies (Chenhall, 2007), and that is elaborated in the next section.

2.3.2.2.1 Taxonomies of Strategy

Miles and Snow (1978) proposed a well-known dimension for understanding and studying strategy. They identified four types of business strategy for organisations: prospectors, analysers, defenders, and reactors. As reactors do not present a “stable strategy-structure relationship”, according to Cinquini and Tenucci (2010, p. 251), it is not considered in this research.

Organisations operating in highly volatile and unpredictable environments are more likely to pursue a prospector strategy. To capitalise on opportunities for developing and launching new products, these firms must be highly responsive to market signals and able to adapt to turbulent environments (Anderson and Lanen, 1999). One of the particular features of prospectors is that they compete through product innovation (Cinquini and Tenucci, 2010). They provide a wide range of goods, and they are normally recognised as pioneers in the industry. Marketing and research and development (R&D) are regarded as the most critical functions in firms pursuing a prospector strategy (Cinquini and Tenucci, 2010).

Prospectors utilise adaptable, non-routine technologies that are less specialist but significantly more interconnected due to the rapid growth of their products (Miles and Snow, 1987). As a result, prospectors have organic structures that are highly

decentralised but also lack formalisation and specialisation (Anderson and Lanen, 1999). This type of structure has substantially fewer hierarchical levels (Miles and Snow, 1978).

The environment that defenders operate in is relatively stable and predictable compared to prospectors. A stable environment allows defenders to spend more resources on improving efficiency and less focus on environment detecting (Miles and Snow, 1978). Defenders improve efficiency by depending on routine operation processes and economies of scale while competing by reducing costs (Snow and Hrebiniak, 1980; Anderson and Lanen, 1999), and they offer a narrower product range compared to prospectors. Rather than investing and developing marketing and R&D functions, defenders prefer to develop the production and engineering functions of the firm (Cinquini and Tenucci, 2010). Structurally, defenders have a high degree of formalisation, specialisation, and centralisation, so the departments in the firm can coordinate better. Meanwhile, interdependence is weakened by the vertical structure and hierarchical levels of defenders (Doty, Glick and Huber, 1993; Anderson and Lanen, 1999).

Analysers are a different typology that combines the traits of both prospectors and defenders. In an integrated product-market segment, environmental analysts are in competition. Analysers can compete as prospectors by pursuing product innovation when the market becomes more dynamic, or they can behave as defenders when the environment is more stable to pursue efficiency (Cinquini and Tenucci, 2010).

According to Miles and Snow (1978), analysers represent a hybrid strategic type that

combines characteristics of both prospectors and defenders. Analysers are located towards the middle of a continuous spectrum that is drawn by prospectors and defenders (Doty, Glick and Huber, 1993; Anderson and Lanen, 1999). Among these strategic types, defenders and prospectors have been the most extensively researched (Simons, 1987; Cadez and Guilding, 2008).

In order to explain strategic mission (also known as portfolio strategy), a different framework is created from a life cycle viewpoint (Gupta and Govindarajan, 1984). The company will have several missions depending on what stage of its life cycle it is at. The following four types of strategic missions can be distinguished based on the harmony between long-term (growing market share) and short-term (maximising annual profit) objectives:

- a) build mission (value long-term goals like gaining market share and competitive advantage over short-term goals such as short-term earnings and cash flow);
- b) harvest mission (opposite to build mission: pursuing short-term earnings and cash flow, not market share);
- c) hold mission (in the middle between build and harvest mission); and
- d) divest strategy (choice to end the activity)

Porter's strategy framework (1980; 1985; 2004) was developed to help organisations understand and evaluate their competitive environment in order to achieve sustainable competitive advantage. Three types of strategies are identified:

- a) Cost leadership strategy (competing by reducing costs to the lowest in the industry); Under this strategy, sustainable competitive advantage can be achieved by the low costs arising from economic scale or more advanced technologies.
- b) Differentiation strategy (delivering products that are unique to consumers); This strategy can be implemented and realised by providing better quality, service or brand image
- c) Focus strategy (competing in one particular market domain by implementing either cost leadership or differentiation strategy).

2.3.2.2.2 Strategy and Management Accounting System

According to Chenhall's (2007), management control system connects to strategy in four dimensions: a) communicating and reinforcing fundamental value and mission of the organisation; b) establishing boundaries and regulations; c) monitoring organisational outcome and correcting deviations from pre-set performance targets; and d) enabling top managers to be involved in subordinates' decision-making activities regularly (Simons, 1994). He also suggested that cost control and the formality of performance evaluation were found to be associated with strategy in general, but the majority of MCS research studied the connection with strategic typologies (Chenhall, 2007). For example, cost control, specific goals and budgets are proven to be more suitable with defenders and cost leadership strategies (Simons, 1987; Dent, 1990); product differentiation strategies are proven to be connected with less rigid budgetary control (Ven der Stede, 2000).

However, research findings on management accounting systems and business strategy are not always consistent. For instance, Simons (1987) found that tight control is more appropriate with more entrepreneurial strategies, whereas Chenhall and Morris (1995) proposed that it was better suited with conservative strategies, but when implementing with organic decision styles, tight control can also match with entrepreneurial strategies.

Empirical investigations into the relationship between business strategy and SMA practices have expanded considerably in recent decades. Drawing on Miles and Snow's (1978) strategic taxonomy, Guilding (1999) examined competitor-focused accounting methods and found that prospectors, due to their outward-looking and innovative orientation, were more inclined to adopt SMA techniques than defenders. This positive association was later reinforced by Cadez and Guilding (2008). In contrast, Cinquini and Tenucci (2010) adopted a broader multi-dimensional framework—incorporating strategic pattern (prospector/defender), mission (build/harvest) and positioning (differentiation/cost leadership)—and reported a relatively loose coupling between strategy and SMA techniques: cost-oriented SMA tools were more frequently associated with defender and cost leader strategies, while customer-oriented techniques showed a weak association with build strategies. More recent contingency-based studies (e.g., Ojra, 2014; Ojra, Opute and Alsaqer, 2023) have continued to explore SMA adoption through the lens of prospector and defender typologies.

Following the mainstream literature that examines the relationship between strategy and SMA adoption (e.g., Guilding, 1999; Cadez and Guilding, 2008; Cinquin and Tenucci, 2010; Ojra, 2014; Ojra, Opute and Alsaqer, 2023), this research embraces the taxonomy developed by Miles and Snow, and considers the prospector and defender typologies of business strategy.

2.3.2.3 Technology

Technology is a complex factor influencing organisational operations, yet it remains underexplored in SMA research. Firms are influenced by both external technological developments and internal technological upgrades. Chenhall (2007) pointed out that “technology has many meanings in organisational behaviour” (p. 174). Summarising from previous literature, he defined that technology is how the business operates its work process, which involves hardware, material, people, software and knowledge (Chenhall, 2007). From this perspective, it includes not only manufacturing technology and the technology that management accounting is based on, but also the mechanism to connect them in between.

Scholars also have identified several important attributes of technology that might affect the design and use of management control systems. Chenhall (2007) explained in his review that businesses tend to use complex unit or batch technology when their products are specialised, differentiated and non-standard. Their management control systems rely less on developed process control (Khandwalla, 1977) and budgetary control (Dunk, 1992). Hence, a mechanistic MCS that is based on financial control

might not be suitable for this type of business, whereas a customer- and market-oriented MCS would assist the process of decision-making better.

On the other hand, the operation process of businesses that provide standard and undifferentiated products is normally automatic, and “involve highly analysable processes and few exceptions” (Chenhall, 2007, p. 174). The technologies within these organisations are more standardised, thus, they tend to employ a conventional and finance-based control (Abernethy and Brownell, 1997; Khandwalla, 1977; Dunk, 1992).

Other than the degree of technology standardisation, the level of interdependence also affects the practice of MCS. When there is a high degree of interdependence between technologies, organisations rely less on formal processes and more on flexible ways of communicating, planning and aggregating reports (Macintosh and Daft, 1987). In contrast, research has also shown that in less technologically interdependent public sector organisations, budget management and analysis are more central, but organisational communication and interaction are reduced (Williams, Macintosh and Moore, 1990).

Based on the early accounting research flagged above, the adoption of a management control system within an organisation can be influenced by its technology. Little is known about the association between technology and SMA usage. In research on Palestinian organisations, Ojra (2014) found a positive association between SMA adoption and information and communication technology. Technology is increasingly becoming a critical factor for businesses, especially in the post-pandemic era (Opute

et al., 2022), and more research is needed to enhance the understanding of its influence on SMA practices.

2.3.2.4 Organisational Structure

Organisational structure has been defined in a variety of ways. According to Chenhall (2007), an important distinction between definitions is the difference between structural outcomes and structural mechanisms. From an outcome point of view, structure can be considered as how an organisation is differentiated and integrated (Lawrence and Lorsch, 1967; 2015). According to Lawrence and Lorsch's framework, taking a contingency approach, an "appropriate organisational structure" depends on the requirements of the environment, and should not be confined to a specific structural form or motivational approach (Burns et al. 2007, pp. 65-66). This aligns with Pasch's opinion:

"Firms in underfit do not establish necessary structures to support their goals while firms in overfit spend too many resources on overly sophisticated structures that could have been used somewhere else in the organization."

Pasch (2019, p. 581)

From a structural mechanism perspective, structure forms include regulations, processes and transparent communication and decision-making procedures (Chenhall, 2007, p. 179). Four organisational structure mechanisms are frequently considered in contingency-based research: centralisation/decentralisation, formalisation,

standardisation and configuration (Pugh et al. 1968; 1969). The current study focused on the first two mechanisms.

Extensive literature indicates a linkage between organisational structure and the adoption of MCS (Bruns and Waterhouse, 1975; Merchant, 1981; Abernethy and Bouwens, 2005). For example, decentralised organisation managers found aggregated and integrated information to be useful (Chenhall and Morris, 1986). The structural arrangement of an organisation impacts its efficiency, motivation, flows of information and control systems and eventually assists in shaping its future (Chenhall, 2007).

As the structure of organisations becomes increasingly complex, the implementation of the SMA technique portfolio will develop to adapt to the structure (Pasch, 2019). From a contingency perspective, the desire of fit to pursue organisational efficiency is the reason why firms tailor SMA practice to their structure (Donaldson, 2001).

From an organisational life cycle perspective, the activities of the startup business are directed by owners, the control and coordination may be frequent and informal (Davila and Foster, 2005), and the demand for using SMA techniques is relatively low (Pasch, 2019). Along with the firm developing into the growth and maturity stage, the need to employ SMA techniques increases to adapt to a departmentalised and functional structure. Such as customer profitability analysis (Granlund and Taipaleenmäki, 2005) and activity-based costing (Walsh and Dewar, 1987) might be employed to improve performance and efficiency.

Previous research suggests that a wider range of the SMA technique portfolio is required for decision-making purposes when an organisation is less centralised (Hoque, 2014). Despite the evidence supporting the connection between SMA adoption and structure, Pasch (2019), using the degree of centralisation to indicate the structure of firms to examine the adoption of SMA in German-speaking countries, suggests that SMA implementation is not associated with the centralisation of organisational structure.

Another dimension of organisational structure that is worth mentioning is formalisation. It is the extent of using formal rules and policies to regulate behaviour and decision-making (Khandwalla, 1974; Pugh et al., 1968). According to Hempel, Zhang and Han (2009), formalisation could be seen as the red tape of bureaucracy, which contradicts empowerment. There is relatively limited discussion of formalisation in the literature on SMA research. Although Ojra (2014) has explored the relationship between formalisation and SMA usage in Palestine, where he proposed that SMA would be more extensively used when organisations are less formalised and more decentralised. However, this hypothesis is not supported by empirical evidence.

2.3.2.5 Firm size

Accounting literature has proven that the size of organisations has a positive association with accounting sophistication (Merchant, 1981; Guilding, 1999). Consequently, larger organisations are expected to be more capable of, and to have a

greater need for, generating strategy-related information. Firm size is a contingency factor that has been examined frequently in SMA research (Guilding and McManus, 2002; Cinquini and Tenucci, 2007; Pasch, 2019). The size of an organisation was found to be a key factor influencing the adoption of competitor-focused procedures in the first empirical study of competitor-focused accounting by Guilding (1999). In later research on customer accounting, McManus (2002) found a comparable outcome. The adoption of strategic pricing and competitor cost assessments was found to be negatively correlated with firm size in Cinquini and Tenucci's 2007 research on Italian large manufacturing companies, however, a weak correlation between firm size and SMA adoption was discovered in their 2010 study. This is quite different from Cadez and Guilding's work (2008), a comprehensive study on the practice of 16 SMA techniques in Slovenia largest companies.

Different methods were taken to measure the size of organisations. The value of assets was initially used to measure this factor (Guilding, 1999). This draws on Deloitte's method of measurement (1994), which did not include intangible assets like goodwill, patents and trademarks, etc. Later, scholars used total revenue as the indicator of firm size (Guilding and McManus, 2002; Cinquini and Tenucci, 2007; 2010; Cadez and Guilding, 2008; Ojra, 2014). For a different purpose, Pasch believes that the indicator of firm size should reflect the firm's ability to employ a new management control system (Hoque, 2014), hence firm size was measured based on the average revenue and number of employees in Pasch (2019).

2.4 Performance Implication of SMA

Successful business performance depends largely on an effective information system because the management control and decision-making within the business are supported by such a system (Abernethy and Bouwens, 2005). The mismatch between the capacity and needs of an organisation processing strategic information will cause poor decision that leads to sub-optimal performance (Gupta, 1987). The economic model of decision-making indicates that better information can assist resource allocation and increase the opportunity to create enhanced outcomes (Cadez and Guilding, 2008). Better management decisions, which can be secured by an efficient information system, can increase corporate performance, according to existing literature (Baines and Langfield-Smith, 2003; Chenhall, 2003). In addition to these general fundamental studies presented above, research has also shown that the success of MAS depends significantly on how well it fits into managers' mental models and the surrounding corporate environment (De Haas and Algera, 2002; Chenhall, 2007). Although the connection between adopting advanced accounting information systems and organisational performance seems clear due to the extensive evidence, owing to the ambiguity of the relationship nature (Baines and Langfield-Smith, 2003), it is still advised that future researchers need to be aware of logical leaps (Chenhall, 2003).

A broad range of empirical works has contributed to the study of both the association of business performance with strategic management (Boyd et al, 2012) and with management accounting technique implementation (Cadez and Guilding, 2008). However, the findings of these studies are not always consistent (Boyd et al, 2012;

Chenhall and Moers, 2007). Although a large body of research suggests that the adoption of management accounting is positively correlated with business performance (Chong and Chong, 1997; Cravens and Guilding, 2001; Baines and Langfield-Smith, 2003; Mahama, 2006; Ojra, Opute and Alsaqer, 2023), other research suggests that these correlations are uncertain and context-dependent (Cadez and Guilding, 2008). Studies on its connections to strategic management have revealed that there is little evidence of a straightforward direct impact on performance (Dalton et al., 1998; Boyd et al., 2012). Despite its significance, organisational complexity tends to be challenging to fully capture through direct impacts, according to Boyd et al. (2012).

The application of management accounting is a considerably bigger subject. As a result, more variables may have an effect on its connection to business performance. The relationship between them may therefore be easier to see in specific situations. For instance, the impact of more extensive information use on performance differs between organisations that follow prospector and defender strategies (Abernethy and Guthrie, 1994). Another example of empirical research conducted by Agbejule (2005) indicated that under a high level of PEU, a sophisticated management accounting system was positively associated with performance, while under a low level of PEU, the association is negative. Although the findings of the existing studies are not entirely consistent, what is sure is that the performance of an organisation is related to the adoption of management accounting (Cadez and Guilding, 2008).

From a contingency perspective, the fitness between a business and its environmental

contingencies can lead to better performance (Venkatraman, 1989; Donaldson, 2001; Otley, 2016; Hamann, 2017). More specifically, pursuing the match between organisational factors and environmental factors can help the business achieve better outcomes (Volberda et al., 2012). These methodological aspects are covered in chapter three in light of the fact that how business performance is conceptualised, represented, and measured might have an impact on the research findings (Deng and Smyth, 2013).

2.4.1 Organisational Performance

The performance concept has been demonstrated to be imprecise and subjective in both academic and practical contexts (Folan, Browne and Jagdev, 2007). After a comprehensive review of the definition and content of the term performance in the Oxford English Dictionary as well as other studies, Folan, Browne and Jagdev (2007, p. 605) pointed that the character of performance “is governed by its relevance to a particular environment, and operates from a particular objective, by virtue of a set of chosen characteristics.” Therefore, ensuring the accurate measurement of business performance is essential for achieving goals. Performance measurement has expanded its application in improving organisational structure (Bianchi, Cosenz and Marinković, 2015), due to the fact that firms tend to utilise a proper measure to increase their competitive advantage (Chalmers, Palomero and Matilla, 2012). Business performance is carefully monitored as a dependent variable to assess the impact of contingency factors in empirical organisational research.

In the mainstream literature, core measurement aspects of performance include: (a) financial performance; (b) financial performance and operational performance; and (c) organisational effectiveness (Venkatraman and Ramanujam, 1987). After reviewing previous research approaches in the relevant literature, Venkatraman and Ramanujam (1987) observed that firm performance measurement was based on merging two dimensions: conceptualisation of business performance and source of data. They also proposed that studies should avoid using a single conceptualisation and data sources.

Despite the fact that the theory of business performance measurement has undergone decades of development, Richard et al. (2009) state that there are still two issues that a performance-related study must take into account: (a) determining the most suitable dimension to measure the performance for the specific research purpose, and (b) selecting the measure or indicator, or the combination of performance measurement. Essentially, performance-related research should focus more precisely on the compatibility of the nature of business performance and its measurement.

Another aspect considered by researchers is the data source of performance measurement (Deng and Smyth, 2013). The discussion of using perceived performance outcomes and actual performance outcomes is still ongoing (Deng and Smyth, 2013). Although there is no remarkable difference between using the two kinds of data, it is suggested that subjective performance measures are more suitable for performance-related research within one industry (Dess and Robinson, 2006).

The dimensions of business performance that are used in the literature include financial stability, customer satisfaction, business efficiency, learning and growth, job

safety, technological innovativeness, and quality management (Deng and Smyth, 2013). The factors which have been examined that could influence performance under contingency theory include structure, culture, technology and strategy (Tosi and Slocum, 1984; Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021).

As one of the core dependent variables in CBMA research, financial performance is the outcome variable that has been most commonly studied. It has been suggested that the measurement of organisational performance is overly reliant on financial performance, and this could lead to a gap in research findings (Otley, 2016; Ojra, Opute and Alsolm, 2021). To aid managerial decisions towards adapting effectively to the changing environment, non-financial information like product cycle time, customers' perception, etc., is gradually gaining attention (Czaja-Cieszyńska, Kordela and Zyznarska-Dworczak, 2021; Pires and Alves, 2022; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). Especially in an environmental uncertainty context, extensive literature indicates that the weight of non-financial information should increase to enhance performance (Al-Mawali and Lam, 2016; Hoque, 2004). Hence, with the increasing relevance of non-financial performance measurement, many of them are highly valued in measuring the outcome of organisations (Otley, 1999; 2016).

Although non-financial information is gaining increasing attention, it cannot take the place of financial information; rather, the two types of information can be obtained and used in conjunction in a variety of situations (Pires and Alves, 2022). This research embraces that logic and considers both financial and non-financial

performance.

2.4.2 Influence of SMA adoption on Business Performance

Cadez and Guilding (2008 and 2012) have conducted SMA research based on contingency theory and configurational theory in over one hundred large companies in Slovenia. The measures utilised were based on the perception of the respondent on different combinations of the following indicators: return on investment, development of new products, market share, capacity utilisation, customer satisfaction, product quality, and margin on sales. While the findings supported that SMA adoption is positively associated with firm performance under contingency theory (Cadez and Guilding, 2008), consistent support is limited under configurational analysis (Cadez and Guilding, 2012).

The study conducted among medium- and large-sized businesses in Turkey has examined the performance implication of SMA adoption through both perceived qualitative and quantitative performance (Aykan and Aksoylu, 2013). The study finds that perceived qualitative performance is significantly influenced by competitors and customer-oriented SMA techniques.

In the United States, 95 hotel properties were examined by Turner et al. (2017). The measurements they employed were financial performance and hotel property customer performance, both of which were relevant to the characteristics of the objective industry (hotel properties) (Turner et al. 2017). The results show that using SMA has a mediating influence on both corporate strategy and financial success.

Finally, research conducted in Saudi Arabia found that the practice of SMA is positively and significantly associated with both financial and non-financial performance (Alamri, 2019).

In a more recent study, Ojra, Opute and Alsaqer (2023) collected questionnaire data from 115 management accountants in the Kuwaiti financial services industry to examine the relationship between the use of SMA and organisational performance. This study particularly focused on the use of one category of SMA techniques, customer accounting, and found that SMA (customer accounting) has a more significant impact on non-financial performance compared to financial performance. Customer accounting plays a key role in improving customer satisfaction and market competitiveness by helping organisations to better understand market needs and customer value, which significantly improves organisational non-financial performance.

2.5 MA Practice in Chinese Organisations

Although the viewpoints on the accounting practice and its development in China differ from one scholar to another (eg, He, 2020; Chow, Duh and Xiao, 2006; and Lee, 2001), the basic stages that financial and management accounting practices that Chinese organisations have been experiencing reflect similarity (Lennox and Wu, 2022). Even though the recorded MA practice started from the Shang Dynasty (16th to 11th century BC), it only served for the purpose of government management with a single-entry bookkeeping system (Chow, Duh and Xiao, 2006). Subsequent economic

developments and changes over the millennia have contributed to the complexity of accounting practices. Bearing huge environmental transformations, the development of organisational MA practice started to accelerate after 1949, when the Civil War had ended and organisations experienced a gradually steadier environment (Chow, Duh and Xiao, 2006). The central government of China also issued a range of guidance, such as centralised material distribution and control of cash flow, etc., for the prompt restoration of the war-torn economy (Chow, Duh and Xiao, 2006). Hence, the MA practice from 1949 to 1978 was dominated by the need for centralised planning, which was modelled after Soviet practice (Duh, Xiao and Chow, 2008). However, it was gradually showing shortcomings and mismatches with the economic development of China. Eventually, in 1978, the country ushered in reform and began to open up. It is the post-1978 MA practice and its development that is the focus of modern management accounting research in China (Lennox and Wu, 2022; Duh, Xiao and Chow, 2008; Chow, Duh and Xiao, 2006), which also forms the core of this literature review. However, even though the MA practice had all along existed, the Chinese academic field (the Accounting Society in China) only started to study it separately from financial accounting in 1997 (Chow, Duh and Xiao, 2006). After that, the emergence of MA research on specific practice like budgeting (Zan and Xue, 2011; Ma, Zhao and Niu, 2015; Frenkiel, 2021), cost management (Lin and Yu, 2002; Song and Wang, 2009; Chen, 2022), responsibility accounting (Lin and Yu, 2002; Wei et al. 2014, Zhu et al. 2023), and cost behaviour analysis (Bu, Wen and Banker, 2015; Li et al. 2020) started to contribute on the understanding of Chinese management

accounting practice.

Before the proposal and implementation of the reform and opening-up policy, the SOEs in China were following the government's practice, using a cash-based Soviet style fund accounting. The operation of Chinese organisations had major shortcomings such as a lack of dynamism and innovation, yet one of the major criticisms was the "widespread haemorrhaging loss" (Lee, 2001, p. 673). Along with the restructuring of state-owned organisations, the accounting practice was also changed to an accrual-based Western-style financial accounting, as well as management accounting.

The MA practice in China after the reform and opening-up is divided into three stages by He (2020), that is, introduction (1978-1992), adaptation (1993-2002) and innovation (2003 to present).

In the introduction stage, organisations began to be exposed to Western MA techniques and methods, but at this time the country was still under a government-led planned economic system, and the market characteristics were not obvious (He, 2020; Chow, Duh and Xiao, 2006). Western MA methods and theories could only be explored in conjunction with the government-led management system. In the second stage, Chinese researchers began to concentrate on studying the field of MA that is tailored to the specific conditions of socialism in China, in response to the growing importance placed on company productivity. Hence, adapting the MA practice to the changing economic environment. Despite the increase in the adoption of contemporary MA techniques, many of these adoptions were focusing on internal

control to improve efficiency and effectiveness, and the market-oriented techniques such as competitor analysis and environmental scanning were less used (Chow, Duh and Xiao, 2006).

With the rapid development of information technology, the practice of MA in China, like the rest of the world, is constantly iterating and evolving in the 21st century. Many innovative MA techniques are also adopted, like ABC, strategic costing, and brand evaluation, etc., for achieving better performance. However, there are still problems identified by scholars (He, 2020). Such as the MA practice in many organisations and its theoretical system is underdeveloped (Chow, Duh and Xiao, 2006), many companies need to better emphasise the importance of MA practice (ACCA, 2015), lack of high-level MA talent (He, 2020; ACCA, 2015), and the innovation of MA techniques and their usage are inadequate (He, 2020).

With time, these shortcomings became clearer, and the government began to emphasise the importance of MA practice in promoting economic development in a fairer, more efficient and sustainable way. To optimise the value-creation effects of MA and further promote the nation's strategy of strengthening organisational accounting ability, the Chinese Ministry of Finance issued the *Guidance on Fully Promoting the Construction of Management Accounting Systems* in 2014. The following year, the Beijing National Accounting Institute (NAI) and the Association of Chartered Certified Accountants (ACCA) in China conducted research on *Management Accounting Practices in Chinese Enterprises*. The questionnaire was sent to the chief accountants of large and medium-sized enterprises and institutions.

Based on responses from 552 participants, the research found that many enterprises did not have an independent MA department, and management accounting functioned significantly better in firms that had an MA department than in those that did not (ACCA, 2015). The research also identified the factors that hindered the development of MA practice. Among them, notable issues include the inadequate attention paid by the leadership to the practice of management accounting and its practitioners; the theory of MA development and its practice lacks practicality and needs to be more systematic; and the information system within organisations cannot effectively support data collection and integration promptly (ACCA, 2015).

2.5.1 SMA Research in China

The research on strategic management accounting in China started relatively later than in Western countries. According to the data on China National Knowledge Infrastructure (CNKI), a Chinese database of academic journals, conference proceedings and newspapers, etc., that provides researchers with information on the latest developments in all aspects of research in China, the first study on SMA was published in 1986. It is not hard to see from the title, *Western Strategic Management Accounting*, that the paper merely introduced the concept, its background and pointed to possible directions for Chinese MA development (Qiao, 1986). Over the next ten years, the number of relevant papers published was not even in the double digits (CNKI, 2024).

Under the combined pressure of accelerated globalisation and privatisation of

state-owned enterprises, Chinese companies are not only facing a more complex external environment, but are also adopting more diversified business models to adapt to this change (Ma et al. 2022). Strategic management control systems are valued not only by enterprises but also by the government. Hence, the Chinese Ministry of Finance issued the *Basic Guidelines on Management Accounting* (2016) and *Outline of the Fourteenth Five-Year Plan for Accounting Reform and Development* (2021) to promote the development of MA theory and practice in a strategic direction.

Since the SMA theory was proposed, more than 1,000 journal articles on the subject have been published on CNKI. During the first two decades of this century, more than 20 journal articles were published annually. The highest number of publications was in 2007, when 76 articles were published. The most recent peak was in 2019, with 59 articles published (CNKI, 2024). These numbers show that the willingness of Chinese accounting academics to explore SMA is strong and relatively persistent. After decades of development, the SMA research in China has made progress in several aspects. First, the research focus has shifted from theory introduction and discussion to localised application analysis (Qu, Li and Yan, 2009). Especially, in the last ten years, more research is focused on SMA application in domestic organisations within various industries and areas like electronic enterprises (Ding, 2023; Zhuo, 2023), the financial service industry (Li, 2023; Liu, 2020) and e-commerce (Wang and Lv, 2022). Another progress point underlined by Qu, Li and Yan (2009) is that the research methodology shifted from mono-disciplinary to multidisciplinary integrated research. For example, discussing strategic cost management problems based on financial

strategy matrix analysis (Zhou, 2019); SMA and sustainable development of internet financial firms (Hu and Lu, 2021); and SMA and SOE reform (Gong, 2020; Wu, 2019; Jin, 2017).

These developments in the academic area have also driven the widespread adoption of SMA techniques in Chinese companies. Some case study research based on in-depth interviews show that particular techniques such as strategic cost management, brand valuation and value-chain costing etc. have been deeply and frequently implemented in head companies like Huawei (Bai, 2019; Wang and Yang, 2017), Lenovo (Zhao, 2015), Midea Group (Jiang, 2024) and Suning (Wei, 2024; Li, 2023).

Even though these SMA-related articles have covered extensive areas, including studies from theoretical discussion in different circumstances to organisational practice within various industries, there are certain inadequacies, from an academic discipline development perspective, that need to be addressed.

First, most of Chinese MA practice research, especially the empirical research on particular SMA techniques, is centred around first two categories, such as value-chain costing (Wei, 2024; Zhao, 2023; Liu et al., 2020), target costing (Zhai, 2021; Liu, 2022), BSC (Liu, Jin and Zhou, 2024; Sun, 2019; Yang and He, 2017) and benchmarking (Yang, 2022; Yang and He, 2017). This may indicate that the emphasis of SMA practice research in China remains on cost management and performance measurement (Ma et al., 2022). In the latter three aspects, i.e. strategic decision-making, customer accounting and competitor accounting aspects, only strategic costing (Shi, 2021; Wang, 2021) and brand valuation (Su and Yu, 2022; Zhao

and Zhao, 2020) have been investigated separately. Other techniques are rarely explored in accounting empirical studies.

Secondly, the empirical research, especially quantitative analysis on SMA practice as a whole, is extremely rare (Cheng, Hail and Yu, 2022). However, the development of empirical research in China is quite different from other countries. SMA, as one branch of accounting, has its empirical studies, like many other academic fields in China, that are shaped by the availability of new data and regulatory reform. Cheng, Hail and Yu also pointed out that researchers who conduct China-related accounting research need to “explore their settings and data with a good understanding of the political incentives and avoid the temptation to prematurely generalise their findings to other settings” (2022, p. 14). To illuminate the uniqueness of the Chinese setting, they call for more empirical exploration of accounting practices in China.

2.6 Conclusion

This chapter has provided the theoretical foundation for the current research. In doing that, three core theoretical domains were covered. First, the SMA concept was explained, specifying clearly the SMA aspects covered in this study. Also covered in the review of literature is the contingency theory, and in doing so, the contingency features that make up the conceptualisation for this study were considered. Lastly, literature was reviewed on organisational performance.

Having summarised prior works, firm size, structure, strategy and environmental uncertainty appear to be the factors that are more relevant to this research as

independent variables. Due to the non-financial performance has not been explored sufficiently in existing literature, it will be investigated with financial performance together as the dependent variable.

Chapter 3 Conceptual Framework and Statement of Hypotheses

3.1 Introduction

The focus of this chapter is to explain the conceptual framework for this study.

This chapter establishes a contingency-based conceptual framework with regard to the practice of strategic management accounting (SMA) in China's dynamic business environment.

The development of management accounting in China is very different from that in the Western world (Duh, Xiao and Chow, 2008). Moreover, the growing complexity of China's market economy, characterised by the privatisation of state-owned enterprises (SOEs) and increasing global competition, demands a refined and comprehensive approach to management accounting (Ma et al. 2022; Chow, Duh and Xiao, 2006). For these reasons, the study of SMA practices in mainland China is extremely important for a deeper understanding of the theory.

The Chinese government's proactive stance highlights the strategic shift towards enhanced SMA practices, as seen in the release of the *Basic Guidelines on Management Accounting* (2016) and *Outline of the Fourteenth Five-Year Plan for Accounting Reform and Development* (2021). These guidelines aim to reconcile traditional accounting practices with the strategic needs of modern businesses, with clear instructions to adopt a contingency-based framework to align SMA practices with organisational strategies and external environmental factors.

Recent research indicates a shift from theoretical explorations to a focus on the localised application of SMA practices in different industries such as electronics, financial services and e-commerce (Ding, 2023; Zhuo, 2023; Liu, 2020; Wang and Lv, 2022). This turn of events highlights the growing recognition that SMA frameworks need to be not only theoretically defensible but also practically feasible in different organisational contexts. The significant increase in research outputs after 2016 demonstrates the strong academic interest in exploring the many facets of SMA in China (CNKI, 2024).

Building on this, the current research proposes a contingency framework towards enhancing the understanding of SMA practice in the Chinese context. The framework considers key factors like firm size, technology, business strategy and perceived environmental uncertainty, which have been identified as important factors affecting the application and effectiveness of SMA. By integrating these factors, this study aims to comprehensively analyse what influences SMA practices in the Chinese setting and how various accounting practices affect organisational performance.

Developed from the structural contingency framework (Donaldson, 2001), the contingency-based management accounting approach attempts to understand the relationship among management accounting practices, their influencing factors and the performance of organisations. Given that some scholars have emphasised the limitations of the contingency theory's application in the accounting context (Tosi and Slocum, 1984; Boyd et al., 2012), after decades of development, the framework has been adapted to suit management accounting research (Cadez and Guilding, 2008;

Otley, 2016) towards achieving appropriate fit. As “the dominant paradigm in empirical management accounting research” (Cadez and Guilding, 2008, p. 840), the contingency approach has been employed extensively in SMA practice studies in different countries over the past two decades (Guilding, Cravens and Tayles, 2000; Cinquini and Tenucci, 2007; 2010; Nuhu, Baird and Bala Appuhamilage, 2017; Pasch, 2019; Ojra, 2014; Ojra, Opute and Alsaqer, 2023).

In the light of previous works, a contingency-based framework was adopted in this research for the following reasons: (a) the practice of management accounting has been suggested to be contextual and vary by organisation (Oyewo, 2022); (b) management accounting’s role and its positioning in different organisations vary by nation and culture (International Federation of Accountants, 1998; Rashid, Ali and Hossain, 2020); and (c) The effectiveness and performance implication of using SMA techniques is strongly associated with the contingency variables of each organisation (Cadez and Guilding, 2008; Ojra, 2014; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023).

According to Oyewo (cited from the Chartered Institute of Management Accountants (CIMA) Official Terminology):

“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.”

(Oyewo, 2022, P. 8)

Informed by this theoretical perspective and the specificities of the Chinese business context, the following section presents the conceptual framework guiding this study.

3.2 Conceptual Framework

Building on the theoretical foundations established in Chapter 2 and the contextual rationale outlined in Section 3.1, this section presents the conceptual framework that guides the empirical analysis.

The framework is grounded in the Contingency-Based Management Accounting (CBMA) perspective, which proposes that the effectiveness of management accounting techniques depends on their alignment, or fit, with contextual factors (Otley, 1980; Donaldson, 2001; Hall, 2016). Rather than assuming a universal best practice, this approach suggests that SMA practices must be adapted to differences in organisational environment, strategy, technology, and structure to support performance outcomes.

Specifically, this study adopts a single-level CBMA structure (Hall, 2016), in which strategic management accounting (SMA) usage is positioned as:

- 1) a dependent variable, influenced by five contingency factors: environmental uncertainty, business strategy, technology, organisational structure, and firm size; and
- 2) an independent variable, in relation to both financial and non-financial performance outcomes.

These relationships reflect a theory-informed association structure, whereby contingency variables are conceptually linked to SMA usage, which is, in turn, associated with organisational performance. This structure aligns with the core proposition of CBMA theory: that information systems must be tailored to the specific

organisational context to be effective.

The resulting framework is illustrated in Figure 3.1, and serves as the foundation for hypothesis development in Section 3.3.

3.2.1 SMA Techniques Explored in this Research

As mentioned in Section 2.2.2.1, research on SMA has identified 16 techniques and classified them into 5 themes (Cadez and Guilding, 2008; 2012; Cescon, Costantini, and Grassetti, 2018; Ojra, Opute and Alsolm, 2021). The existing literature showed more interest in the techniques from *costing* and *planning, control and performance measurement* aspects like target costing, balanced scorecard and attribute costing (Rashid, Ali and Hossain, 2020). The latter three techniques have been less explored in accounting literature.

Considering the general environment facing Chinese companies, enhancing the awareness of competitors' actions and intentions is crucial (Cravens and Guilding, 2001; Cinquini and Tenucci, 2010; Pavlatos and Kostakis, 2018). Moreover, increasing competitive pressure forces managers to pursue advantages in competition by engaging with their customers (McManus, 2013; Aykan and Aksoylu, 2013; Pavlatos and Kostakis, 2018; Opute, Jawad and Jiang, 2022; Opute et al, 2020). In dealing with the unprecedented situation of the global pandemic (Lodge and Boin, 2020), forming proper strategic decision-making procedures is also important (Cadez and Guilding, 2008; Karlsson, Hersinger and Kurkkio, 2019; Opute, Jawad and Jiang, 2022; Opute et al, 2020). Therefore, this research focused on *strategic decision-making, competitor accounting, and customer accounting* techniques.

3.2.2 Contingency Factors

According to SMA literature, effective implementation of strategic management accounting techniques would enable appropriate managerial decisions that would boost organisational performance (Cescon, Costantini, and Grassetti, 2018; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). However, according to the contingency foundation, the extent to which appropriate managerial decisions can be achieved and organisational performance boosted would depend on the alignment of SMA practices with contingency factors (Ojra, 2014; Boyd et al, 2012; Hamann, 2017; Ojra, Opute and Alsaqer, 2023).

Prior contingency perspective on SMA has examined the influence of company size (Ojra, 2014; Cadez and Guilding, 2008; Chiquini and Tenucci, 2010; Pavlatos, 2015; Pasch, 2019); organisational structure (Ojra, 2014; Pavlatos, 2015; Ojra, Opute and Alsaqer, 2023); strategy (Cadez and Guilding, 2008; Chiquini and Tenucci, 2010; Ojra, 2014; Turner et al., 2017; Cescon, Costantini, and Grassetti, 2018); and environmental uncertainty (Guilding and McManus, 2002; Ojra, 2014; Ojra, Opute and Alsaqer, 2023; Pavlatos, 2015; Al-Sayed and Dugdale, 2016; Cescon, Costantini, and Grassetti, 2018). To contribute to the understanding of SMA practice in the Chinese Context, the contingency factors considered in this study include:

Perceived environmental uncertainty (competitive intensity and market turbulence);

Business strategy (Prospector and defender);

Technology;

Organisational structure (formalisation and decentralisation); and

Company size.

Regarding the performance implications, management accounting studies are more focused on financial performance (Otley, 2016), as researchers found that organisations adopting traditional MCS have based their decisions on financial controls (Chenhall, 2007). Empirical research on SMA documents a similar trend, the evidence of SMA practice influence on non-financial performance measures is still limited (Cadez and Guilding, 2008; Ojra, 2014; Alarmri, 2019; Ojra, Opute and Alsaqer, 2023). Although the relevance of non-financial performance measures has been proven to be core in situations with a higher level of environmental uncertainty (Czaja-Cieszyńska, Kordela and Zyznarska-Dworczak, 2021; Chenhall, 2007; Ross, 1995), there is still relatively less focus on this performance aspect in SMA research. Therefore, both financial and non-financial performance measures are considered in this research.

Based on the reasons above, to align with the philosophy of previous CBMA research and to capture the key factors mentioned, the conceptual framework is illustrated in Figure 3.1.

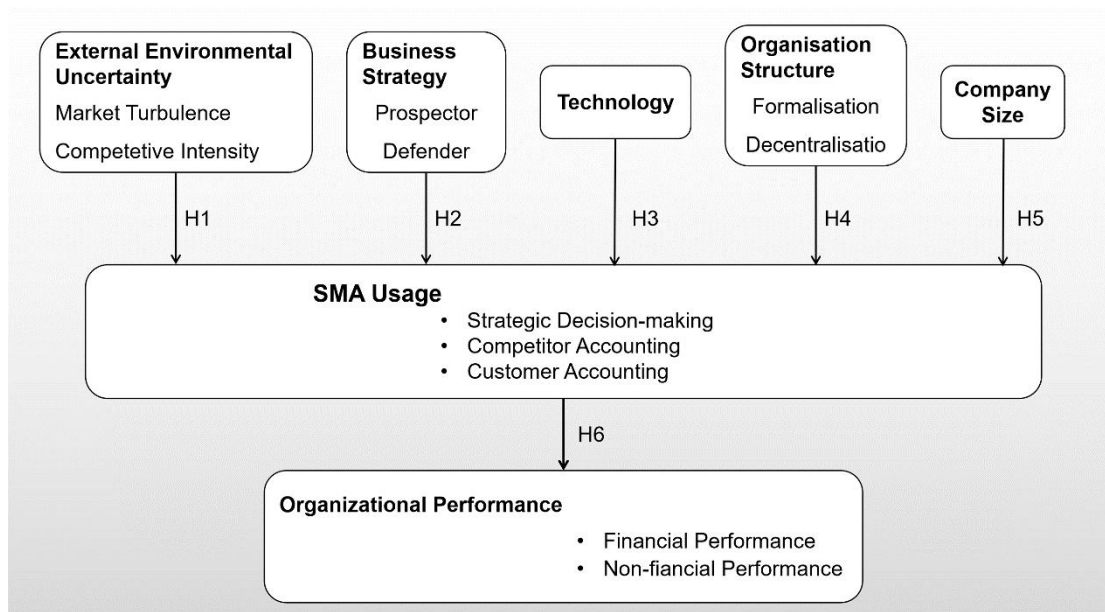


Figure 3.1 Conceptual Framework

This framework proposes that five key contingency variables (environmental uncertainty, business strategy, technology, organisational structure, and company size) are connected with the extent to which SMA techniques are adopted. In turn, SMA usage is expected to be associated with organisational performance. The model reflects the CBMA perspective that accounting practices must align with contextual characteristics to support effective decision-making and enhance outcomes.

To further justify the selection of contingency variables, this study draws upon contingency theory, which posits that there is no universally optimal accounting system; rather, the effectiveness of strategic management accounting (SMA) depends on the alignment between organisational and contextual characteristics and the firm's information needs (Otley, 1980; Donaldson, 2001). Specifically:

- a. Environmental uncertainty increases the need for externally focused, forward-looking information, which SMA techniques are designed to provide (Chenhall, 2003; Guilding and McManus, 2002).

- b. Business strategy, particularly prospector versus defender orientations, shapes whether firms prioritise innovation or efficiency, influencing the nature of information required (Miles and Snow, 1978; Cadez and Guilding, 2008).
- c. Organisational structure, measured through formalisation and decentralisation, affects decision-making autonomy and the flow of information within the organisation (Pavlatos, 2015).
- d. Technology enhances firms' ability to collect, process, and analyse information relevant for SMA (Granlund, 2011).
- e. Company size reflects resource availability and operational complexity, both of which influence the adoption of SMA techniques (Ojra, 2014; Cadez and Guilding, 2008).

These theoretically grounded variables form the basis of the conceptual model presented in Figure 3.1.

3.3 Hypotheses Development

Contingency-based accounting research assumes a theoretically grounded connection between SMA practice and its contextual influences on organisational performance (Cadez and Guilding, 2008; Ojra, 2014; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023).

While the conceptual framework in Figure 3.1 presents these theorised relationships between contextual variables, SMA practices, and performance outcomes, this study does not aim to establish causality in the econometric or experimental sense.

Importantly, this research acknowledges that contingency-based SMA theory, primarily developed in Western contexts, may not be directly transferable without adaptation to the Chinese institutional and managerial environment. Given the distinct characteristics of Chinese listed companies (such as ownership structures, regulatory dynamics, and strategic orientations), the present study adopts a cautious, exploratory approach. The goal at this stage is to examine whether the theoretically derived relationships can be observed empirically as patterns of association.

Given the cross-sectional and perceptual nature of the data, the study focuses on identifying statistically significant associations, consistent with prior SMA research. This approach reflects the exploratory intent of applying Western-developed contingency models within a distinct Chinese organisational context.

Based on the conceptual framework, the hypotheses are divided into two parts. Section 3.3.1 explores the relationships between each contextual factor and the adoption of SMA techniques, while Section 3.3.2 examines the associations between SMA usage and organisational performance (both financial and non-financial).

3.3.1 Hypotheses on Contingency Factors of SMA Adoption/Usage

As demonstrated in Figure 3.1, several contingency factors are considered in the study: environmental uncertainty, strategy, technology, structure and firm size, and the first set of hypotheses proposed in this research relates to SMA practice (see sections 3.3.1.1 to 3.3.1.5).

3.3.1.1 Environmental Uncertainty and SMA Adoption

Chenhall (2007) demonstrated the influence of environmental uncertainty on MCS

design. According to Chenhall (2007), a formal and mechanistic MCS is normally unable to provide sufficient information to assist decision-making in an uncertain environment. Moreover, perceived environmental uncertainty has been proven to be associated with a more broadly scoped management accounting system (Gordon and Narayanan, 1984) and SMA usage (Cescon, Costantini and Grassetti, 2018; Ojra, Opute and Alsaqer, 2023). However, inconsistent findings also exist in the PEU-related accounting research (Sharma, 2002). It is claimed that by properly conceptualising and operating the variable in accounting research, these inconsistencies can be eliminated (Tymon, Stout and Shaw, 1998).

Acknowledging the multi-dimensional attribute (Sharma, 2002), it is supported that the construct of PEU needs to be decomposed (Milliken, 1987; Downey, Hellriegel and Slocum Jr, 1975). A practical taxonomy that has been employed widely in contingency works was developed by Khandwalla (1977), and he proposed that environmental variables include turbulence, hostility, diversity and complexity. Duncan's (1972) suggested a two-dimensional perspective: complexity and dynamism.

MCS research finds that environmental uncertainty is associated with broader and prompt information using (Chenhall and Morris, 1986), subjective performance evaluation (Moore and Sharma, 1998; Govindarajan, 1984), and non-accounting performance evaluation style (Ross, 1995). The intensity of competition, as the most commonly researched force that causes environmental hostility, has been proven to be associated with formal control dependence (Imoisili, 1986), and accounting

sophistication, production and statistical control (Khandwalla, 1977).

Based on the MCS research findings in the past, environmental uncertainty is proven to be related to a more external-oriented and non-financial style of management control system. More particularly, Chenhall (2007, p. 173) summarised some of the propositions for the interaction between the external environment and MCS in his research: “the more uncertain the external environment, the more open and externally focused the MCS” and “the more hostile and turbulent the external environment, the greater the reliance on formal controls”. These views complement the core principles of SMA that were proposed by Guilding, Cravens and Tayles (2000), which emphasise environmental orientation, competitor focus, as well as a long-term and forward-looking perspective. This complementary relationship demonstrates the critical role SMA plays in enhancing the competitiveness and efficiency of business operations in a complex and volatile marketplace. In a recent study, Ojra, Opute and Alsaqer (2023) suggest that the higher the competitive intensity, the higher the SMA usage. Based on this connection, this research proposes that:

H1a: *The higher the competitive intensity level, the greater the adoption of SMA techniques.*

H1b: *The higher the market turbulence level, the greater the adoption of SMA techniques.*

3.3.1.2 Strategy and SMA adoption

The importance of organisations to have a relevant strategic orientation has been emphasised in social research (e.g., Chenhall, 2007; Miles and Snow, 1987; Opute et

al, 2020). In the study of business strategy, scholars have proposed several recognised strategic classifications. Miller and Friesen (1982) distinguish between conservative strategies that are reluctant to innovate in the face of serious challenges and entrepreneurial strategies that aggressively seek to innovate. Miles and Snow's (1978) classification divides firms into prospectors, analysts, and defenders, reflecting different strategic responses to market opportunities. Gupta and Govindarajan's (1984) proposed task classification of building, holding, and harvesting focuses on the strategic objectives of firms at different stages of development. Porter (1980), on the other hand, emphasises strategies to gain competitive advantage through product differentiation and cost leadership.

Scholars suggest that organisations with specific strategic features suit particular control styles: firms that are recognised to be defenders, taking strategies that are conservative-oriented, in a harvest stage in their life cycle, or taking cost leadership strategy would achieve better outcomes with a centralised control system, specialised and formalised work, straightforward coordinating mechanism and attention to problems (Miller and Friesen, 1982; Miles and Snow, 1978; Porter, 1980).

With various taxonomies provided by different scholars, more dimensions are contributed to the understanding of strategy. Empirical works have shown support for the relationship between business strategy and MCS (Chenhall, 2007; Ojra, 2014; Cescon, Costantini and Grassetti, 2018; Ojra, Opute and Alsaqer, 2023). All three of the mentioned dimensions of strategy have been investigated in SMA studies. For example, Cadez and Guilding (2008) suggest that SMA adoption is positively

associated with applying the prospector strategy. In the work of Cinquini and Tenucci (2007), the use of several particular SMA techniques, like strategic costing and value chain costing, was found to be greater in companies adopting the cost leadership strategy. In their work in 2010, the adoption of cost-oriented techniques is greater in defenders and cost leaders. Moreover, customer-oriented techniques have a higher usage rate in build-strategy pursuing companies (Cinquini and Tenucci, 2010). According to Cescon, Costantini and Grassetti (2018), brand valuation adoption is greater in national organisations pursuing a product differentiation strategy. In a study of customer accounting practices, McManus (2013) suggests that customer accounting practices would be much higher in prospector-type organisations.

Given that companies pursuing a prospector strategy are generally more forward-looking, it is reasonable to expect that they would require more strategic information. Therefore, this study hypothesises as follows:

H2: The adoption of SMA techniques would be greater in prospectors than in defenders.

3.3.1.3 Technology and SMA adoption

As shown in Section 2.3.2.3, organisational behaviour scholars (Chenhall, 2007) conceptualised technology to include manufacturing technology, information technology and mechanics that connect the operation of the business. Accounting research suggests that there is a stronger connection between accounting practice and information technology than there is with other technology elements. Accounting work has evolved as a result of the development of information technology (Scapens

and Jazayeri, 2003), consequently, accounting operations have been driven to transform into computerised information systems (Vaassen and Hunton, 2009; Taipaleenmäki and Ikäheimo, 2013). Also, information technology is evolving in the form of enterprise resource planning systems that provide forward-looking information that aid organisational operations (Scapens and Jazayeri, 2003).

Business operations can be affected significantly by information technology advancement (Zawawi and Hoque, 2010; Opute et al, 2022). With different aspects of business operation integrated through information technology, the characteristics of management accounting systems may change as well (Ghasemi et al. 2019). For example, Granlund (2011) pointed out that management accounting information is more integrated, timely, accurate and relevant because of IT development and computerisation. Sánchez-Rodríguez and Spraakman (2012) believe that technology-based systems are the essential carriers of MAS. Overall, Ghasemi et al. (2019) propose that technology is crucial to provide high-quality information that assists managerial decisions.

In a recent SMA study, Oyewo (2022) discusses the relationship between SMA adoption and information technology (IT). The author notes that IT is a core competency that supports complex management accounting techniques such as SMA. The research found a positive correlation between the quality of IT and the use of SMA, but not significant. Although IT is critical to SMA, its impact on competitive advantage is relatively small. On the other hand, in Ojra's (2014) study, the relationship between SMA and technology was shown to be more significant and

positive (Ojra, 2014). This suggests that technology may be a stronger contingency factor of SMA adoption in different contexts. Therefore, the reasons above have motivated the following hypothesis:

H3: Organisations with higher levels of technology would have greater SMA adoption.

3.3.1.4 Organisational Structure and SMA adoption

Popular examples of structural mechanisms that have been investigated in contingency studies include centralisation, formalisation, standardisation, etc. (e.g., Pugh et al, 1968; 1969; Chenhall, 2007; Opute and Madichie, 2017; Ojra, Opute and Alsolm, 2021; Ojra, Opute and Alsaqer, 2023). According to Chenhall (2007), the structural arrangements of an organisation have an impact on the effectiveness of work, flows of information, employee and MCS, which eventually will affect the outcome of the organisation. Thus, the MCS ought to be designed to fit the intention of the organisational structure (Gerdin, 2005). Early contingency studies on the structure choice were mainly concerned with the proper structure that fits its environment (Burns and Stalker, 1961), strategy (Chandler, 1962) and technology (Galbraith, 1973). In this study, the aspects of organisation structure that are considered include decentralisation and formalisation. In general, more organic structures are considered to be more suitable for uncertain environments (Chenhall, 2007).

As an important contingency factor, MCS empirical studies find that big organisations with differentiated structures tend to use MCS to mitigate integration problems

(Chenhall, 2007). Early works suggest big organisations with decentralised structures not only tend to have a strong emphasis on formal MCS (Bruns and Waterhouse, 1975) but also implement more administrative controls such as sophisticated budgets (Merchant, 1981). Also, decentralised decision rights could encourage the effectiveness of implementing accounting innovation within an organisation (Abernethy and Bouwens, 2005). The employment of a team-based structure was found to be associated with great dependence on non-financial MA information (Baines and Langfield-Smith, 2003).

Empirical research investigating the relationship between business structure and SMA adoption is comparatively rare, and the results are not clear. In Ojra's 2014 study on Palestinian companies, a significant association was not found between SMA adoption and decentralisation. In Ojra's further study, he and his colleagues (Ojra, Opute and Alsaqer, 2023) also found no support for the notion that decentralised decision-making would enable Customer accounting SMA Usage in Kuwaiti financial services organisations. Those results, however, contrast insights about the financial services organisations in the UK (Opute, 2009) and Nigeria (Opute and Madicie, 2017). In both studies, a positive influence of decentralisation was found on accounting-marketing integration, results that resonate with the findings in McManus (2013) that suggest a positive impact of decentralisation on customer accounting usage.

Formalisation refers to the employment of rules, policies and procedures (Khandwalla, 1974; Pugh et al., 1968). It is often seen as "red tape" that binds power or restricts

effective implementation, but it is also seen as a necessary means of clarifying goals and providing strategic direction (Hempel, Zhang and Han, 2009). Formalisation is a complex concept (construct). Although it is relatively rare in SMA research, there is some understanding of the complexity of the construct in the field of organisational studies. For example, Lin and Germain (2003) propose that organisations can formalise by developing a strategic plan, employing resource planning systems, or performance appraisal systems. On the other hand, formalisation can have a negative impact on performance when bureaucratic barriers diminish flexibility, innovation and cross-functional coordination (Tata and Prasad, 2004).

In the context of state-owned enterprises reform and entrepreneurial wave in the last several decades, the structures of organisations in mainland China have undergone substantial change in general (Smyth, 2005). Influenced by globalisation, flatter forms gradually took place instead of traditional hierarchical forms (Smyth, 2005; Otley, 2016). As mentioned earlier, the increasingly reformative process of Chinese organisations is forcing them to embrace a more future-oriented approach. As a result, one would expect a greater need for accounting information. Given that decentralisation would allow for decisions to be made more quickly by employees as well as when there are formalise structures, this study proposes the below hypotheses:

H4a: *Greater SMA adoption is positively associated with formalised organisations.*

H4b: *Greater SMA adoption is positively associated with decentralised organisations.*

3.3.1.5 Firm size and SMA adoption

Contingency scholars are of the view that company size also influences organisational dynamics. Related to that foundation, accounting scholars have considered the influence of company or firm size on the usage of SMA (e.g., Ojra, 2014; Ojra, Opute and Alsolm, 2021; Rashid, Ali and Hossain, 2021). Firm size has been noted to be positively associated with accounting sophistication (Guilding, 1999). Firm size should be an element of importance in understanding SMA practice in Chinese organisations because the complexity and specialism of accounting and control rise as a result of the increased communication and control issues that growing businesses face (Hoque and James, 2000). Additionally, research suggests that when a firm's size increases, the relative costs of information processing (i.e., expenses per sale) decline (Guilding, 1999; Johnson and Kaplan, 1987).

In early MCS research, scholars found that firm size had a significant impact on accounting practices. Bigger firms typically employ large-scale, multi-product line manufacturing techniques, thus requiring more sophisticated control systems and environmental information-gathering instruments such as predictive analyses and market research (Khandwalla, 1972, 1977). However, in SMA studies, the relationship between size and SMA application presents mixed results (Cinquini and Tenucci, 2007, 2010). Nonetheless, there are still substantial studies that show a positive correlation between firm size and SMA application (Cadez and Guilding, 2008; Pasch, 2019).

The ability of an organisation to upgrade its management accounting system is

correlated with its size (Hoque, 2014), hence, the current research proposes that:

H5: SMA adoption is positively associated with firm size.

3.3.2 Hypotheses Relating to SMA Adoption & Organisational Performance

To compete in an increasingly unpredictable environment, keeping track of the performance indicators is crucial to organisations (Taticchi, Tonelli and Cagnazzo, 2010; Rojas-Lema et al., 2020). Hence, research on performance measurement has been of core importance to scholars for decades (Ittner, Larcker and Rajan, 1997; Chenhall, 2005a; Chalmeta, Palomero and Matilla, 2012). There is also considerable support from SMA research suggesting that techniques such as benchmarking and balanced scorecard have positive associations with organisational performance (Hoque, 2004; Cadez and Guilding, 2007). These techniques not only provide financial measures but also emphasise the importance of non-financial performance measures.

Measures of non-financial performance like customer satisfaction, product quality and market share are believed to have their own unique advantages over traditional financial measures such as return on investment. These non-financial metrics excel in identifying signals from the external environment and serve business objectives better. (Kaplan and Norton, 1996; Hoque, 2004).

One of the objectives of this research is to understand the performance implications of SMA techniques usage in Chinese listed companies. The hypotheses explored in that regard are explained in section 3.3.3.1.

3.3.3.1 SMA Adoption and Organisational Performance

Deriving from economic models of decision-making, better information can assist in areas like resource allocation (Baines and Langfield-Smith, 2003), and increase the potential of positive outcomes (Cadez and Guilding, 2008). The same reasoning holds true for the discipline of accounting. A key function of an accounting information system is to support managerial decision-making processes (Abernethy and Bouwens, 2005; Cadez and Guilding, 2008). Appropriate strategic management decisions have been proven to be important to the performance of an organisation (Abdel-Maksoud et al, 2015; Pollanen et al, 2017; Ojra, Opute and Alsaqer, 2023). Hence, it would seem rational to contend that effective accounting information systems can result in better decisions, which eventually would boost business performance. However, that outcome may not be expected in all circumstances, because the effectiveness of management accounting systems is also affected by factors like business environments (Chenhall, 2007).

Improved management accounting adoption is typically positively correlated with organisational performance, according to substantial empirical studies on MA practice and its performance implications (Chenhall, 2007; Zawawi and Hoque, 2010; Alabdullah, 2019). Some studies, however, demonstrate the opposite results. For instance, advanced MAS is inversely correlated with performance under low-level PEU conditions (Agbejule, 2005). The studies of SMA practice are generally showing positive relationships with organisational success, despite the mixed results in the overall management accounting research (Cadez and Guilding, 2008; Aykan and

Aksoylu, 2013; Alamri, 2019; Ojra, 2014; Ojra, Opute and Alsaqer, 2023).

Considering the information that SMA techniques usage would aid optimal managerial decision-making and extend organisational performance, this research proposes that:

H6a: *Greater SMA adoption is positively associated with financial performance.*

H6b: *Greater SMA adoption is positively associated with non-financial performance.*

3.4 Conclusion to the Chapter

The ever-dynamic environment surrounding the operations of organisations compels organisations to adopt a management accounting system that can collect and analyse external and internal information to form effective strategies to achieve better performance. Building on the theoretical foundation presented in Chapter 2, this chapter sets out the conceptual framework and specifies the hypotheses tested in this study (see Figure 3.1). This conceptual foundation provides the basis for the methodological approach discussed in Chapter 4, which explains how the hypotheses are operationalised and empirically examined.

Chapter 4 Research Methodology

4.1 Introduction

Towards addressing the research questions specified in Chapter One, this current chapter explains the methodological approach used in this study. Several steps are taken in this regard. First, the philosophical background and paradigm for this research are explained (section 4.3 and section 4.4) after the research design is illustrated in section 4.2. The research methodologies, or research approaches, encompass a series of steps from general assumptions to specific methods of collecting, analysing, and interpreting data (Creswell and Creswell, 2023). According to Creswell and Creswell (2023), choosing an approach or a methodology to study a topic is built on the philosophical assumptions of the researcher, procedures of inquiry (i.e. research design), and the particular methods of this study.

Hence, when planning research, besides listing the specific methods and processes of conducting it, it is crucial to consider the philosophical worldview assumption that the researcher brings to it, as well as the design of the research associated with the worldview. While the philosophical assumptions, to a large extent, are “hidden in research” (Creswell and Creswell, 2023, p. 40; Slife and William, 1995), it is necessary to acknowledge them as they impact the practice of the research. Articulating the broader philosophical ideas the researcher espouses is vital to justify the choice of his/her research approach (Creswell and Creswell, 2023). In line with the philosophical backgrounds and justifications provided in section 4.4 and relevant

sections, the methodological approach followed in this study is explained in section 4.5. The specific steps taken in data collection and analysis are described in sections 4.6, 4.7, and 4.8.

4.2 Research Design

Research design is the art and science of planning research processes to conduct in order to gain “the most valid findings” (Collis, Hussey and Davies, 2014, p. 97; Collis and Hussey, 2021, p. 88). It also concerns the standards employed to ensure quality in business research, reliability, replicability and validity (Bell, Bryman and Harley, 2022). Drawing from McKerchar’s (2009) criteria, a good research design ought to have a good fit between research methodology and paradigm, and would contain a fundamental framework to direct the research conducting process, proper strategies of inquiry, enable the generation of consistent knowledge claims, and address the research question(s) to meet the aims and objectives.

Richard Thorpe, one of the authors of *Management and Business Research* (Easterby-Smith et al., 2021), uses a tree metaphor to illustrate how research design flows from philosophical roots to methodological choices. The roots of the tree symbolise the research traditions that shape different philosophical positions. There are three main roots (research traditions) that relate to the management and business research: realism, nominalism and “various third ways” (Easterby-Smith et al. 2021, p. 69). Being a part transports nutrition to branches, leaves and fruit, the trunk represents four main and interlinked philosophical assumptions and “features of a research

design”: ontology, epistemology, methodology and methods and techniques (Easterby-Smith et al. 2021, p. 69). The canopy of the tree has branches and leaves, and can be seen as the form and process of data collection and analysis. Together, they photosynthesise in the sunlight and eventually produce fruit, the output of the research. The details of the metaphor might not be explicitly laid out, but it does provide a useful way to understand the structure and process of a research design. It also emphasises the connection and match between the choice of methodology and the philosophical stance of the research. For example, the connection between a nominalist ontology and a constructionist epistemology implies the adoption of a qualitative approach to data collection and analysis, and allows multiple angles to explain one phenomenon.

However, researchers also encounter practical challenges, such as unpredictable external factors, which constrain the quality of the research design (Bono and McNamara, 2011). Acknowledging the limitations, Collis and Hussey (2021) identify the main steps in research designs: identify research problems, determine the purpose, identify research question(s), choose the methodology and methods and determine the outcomes and timetable. As explained, a research design aims to find the answers to the research question(s) (Saunders, Lewis and Thornhill, 2019; Ojra, 2014). The following parts of this chapter will illustrate the choice of methodology and methods and the philosophical stance behind it based on the research problem, purpose and questions that have been explained in Chapter 1, Sections 1.3, 1.4 and 1.5.

Generally, research designs can be classified through their approaches: qualitative,

quantitative, and mixed-method approaches (Creswell and Creswell, 2023).

Considering the characteristics of business and management research and the previous research patterns, Bell, Bryman and Harley (2022) described five research designs: experimental, cross-sectional, longitudinal, case study and comparative designs in the business and management field. According to Taylor (2021), research in strategic management accounting (SMA) typically adopts either a quantitative, cross-sectional design or a qualitative, case-study approach.

In line with this tradition, and in order to address the following research questions:

1. To what extent are different types of strategic management accounting (SMA) techniques adopted by Chinese listed companies?
2. What is the relationship between contingency factors and the adoption of SMA techniques?
3. What is the relationship between the adoption of SMA techniques and organisational performance in Chinese listed companies?

This study adopts a quantitative, cross-sectional design underpinned by a positivist philosophical stance. The next section explains the research philosophy and the paradigmatic positioning of this study.

4.3 Philosophical Background

In exploring a topic, the beliefs and values that guide research (i.e. the philosophical assumptions) provide the guidelines for processes of conducting the research (Creswell and Creswell, 2023). The philosophical assumptions that underpin research

(such as ontology, the study of the nature of reality; epistemology, the study of knowledge and how it is acquired; and axiology, the study of values in research) shape how researchers formulate questions, select methods, and interpret research results (Crotty, 1998; Saunders, Lewis and Thornhill, 2019). To ensure the coherence of research projects of business and management research, when choosing a research strategy, the philosophical guidelines should be kept in mind and utilised by the researcher in understanding what he/she is investigating and the actions to take (Johnson and Clark, 2006).

In their latest edition of *Research Design*, Creswell and Creswell (2023) illustrate that the broad research methodology encompasses the interaction of philosophy, research design and specific methods. Based on their framework for research, the interconnection of worldview, design, and research method, this study summarises the components of research methodology in the following figure.

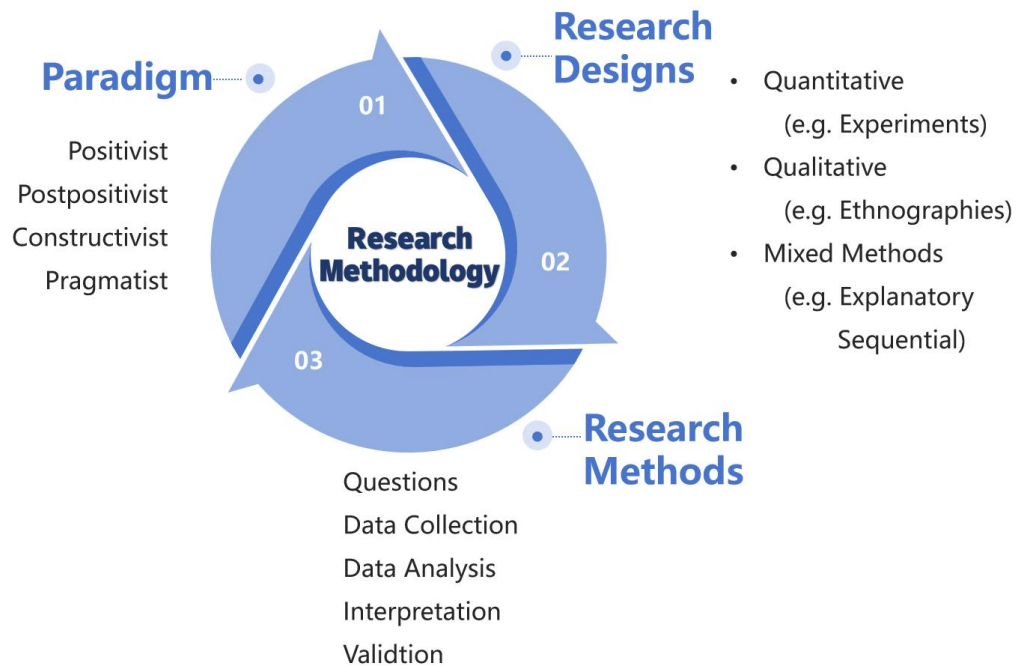


Figure 4.1: Amended from Creswell and Creswell's (2023, p. 40) Framework for Research¹

As illustrated in Figure 4.1, research methodology consists of three interconnected elements. A research paradigm, such as positivism or constructivism, reflects the underlying assumptions about reality, knowledge, and values. This philosophical stance informs the choice of research design (e.g., a quantitative or qualitative approach), which in turn shapes the research methods for data collection, analysis, interpretation, and validation.

Scholars use various terms to describe the philosophical framework that guides research, such as philosophical worldview (Creswell and Creswell, 2023), research philosophies (Saunders, Lewis and Thornhill, 2019), or paradigm (Lincoln, Lynham and Guba, 2018; Burrell and Morgan, 2019). In this thesis, the term paradigm is adopted, defined as a philosophical framework that directs the implementation of

¹ This figure presents an amended version of Creswell and Creswell's (2023) original framework. While the conceptual flow and elements remain consistent, the terminology has been modified—for instance, "philosophical worldviews" has been replaced with "paradigm" to align with the vocabulary used in this thesis. The "transformative" paradigm was excluded as it is not relevant to the current research.

scientific research (Collis and Hussey, 2021).

According to Waite and Hawker (2007, p. 675), the essence of philosophy is “a set or system of beliefs” and “the study of the fundamental nature of knowledge, reality, and existence” and therefore the philosophical assumptions possessed by the researcher are crucial to their studies.

Denzin and Lincoln underlined that “a paradigm encompasses three elements: epistemology, ontology, and methodology” (1994, p. 99), and these philosophical elements (such as ontological, epistemological, methodological and axiological assumptions) also affect researchers’ decisions throughout the whole study (Crotty, 1998; Burrell and Morgan, 2019).

Ontology, as the beginning point of most arguments among philosophers, is associated with the researcher’s assumptions on the nature of reality. There are four ontological positions according to Easterby-Smith et al. (2021): realism, internal realism, relativism and nominalism. Their difference is illustrated in Table 4.1:

Table 4.1: Four different ontological positions. Source: developed from Easterby-Smith et al. (2021, p. 75)

Ontological Position	Realism	Internal Realism	Relativism	Nominalism
View of Reality	The world is real and exists independently of perception.	The world is real and causally independent of the human mind, but cannot be directly observed.	Reality is shaped by people who are embedded in specific contexts.	Reality is constructed by humans and does not exist independently of perception.
View of Truth	A single, objective truth exists.	Truth exists but is partially hidden or obscured.	Multiple “truths” exist depending on context.	There is no universal truth.
View of Facts	Facts exist and can be discovered through observation.	Facts are real but not directly accessible.	Facts depend on the observer’s perspective.	Facts are shaped by human interpretation.

In the business and management field, researchers' ontological assumptions also impact their perspectives on research objects, including organisations, management, individual lives, and organisational events, influencing their study choices and understanding of the world.

According to Burrell and Morgan (2016), epistemology relates to presumptions about knowledge, what qualifies as acceptable, valid, and legitimate knowledge, and how the knowledge can be communicated with each other. The multidisciplinary context provides business and management researchers with various epistemologies to adopt in their research, including numerical data, textual and visual data, facts, opinions, narratives, and stories, to explore various knowledge types, including archival research, narratives, and even fictional literature (De Cock and Land, 2006).

Axiology is related to the role that of researcher's values and ethics play in the study. One of the essential axiological decisions a researcher needs to make is the extent to which his or her values and beliefs can influence research. Heron (1996) emphasises that values guide human action, and researchers dealing with their own values and beliefs during the studies are inevitable. Therefore, it is important for researchers to explicitly recognise and reflect on these values in the research and writing processes.

Methodology refers to the way of gaining knowledge about the world. How may the researcher go about learning what he/she thinks is knowable? As noted by Guba and Lincoln (1994), the answer to this question depends on the ontological and epistemological choices made by the researcher. Hence, an appropriate methodology choice should be coherent with the author's ontological and epistemological

assumptions.

4.4 Research Paradigm and Assumption

A considerable body of literature highlights the diversity of research paradigms across academic disciplines, and debates over their boundaries have persisted for decades (Lincoln, Lynham and Guba, 2018; Collis and Hussey, 2021). In business research, Collis and Hussey (2021, p. 41) describe positivism and interpretivism as two extremities of a continuum of paradigms that can exist simultaneously. Bell, Bryman and Harley (2022) similarly identify positivism and social constructivism as the two dominant paradigms in business-related research.

Although interpretivism and constructivism are often regarded as closely related paradigms within the broader framework of social constructionism (Easterby-Smith et al., 2021), they are not interchangeable. As Schwandt (1994) explains, interpretivism is primarily concerned with understanding how individuals interpret their experiences, whereas constructivism goes further to assert that reality itself is socially and experientially constructed through human interaction and shared meaning-making.

Meanwhile, Creswell and Creswell (2023) extend the discussion by including postpositivism, constructivism, transformative, and pragmatism as four principal paradigms. Most recently, Lincoln, Lynham and Guba (2024) added participatory inquiry to their original set (positivism, postpositivism, critical theory, and constructivism), highlighting the evolving nature of paradigmatic thinking, which will be explored in the following sub-sections.

4.4.1 Positivism

Positivism is a philosophical stance that emphasises the observation of social phenomena through empirical data, aiming to produce law-like generalisations. It assumes that facts exist independently of human perception and that objective knowledge can be acquired through systematic observation and measurement (Collis and Hussey, 2021; Saunders, Lewis and Thornhill, 2019).

Ontologically, positivism is grounded in realism, which holds that a single, objective reality exists independently of the researcher's consciousness. This reality can be studied, measured, and analysed using appropriate scientific tools (Mitroff and Pondy, 1978).

Epistemologically, positivism adopts an objectivist stance, where knowledge is considered valid only if it can be empirically verified. As Easterby-Smith et al. (2021, p. 77) note, "knowledge is of significance only if it is based on observations of this external reality; it is the result of empirical verification". The positivist tradition assumes that researchers can investigate the world from a neutral, value-free position, uninfluenced by their own beliefs or emotions (Johnson and Duberley, 2000). This assumption underpins the widespread application of positivist philosophy in quantitative research across the business and management disciplines (Johnson et al., 2006).

Methodologically, positivist research typically involves selecting representative samples, applying valid and reliable measurement instruments, testing hypotheses, and generalising findings to a broader population. Through this structured and

systematic approach, positivist researchers aim to produce rational, objective, and generalisable knowledge (Xian and Meng-Lewis, 2018; Johnson et al., 2006). This perspective assumes that social phenomena can be studied much like phenomena in the natural sciences, using structured observation and measurement to identify patterns and test hypotheses (Crotty, 1998).

4.4.2 Postpositivism

Postpositivism is a philosophical stance that emerged as a refinement of positivism, acknowledging the limitations of absolute objectivity and certainty in the study of human behaviour. It is described by Creswell and Creswell (2023, p. 41) as “representing the thinking after positivism”, and challenges the conventional belief in the infallibility of knowledge claims (Phillips and Burbules, 2000).

Ontologically, postpositivism is grounded in critical realism, a view that accepts the existence of a reality independent of human cognition but recognises that this reality can only be understood imperfectly and probabilistically (Guba and Lincoln, 1994, p. 111). Unlike naive realism, postpositivism emphasises the need for critical examination, triangulation, and ongoing refinement of understanding.

Epistemologically, knowledge within a postpositivist framework is viewed as conjectural (Phillips and Burbules, 2000). As Creswell and Creswell (2023, p. 42) explain, evidence is always imperfect and fallible, and research is understood as a continuous process of proposing, testing, refining, or abandoning claims in the pursuit of a more credible understanding (Phillips and Burbules, 2000).

Methodologically, postpositivist inquiry maintains a strong alignment with

quantitative research. It typically involves theory testing, hypothesis formulation, and the systematic use of data and empirical evidence to examine relationships between variables (Creswell and Creswell, 2023; Phillips and Burbules, 2000). While objectivity remains an important ideal, it is not assumed to be perfectly attainable; instead, it is pursued through rigorous procedures such as bias control, transparency in reasoning, and methodological triangulation (Phillips and Burbules, 2000; Guba and Lincoln, 1994).

4.4.3 Critical theory

Critical theory is a philosophical stance that seeks to critique both the structures and outcomes of society, particularly those associated with capitalist systems (Easterby-Smith et al., 2021). Easterby-Smith et al. (2021, p. 92) note that key figures in the tradition, such as Habermas, argue that social systems lead to inequality and alienation (Easterby-Smith et al. 2021, p. 92). Accordingly, critical theorists aim to understand “how powerful members of society maintain their dominance over less powerful members” (Easterby-Smith et al. 2021, p. 441).

According to Denzin and Lincoln (2018), critical theory faces increasing challenges in both academic and political spheres. Critical theorists seek to question normalised assumptions about democracy, freedom, and opportunity structures, while denouncing systems of power and domination (Kincheloe et al., 2018). To both extend this tradition and respond to these challenges, Kincheloe et al. (2018, p. 418) advocate for an evolving form of criticality that addresses not only traditional concerns about power and ideology, but also the broader “crisis of humanity, all life forms, and the

Earth that sustains us.”

Historical realism is the ontological position adopted by critical theorists (Guba and Lincoln, 1994). While they assume that reality is apprehendable, they also acknowledge that it is shaped by historical, cultural, political, and gendered forces. Over time, this reality becomes “crystallised (reified) into a series of structures that are now (inappropriately) taken as ‘real’, that is, natural and immutable” (Guba and Lincoln, 1994, p. 110).

The epistemological stance of critical theory is transactional and subjectivist, recognising that the researcher and the object of inquiry are inherently interconnected. The values and positionality of the researcher inevitably influence the research process and mediate its findings. Methodologically, critical theory relies on dialogue between the researcher and participants, aiming to achieve mutual understanding and transformation. According to Guba and Lincoln (1994, p. 110), a dialectical nature needs to be reflected in the dialogue in order to “transform ignorance and misapprehensions into more informed consciousness”.

Critical theorists often adopt mixed methods to explore complex social realities (Strang, 2015). They challenge the ways in which knowledge and processes are explained by exploring insights into historical contexts and social change, and by comparing and contrasting different theories (Crotty, 1998; Lincoln, Lynham and Guba, 2018).

4.4.4 Constructivism

Constructivists’ worldview posits that individuals seek understanding of their world

through subjective meanings, often shaped by social and historical norms. Researchers focus on the complexity of views and open-ended questioning to allow participants to construct meanings. They acknowledge that their interpretations are influenced by personal, cultural, and historical experiences. According to Guba and Lincoln (1994), constructivist researchers believe that realities can be perceived as a variety of intangible mental constructions that are socially and experientially based, and it dependent on the unique individuals and groups holding the construction to comprehend its form and content. Hence, constructivist researchers aim to interpret meanings others have about the world, rather than starting with a theory, and acknowledge the influence of personal, cultural, and historical experiences on their interpretations.

Qualitative researchers who hold constructivist worldviews normally use open-ended questions to understand participants' historical and social perspectives on their world (Creswell and Creswell, 2023; Crotty, 1998). They interpret the data based on their experiences and background, generating meaning through social interaction with a human community. The research process is largely inductive, allowing the researcher to generate meaning from the collected data.

4.4.5 Justification of Positivism in this Research

In section 4.2, the objectives for this research were reminded. To achieve those objectives, the positivist paradigm is embraced in this study. Positivism emphasises objective data collection to test hypotheses (Xian and Meng-Lewis, 2018).

A positivist paradigm is applied in this research because the features of positivism

match the purpose and the nature of this study.

The aim of this research is to understand SMA practices in Chinese organisations, a pioneering effort in this area. Although the researcher recognises the insights offered by social constructivist perspectives, the study adopts a positivist stance and quantitative methods to provide an initial overview of the phenomenon, given the scope and limitations of a doctoral thesis.

Hence, to answer the research questions of the current study, detaching from subjective opinions is required to ensure adequate exploration of the research questions. Being a value-free approach, positivism-based research minimises personal bias and ensures objective data interpretation (Lincoln, Lynham and Guba, 2018; Collis and Hussey, 2021). By observing objectively from a positivist paradigm, through sending questionnaires, measuring and analysing results, the researcher seeks to uncover general patterns in the behaviour of applying SMA techniques and their influences.

Within this goal, the researcher of this study is also seeking to test the generalisability of the SMA theory and contingency model in the Chinese business context. Therefore, a deductive approach is more appropriate to test the theory and hypothesis. More particularly, the current study is trying to identify the factors that influence the SMA adoption and the performance implications from a contingency perspective. In uncovering cause-and-effect relationships between variables, the positivist paradigm that is associated with a quantitative approach is more appropriate (Easterby-Smith et al., 2021; Strang, 2015).

Finally, from the point of contributing to the contingency-based management accounting (CBMA) research model, due to the significant differences between China's business environment and that of developed countries, the study also provides valuable evidence from a context that is worth exploring. As mentioned in the literature review chapter (Section 2.5), Chinese companies are currently experiencing changes in the overall business environment due to economic reforms and market fluctuations. This research also provides a unique setting for testing contingency theory and the CBMA model by applying a positivist paradigm to compare the results and assess the generalisation of the model.

4.5 Research Strategy

As mentioned in the paradigmatic assumptions, the choice of methodology should be informed by the nature of the research questions, the type of explanation the researcher aims to develop, and the most suitable approach for investigating the problem (Easterby-Smith et al., 2021). Using their tree metaphor, Easterby-Smith et al. (2021, p. 71) explain that “a realist ontology” is normally associated with “a positivist epistemology.” In turn, a positivist epistemology often leads to a quantitative research design (methodology), involving numeric forms of data collection and analysis (methods and techniques).

Scholars who have examined the contingency perspective of SMA practice in organisations have underscored the importance of a quantitative approach (Guilding, 1999; Cinquini and Tenucci, 2010; Ojra, 2014; Alamri, 2019; Taylor, 2021; Ojra,

Opute and Alsaqer, 2023). Therefore, following that methodological precedence, this study builds up on a positivistic paradigm and takes a quantitative approach involving questionnaires to better understand SMA usage, contingency factors and organisational performance impact in the Chinese context. According to the positivistic paradigm, knowledge can be quantifiably observed (Collins, 2010). Taking this quantitative approach is important as it will enable a better understanding of the nature of SMA practices and the association of the contingency variables, and also the organisational performance impact of SMA practices in the explored companies.

4.5.1 Quantitative Research Method

Quantitative research is an empirical research method that utilises objective tools in examining the relationships between variables (Creswell and Creswell, 2023). A deductive approach is often adopted in this method, so that specific conclusions are deduced from theories or hypotheses through empirical testing (Bell, Bryman and Harley, 2019). Researchers use statistical procedures to analyse collected data to reveal patterns and trends among variables. Drawing on the positivist approach, quantitative research emphasises the objectivity of research (Bell, Bryman and Harley, 2019).

As justified in Section 4.4.5, the positivist paradigm matches the research purpose of the current study, which is connected with quantitative methods (Collis and Hussey, 2021). Compared to an interpretivist paradigm, the positivist paradigm emphasises the specificity and precision of research data, as measurement is a central element of the

research process under this paradigm (Bell, Bryman and Harley, 2019). Researchers need to take rigorous measures to ensure the accuracy of measurements, such as using standardised measurement tools, conducting pilot tests and controlling variables (Collis and Hussey, 2021). Effective statistical analyses and inferences can only be made if high-quality quantitative data are obtained. Consequently, a quantitative research method was used for data collection as well as analysis to ensure consistency throughout the research process and steps.

4.5.2 Justification of the Quantitative Survey Method

Quantitative research methods are closely associated with the philosophical stance of positivism (Easterby-Smith et al., 2021; Collis and Hussey, 2021). Moreover, as explained in the preceding sections, ensuring alignment between research methodology and the underlying paradigm is essential for sound research design (McKerchar, 2009). Herschung, Mahlendorf and Weber (2018) observe a growing interest in empirical quantitative research within the field of management accounting. Although their study indicates that experiments remain the predominant method and that the relative use of surveys has declined, this does not imply that survey-based approaches are less valuable. On the contrary, the reduced reliance on surveys highlights a potential methodological gap in the literature, particularly in studies aiming to capture perceptions and practices across a broad organisational landscape. Given the objectives of the present study and the nature of the research questions, the survey method remains a highly appropriate choice:

First, to address the three research questions, this study requires data collection and

analysis to be neutral and objective. Quantitative methods rely on numerical data and enable standardised comparisons and analysis, thus minimising researcher bias (Bell, Bryman and Harley, 2019).

Second, quantitative approaches employ a range of statistical techniques to identify patterns, correlations, and causal relationships within the data, allowing for more precise and conclusive findings (Easterby-Smith et al., 2021).

Third, in order to assess the validity of the contingency-based SMA framework in the Chinese context, the study needs to test the hypotheses proposed in Section 3.3. Quantitative research is typically grounded in explicit assumptions about variable relationships, with hypotheses tested through rigorous statistical analysis (Lincoln, Lynham and Guba, 2018).

Finally, generalisability is a key objective of this study. A large-scale quantitative survey conducted through questionnaires distributed to senior financial managers enables the generation of findings that can be generalised to the broader population of Chinese listed companies (Collis and Hussey, 2021).

4.6 Data Collection

An internet-based questionnaire survey was conducted to collect data from a selected sample of senior financial personnel in Chinese listed companies. Prior to the main distribution, the questionnaire (comprising measurement items adopted or adapted from previous studies) was pilot-tested to ensure clarity and reliability.

The final questionnaires were distributed electronically, accompanied by a covering

letter that emphasised the confidentiality of the data and the voluntary nature of participation.

The selection of participants was based on purposive sampling, as the study required respondents with substantial knowledge or practical involvement in SMA practices. Therefore, individuals in key financial management roles (such as Chief Accountant, Chief Controller, Management Accountant, or Chief Financial Officer) were identified as suitable participants.

Upon receipt of the completed responses, the data were collated, coded, and analysed using SPSS.

4.6.1 Data Collection Method

To analyse factors that influence SMA usage and performance implications, the perception of top managers in the participating organisations was utilised (Gul and Chia, 1994; Tymon, Stout and Shaw, 1998; Cadez and Guilding, 2008; Pavlatos and Kostakis, 2018; Ojra, Opute and Alsaqer, 2023). A survey strategy was used to achieve the objectives of the study (Creswell and Creswell, 2023). The questionnaire was implemented through an online survey (explained next) to collect primary data from each organisation (Saunders, Lewis and Thornhill, 2019).

4.6.1.1 Online Questionnaire

According to authors, the choice of a questionnaire and how it will be delivered would be dependent on factors like characteristics of respondents, the importance of

reaching particular persons, and the number and types of questions involved in the questionnaire (Saunders, Lewis and Thornhill, 2019). While there are different ways to implement the questionnaire (postal, telephone, online, and interview, etc) (Collis and Hussey, 2021; Saunders, Lewis and Thornhill, 2019), the online option was used to collect data in this study.

Online questionnaire survey was used in this study for several reasons: a) It enabled the research to access a large sample; b) it enabled data inputting automatically (online survey tool); and most importantly c) it enabled the researcher to access higher top level personnel (top managers such chief accountants) as the respondent of the organisation (Saunders, Lewis and Thornhill, 2019; De Vaus, 2013; Dillman, Smyth and Christian, 2014). Even though the response rate could be lower (depending on various factors), this research would enhance the rate by combining the online questionnaire with telephone calls and conducting a pilot test prior to the actual survey.

4.6.2 Questionnaire Design

The questionnaire for this study was designed in accordance with the objectives and conceptual framework of the research (De Vaus, 2001; Oppenheim, 1992). Its development was informed by established survey instruments used in prior literature (e.g., Khandwalla, 1972; Jaworski and Kohli, 1993; Cadez and Guilding, 2008; McManus, 2013; Ojra, 2014; Sahi et al., 2019; Lyu et al., 2022; Opute, 2009; Opute and Madichie, 2016; Ojra, Opute and Alsaqer, 2023), with necessary adaptations

made to suit the Chinese business context.

The full questionnaire comprises three components: a covering letter, the main body of the questionnaire, and a glossary of strategic management accounting (SMA) terms. While Hardy and Ford (2014) note that approximately four to nine per cent of respondents may overlook survey instructions, a covering letter was included in this study to enhance the likelihood of participant engagement and improve the overall quality of responses (Dillman, Smyth and Christian, 2014). To that end, the letter not only introduced the survey but also emphasised the ethical principle of voluntary participation.

To minimise potential ambiguity and enhance the comprehensibility of the questionnaire items, the original English version was translated into Chinese and then back-translated into English. This process followed the guidelines of Brislin (1970) and was refined through several iterative revisions involving two academic researchers from a local university and four senior managers from listed companies in China. Feedback from these experts focused on ensuring conceptual equivalence and cultural appropriateness, resulting in a final version that maintained both linguistic clarity and contextual relevance. To further reduce misinterpretation of technical terms, a glossary of SMA concepts used in the survey was appended to the final version delivered to respondents.

The detailed instrument application and the measurement of each variable will be explained in the section of the *Research Instrument* (section 4.7).

4.6.2.1 Population and Sampling

The sample for this research was randomly selected from the over 4000 companies in the Chinese A-share market. Further details relating to the sampling are provided in section 4.6.2.1.2, while details relating to the population are presented in section 4.6.2.1.1.

4.6.2.1.1 Population

To ensure the feasibility of primary data collection, the participating organisations were listed companies in mainland China. The history of stock trading in China dates back to the early 1990s. The domestic stock market, also referred to as the A-share market, originally comprised the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) (Rong, Wu and Boeing, 2017; Segal, 2021). Although the Beijing Stock Exchange (BSE) was established in September 2021 (Lu and Ye, 2022), it is still in its early stage and mainly dedicated to small and medium-sized enterprises. Therefore, the sample for this study was randomly selected from companies listed on the SSE and SZSE. Mainland China-based firms that are traded in other capital markets such as Hong Kong, the United States, or Singapore, were excluded from the study.

This study accessed the most recent information on listed companies from both the official websites of SSE and SZSE. As of May 7th 2023, there were 4455 listed firms in the A-share market (1685 in SSE and 2770 in SZSE). These companies also make up the two main segments of the Chinese securities market: the main board and the Growth Enterprise Board (GEB) (Zhang, Zhang and Farazmand, 2021). The

characteristics of the listed companies from the two boards are distinct from each other. The main board has the highest listing condition, therefore, the companies on the main board are big, mature organisations with large capital scale and stable profitability (Baker McKenzie, 2024). There are over 1,000 state-owned enterprises on the main board (Rong, Wu and Boeing, 2017). The GEB is also referred to as the second board. The purpose of establishing the second board is to fulfil the financing needs of smaller, faster-growing and more entrepreneurial organisations which struggle to meet the full listing requirements of the Main Board (Cheng, 1997). Being a part of the strategy of developing the Chinese financial market, the initiation of GEB can assist the main board effectively in improving the financing environment (Zhang, Zhang and Farazmand, 2021).

There are other boards in the Chinese A-share market, like the new third board and the science and technology innovation board. The purpose of initiating these two boards is to broaden the financing channels of SMEs and technology organisations (Han, Wu and Wei, 2023). However, due to the main board and the GEB being the two significant parts that can reflect the Chinese economy, the current research focused on the listed organisations in the two boards as the population of this study.

4.6.2.1.2 Sampling

As mentioned above, the characteristics of the listed organisations in the two separate boards are distinct from each other, and this distinction should be reflected in the sampling procedure when considering the representativeness of the sample to the population.

In this study, representativeness refers to the extent to which the sample reflects the structural characteristics of the broader population, particularly with regard to industry composition.

Moreover, according to the *guideline of Industry Classification of Listed Companies* that is issued by the China Securities Regulatory Commission (CSRC, 2012), listed organisations in both boards are divided into 19 industries, and the number of listed companies in each industry is highly unevenly distributed. For example, there are over 900 companies in the manufacturing industry listed on the SSE (main board), while there are only 12 listed firms in the education industry altogether (5 on SSE, 5 on SZSE main board and 2 on SZSE second board). A simple random sampling may not adequately represent all industries, thereby reducing the representativeness of the sample. Therefore, to better reflect the population structure, this research adopted a stratified random sampling strategy based on industry.

Although the initial design recognised the structural differences between firms listed on the Main Board and GEB, and aimed to incorporate board type into the sampling stratification, practical limitations arose during the actual data collection. In particular, the use of a gatekeeper-mediated distribution process (Bell, Bryman and Harley, 2019), which was necessary due to low expected response rates, meant that the researcher could not access detailed listing board information for participating firms. This is acknowledged as a potential source of unobserved heterogeneity. Nevertheless, a strict industry-based stratification was employed to mitigate such risks and to preserve the validity of the study's findings.

According to previous literature, certain industries are particularly suited for the SMA practice. For example, after comparing published SMA articles from 2008 to 2019, Rashid, Ali and Hossain (2020) found that most SMA techniques are more applicable in the manufacturing industries than in the service industry. Beyond the manufacturing industries (Al-Sayed and Dugdale, 2016), there is also empirical research on SMA practice within public sectors (Chiwamit, Modell and Scapens, 2017; Bobe, Mihret and Obo, 2017), higher educational institutes (Hutaibat, Alberti-Alhtaybat and Al-Htaybat, 2011), the hotel industry (Pavlatos, 2015; Turner et al., 2017), and hospitals (Lachmann, Knauer and Trapp, 2013).

Not all 19 industries on the guideline participated in this study. As it has been mentioned in the literature review chapter (Section 2.2.2.1), to distinguish from traditional ones, an SMA technique ought to have at least one of the following characteristics: market/environment oriented, competitor focused, long-term oriented and forward-looking (Guilding, Cravens and Tayles, 2000). Building on this theory, Rashid, Ali and Hossain summarised the following features: focusing on the external environment, long-term or forward-looking, and valuing both financial and non-financial information (2021). Considering the needs and capacity of the industries in the Chinese context, this research identified 6 industries that might benefit the most from applying SMA: manufacturing; construction; information transmission, software and information technology services (ITS&ITS); financial services; real-estate and wholesale and retail trade (W&R).

Combining public information from the China Securities Regulatory Commission and

data from the Shanghai and Shenzhen stock exchanges, the researcher sampled Chinese listed companies. To gain a deeper and more comprehensive understanding of SMA and its application, the study combined methodological tradition in previous studies (e.g., Ojra, Opute and Alsaqer, 2023; Opute and Madichie, 2016; Opute, 2009), and companies that participated in this study fulfilled the following conditions:

- a. The company's shares must be listed and traded on the Shanghai or Shenzhen Stock Exchange.
- b. The size of the company must be of a certain level: total assets of not less than RMB 30 million, as well as a workforce of not less than 100 employees.
- c. Have an independent accounting and finance department.
- d. Operate in a competitive environment or industry.

Participants' homogeneity is crucial for exploring relationships between variables and ensuring the validity of the results (Opute, 2009). Therefore, the criteria above were essential towards ensuring an appropriate sample for exploring SMA practice. The SSE and SZSE have more rigorous listing thresholds and disclosure standards for their listed companies (Baker McKenzie, 2024). This enhances firm comparability and ensures researchers can access more complete and reliable public information. Larger organisations have a stronger demand for strategic information to make plans and decisions (Pires and Alves, 2022; Chenhall, 2003; Chenhall and Langfield-Smith, 1998b). Moreover, there are several studies that targeted larger organisations (eg, Cescon, Costantini and Grassetti, 2018; Cescon, Cadez and Guilding, 2008; 2012; Cinquini and Tenucci, 2007; 2010; Guilding, 1999). Therefore, in order to enhance the

comparability of the results of this study, it is important that the target populations have similar characteristics (Pires and Alves, 2022). Having aligned the requirements of the two exchanges for listed companies, this study used total assets of RMB 30 million and 100 employees as a cut-off line for the sample. An independent finance and accounting department means that the company is more finance-conscious and has the capability and need to implement strategic management accounting. Finally, firms operating in competitive industries are more likely to adopt advanced management accounting techniques to support strategic decision-making (Chenhall, 2007).

4.6.3 Pilot Test

To enhance response rates and ensure the reliability and validity of the questionnaire, a pilot test was conducted prior to the main survey (Easterby-Smith et al., 2021; Collis and Hussey, 2021). Bell and Waters (2014) emphasised the importance of piloting questionnaires, noting that without a trial run, there is no guarantee that the survey will proceed smoothly (Saunders, Lewis and Thornhill, 2019). Following initial structural revisions made with the supervisors, the draft questionnaire was discussed with four experts from a local university and two listed companies, and then subjected to pilot testing.

Because the measurement instruments for each variable were originally written in English, they were translated into Chinese to ensure comprehension. This step was considered necessary despite the high educational levels among top management

teams in Chinese listed companies (Yang, Wang and Feng, 2023), as a considerable proportion of executives may still lack sufficient English proficiency.

The translation was carried out by the researcher and reviewed by a professor from a local university's School of Economics and Management, who is a native Chinese speaker with overseas academic and professional experience in finance and accounting. After several rounds of revision, the translated version was further reviewed by two chief accountants from listed companies to identify any potential ambiguity that might hinder understanding. The researcher then incorporated the feedback and finalised the version for pilot distribution.

Once the basic information of the target population had been collected and organised, a total of 3,713 listed firms were identified across the six selected industries, which had been identified as most relevant to SMA in the prior literature. To ensure the pilot test would assess the clarity and applicability of the questionnaire across different sectors, the researcher adopted a simple random selection within each industry. This selection aimed to achieve broad coverage rather than statistical representation.

In their research on the challenges of gaining access to appropriate participants in multiple organisations, Saunders, Gray and Bristow (2017, p. 402) noted that “response rates are often low and quality variable” when conducting an internet questionnaire within multiple organisations. To achieve a reasonable number of responses for the pilot, and following the 10% minimum response rate benchmark proposed by Baruch and Holtom (2008), approximately 1 per cent of listed companies in each selected industry were randomly chosen, resulting in a total of 41

organisations. The pilot sample was selected specifically for instrument testing and refinement purposes, and was not intended to be statistically representative. Issues of generalisability and representativeness are addressed in the design of the main survey (see Section 4.6.4).

Contact details were obtained from the latest financial reports published on the *cninfo* website, the official information disclosure platform designated by the China Securities Regulatory Commission.

Prior to sending the pilot questionnaires, the researcher contacted the Office of the Secretary of the Board of Directors by phone to request permission. After obtaining oral consent, the questionnaires were sent to the official Secretary's Office email address. Each email included a covering letter that outlined the purpose of the study, emphasised the voluntary nature of participation, and confirmed that the confidentiality of both respondents and organisations would be strictly maintained.

During the pilot-testing period, a total of 41 questionnaires were sent to companies randomly selected from the six chosen industries. Eleven usable responses were received over a four-week period. The industry-wise distribution of pilot responses is presented in Table 4.2. The final response rate was 27%, which aligns favourably with pilot testing standards reported in prior SMA-related studies (e.g., Opute, Dedoussis and Tzokas, 2013; Opute and Madichie, 2016; Ojra, Opute and Alsaqer, 2023).

Table 4.2: The Pilot Testing Response Rate			
Industries	Send out	Response	Response Rate
<i>Manufacturing</i>	29	6	21%
<i>Construction</i>	2	0	0%
<i>Wholesale & Retail</i>	2	2	100%
<i>ITS&ITS</i>	4	1	25%
<i>Financial Service</i>	2	1	50%
<i>Real-Estate</i>	2	1	50%
<i>Total</i>	41	11	27%

The pilot study followed institutional ethical guidelines. Ethical approval for this study was obtained from the institutional research ethics committee prior to data collection. Before participation, oral consent was obtained from each organisation's Secretary to the Board Office. Participants were informed of the purpose of the pilot, the voluntary nature of participation, and the confidentiality of all responses. No personally identifiable information was collected. All data were stored securely and handled in accordance with university policy.

After the pilot testing was completed, the participants' responses, including written comments, were carefully reviewed. Based on the feedback received, several modifications were made to improve the clarity, relevance, and flow of the questionnaire. This involved rewording certain items and, where necessary, shortening overly complex sentences.

The pilot phase helped to confirm the questionnaire's overall suitability and provided valuable insight into how respondents might interpret and engage with the survey items. Following these refinements, the final version of the questionnaire was used in the main survey (see Section 4.6.4).

4.6.4 Actual Survey

Based on the four criteria specified in Section 4.6.2.1, the researcher conducted the actual survey on the six selected industries using the most recent list of companies officially published by SSE and SZSE (as of 7 May 2023). The total number of listed companies in these industries was 3,713.

To determine an appropriate sample size for this survey-based study, the researcher adopted the guidelines provided by Collis and Hussey (2021, p. 184). These guidelines draw upon the widely accepted rule of thumb proposed by Krejcie and Morgan (1970), who developed a statistical table based on population size, confidence level, and margin of error. For a population between 3,000 and 4,000, they recommend a minimum sample size of approximately 341 to 351 at a 95% confidence level and a 5% margin of error. This recommendation is derived from standard statistical principles for estimating proportions in cross-sectional studies and is widely accepted as a threshold to ensure adequate statistical power and generalisability (Krejcie and Morgan, 1970).

Although this guideline provides a baseline, the actual sample size also depends on feasibility and anticipated response rates in organisational settings. This benchmark was used as the target range for valid responses in the present study.

In this study, representativeness was further addressed through stratified random sampling based on industry type, in order to reduce sampling bias and ensure that the final dataset adequately reflected the diversity and structure of the target population.

While factors such as firm size and competitive intensity were not used as explicit

stratification criteria during the sampling stage due to data limitations, these variables were captured through the questionnaire and used in the later analysis to explore heterogeneity across firms. Nonetheless, as discussed in Section 4.6.4.1, the actual response distribution showed some variation across industries, which may introduce heterogeneity effects. This issue is acknowledged and addressed in the data analysis stage.

Based on the response rate and timeframe observed during the pilot test, the researcher distributed 750 questionnaires to 750 individual organisations. This decision was made to maximise the likelihood of obtaining a final sample size within the target range of 340–350 valid responses, as suggested by Collis and Hussey (2021, p. 184) and derived from Krejcie and Morgan's (1970) sample size recommendations. To enhance the generalisability of the findings, the sample was drawn from a heterogeneous population of listed companies across six industries, following the recommendation of Bell, Bryman and Harley (2019). Each questionnaire was directed to one senior financial executive per company (e.g., CFO or financial controller), ensuring a one-to-one match between organisational unit and respondent. This approach also avoided organisational clustering, which can complicate statistical analysis and reduce independence among observations.

In order to extract these 750 companies, the following criteria were prioritised:

- 1) To ensure a fair representation of the six industries explored in this study, a stratified random sampling was employed;
- 2) Confirming the valid contact information of the companies by telephone, and

3) After following points 1 and 2 above, numbers were assigned to the companies in each industry list.

While stratified random sampling was applied during the selection process, with proportions based on each industry's share in the full population, the final responses were not proportionally distributed across all industries. This was primarily due to the use of a gatekeeper (Corporate Information Consultancy department) and other response-enhancing strategies. Therefore, although stratification was implemented at the sampling stage, it was not fully realised in the actual respondent pool. The details are explained in Section 4.6.4.1.

Prior to extracting the company sample, the order of company numbers was randomly disturbed to create "an unbiased subset that represents the population" (Collis and Hussey, 2021, p. 185).

After calling the office phone numbers of the secretaries to the boards of directors, the researcher sent the revised questionnaire via email to the addresses provided. A total of 750 questionnaires were sent during the first phase. The questionnaires (see Appendix 2), mainly composed of Likert-scale items, were accompanied by personalised cover letters. These letters (see Appendix 1) outlined the topic, purpose, methodology of the research, the target respondent profile, and the importance of participation. They also included statements on confidentiality, estimated time commitment (based on the pilot test), and a promise to share an anonymised summary

report with participants who expressed interest in receiving the results and recommendations.

4.6.4.1 Improving the Response Rate

The actual survey commenced at the beginning of July in 2023. Four weeks after sending out the questionnaires, only 51 responses were received.

To increase the response rate, the researcher decided to diversify the channels through which the questionnaire was sent. Using the Survey app, a web-based version of the questionnaire was created, and a QR code was generated and sent to the companies (see Appendix 2c), allowing participants to open the link directly from their mobile phones and answer the questionnaire. This made it much easier for participants. After a new round of phone calls and emails reminding the companies, a total of 97 questionnaires were received by the end of August. The response rate for each industry is presented in Table 4.3.

Despite the increase in the number of responses from participants, a representative sample size of 341, as suggested by Krejcie and Morgan (1970, p. 608) for a population between 3,000 and 4,000, was not achieved.

Table 4.3 Response in Each Phase

Industries	<i>Stratified Sampling Number</i>	<i>4weeks after 1 call and 1mail</i>	<i>Response Use App (End of August)</i>	<i>Response Rate</i>
<i>Manufacturing</i>	571	33	59	10%
<i>Construction</i>	23	2	7	30%
<i>Wholesale & Retail</i>	39	6	11	28%
<i>ITS&ITS</i>	68	2	5	7%
<i>Financial Service</i>	26	5	9	35%
<i>Real-Estate</i>	23	3	6	26%
<i>Total</i>	750	51	97	13%

Driven by the generalisation target of this study, the researcher followed the response-enhancing strategies discussed in Opute (2009) and sought the assistance of the Corporate Information Consultancy department to improve participation rates. This department has established long-standing contacts with numerous listed companies and their senior personnel. Accordingly, the researcher requested the department to contact potential respondents and collect the completed questionnaires on behalf of the research project. This approach resulted in 361 responses being obtained. After preliminary screening, 346 questionnaires were confirmed as usable for analysis.

Combining the responses gathered directly by the researcher with those facilitated through the consultancy department, the final response rate reached 33.04%. Due to privacy protection protocols, the researcher was not granted direct access to respondent information from the consultancy department; hence, the final response rate was derived partially from the department's provided figures and partially from the researcher's own data collection.

To ensure the generalisability of the findings, the study carefully considered potential

non-response bias during the data collection process. For companies that did not respond, the researcher contacted staff in the Office of the Board Secretary to inquire about the reasons for non-participation. Responses indicated reasons such as lack of time, disinterest, or, in some cases, non-use of strategic management accounting techniques.

In addition, the study employed several strategies to mitigate the risk of non-response bias. These included the use of gatekeeper-mediated distribution to improve engagement, stratified random sampling to ensure representation across industries, and follow-up reminders. While it was not possible to compare respondent and non-respondent firms on all characteristics due to data limitations, the final sample broadly aligned with known population structures in terms of industry composition. These steps collectively helped reduce the likelihood of systematic non-response bias. With regard to missing data, a strict inclusion criterion was applied: only fully completed questionnaires were included in the final dataset. Any responses containing missing values on key variables were excluded. Consequently, the final sample of 346 responses used in the analysis consisted entirely of complete cases. This approach helped minimise item-level non-response bias and ensured consistency in statistical analysis.

Furthermore, in light of the heterogeneity of the six selected industries, the potential impact of sectoral imbalance on result interpretation was carefully considered. Although stratified sampling was employed at the sampling stage to enhance representativeness, actual responses were uneven across industries. To reflect this, the

industry affiliation of each respondent was recorded and descriptively analysed.

Due to space limitations within the current doctoral dissertation, more detailed industry-specific regression analyses were not conducted at this stage, as they may compromise the coherence and focus of the overall analysis. However, the researcher plans to address these aspects in future studies where such extended analysis can be presented more fully.

The potential influence of this sectoral imbalance is acknowledged as a limitation of the study and has been taken into account in the interpretation of findings.

4.6.5 Ethical Issues

Ethical standards were ensured in this study. To explain the research and gently seek their participation in the study, prior to sending emails, phone calls were made to the sampled companies. Formal consent was obtained from the companies before the questionnaires were sent to the participating companies. The goal of the research and instructions on how to reply were provided for the respondents along with the questionnaire. Their privacy and business confidentiality were respected in the entire process of the research. Before the survey was implemented, approval was obtained from the University Research Ethics Committee.

4.7 Research Instruments

Premised in the contingency realm, this research seeks to understand the influence of external and internal organisational factors on SMA and performance outcomes, using a questionnaire tool. With the aim of illuminating strategic management accounting

practice in China, a setting that is relatively under-explored, several contingency factors are included in the conceptual model for this study:

- a) Perceived environmental uncertainty (section 4.7.1);
- b) Business strategy (section 4.7.2);
- c) Technology (section 4.7.3)
- d) Organisational structure (section 4.7.4);
- e) Firm size (section 4.7.5); and
- f) SMA Outcome: Organisational/Business performance (section 4.7.6).

4.7.1 Perceived Environmental Uncertainty

In the discourse of organisational dynamics, the uncertainty of the environment has been studied the most widely in contingency works (Chenhall, 2007). Due to organisations' responses to their environment are interpreted by decision makers, and the decision and action would not be impacted by environmental characteristics that are not perceived by decision makers (Daft and Weick, 1984; Peters, Gudergan and Booth, 2019). Research (Tymon, Stout and Shaw, 1998) underlined that top managers' perception of their external environment should be involved in the measure of environmental uncertainty. Though measurement instruments vary slightly, this factor is often measured by the perception of managers in organisations in management accounting empirical studies. Some scholars have utilised one item to explore the extent of dynamic/uncertainty of the external environment of organisations (e.g., Gordon and Narayanan, 1984; Cescon, Costantini and Grassetti, 2018). However, a

multi-dimensional structure of perceived environmental uncertainty has been described in the literature, and two of these dimensions are considered in this study and are elaborated in sections 4.7.1.1 (competitive intensity) and 4.7.1.2 (market turbulence). To measure the two variables, the managers' perceptions were captured using a seven-point Likert scale, with 1 being "strongly disagree" and 7 being "strongly agree".

4.7.1.1 Competitive Intensity

The instrument for competitive intensity was derived based on Khandwalla's (1972) and Jaworski and Kohli's (1993) instruments. That instrument has been widely adopted in organisational contingency works (e.g. McManus, 2013; Ojra, 2014; Sahi et al, 2019; Lyu et al., 2022). Participants (top managers of organisations) were required to rate the level of the intensity of the competition that their organisations face based on the following items:

- a) Competition in our industry is cut-throat;
- b) Competition for market share in our industry is intense;
- c) Price competition in our industry is intense; and
- d) There are many "promotion wars" in our industry.

4.7.1.2 Market Turbulence

According to Jaworski and Kohli (1993), market turbulence should reflect the changing rate of customer composition and preference of an organisation. Their

measurement instrument has also been employed in SMA research (Ojra, 2014; Ojra, Opute and Alsaqer, 2023). Similar to competitive intensity, the measurement items for market turbulence (stated below) were explored using a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly disagree):

- a) Customers' product preferences change quite a bit over time in our industry;
- b) Our customers tend to look for new products all the time;
- c) We are witnessing demand for our products and services from customers who never bought them before;
- d) New customers tend to have product-related needs that are different from those of our existing customers; and
- e) We cater to many of the same customers that we used to in the past.

4.7.2 Business Strategy

As mentioned in the previous chapter, this research explores organisations' strategic orientation using Miles and Snow's characterisation (1978). The instrument that is used to measure business strategy was developed by Shortell and Zajac (1990), and has also been widely employed in SMA empirical studies (Cadez and Guilding, 2008; Cinquini and Tenucci, 2010; Ojra, 2014; Ojra, Opute and Alsaqer, 2023).

The instrument evaluates the general strategic orientation of an organisation on a continuum of 1 to 7, with two sets of statements that describe "defender" (Organisation I) and "prospector" (Organisation II) separately. The participants were required to read the description carefully and decide which statement fits the

characteristics of their organisation by using the number on the continuum (scale), with 1 being the defender and 7 being the prospector. Drawing from previous research on business strategy, the characteristics of defender and prospector were described based on the following aspects:

- a) Products and services;
- b) Competition;
- c) Respond to market signal;
- d) Emphasise on efficiency or cost control.

4.7.3 Technology

Chenhall (2007) conceptualised technology in organisational behaviour to include manufacturing technology, information technology and the mechanics that connect business operations. In the SMA theoretical domain, scholars have sought to understand the influence of technology on SMA usage in organisations. Following the pattern shown in prior literature (McChlery, Godfrey and Meechan, 2005; Dik, 2011; Ojra, Opute and Alsaqer, 2023), the technology instrument in this study included four items listed below, measured on a scale of Strongly Disagree (1) to Strongly Agree (7).

- a) Technology is a core element of the operating system of this organisation;
- b) Our production/services techniques are technology-based;
- c) The accounting information system is computer-based;
- d) We invest in software packages to aid our accounting and other operational systems.

4.7.4 Organisational Structure

As shown in Section 2.3.2.4, organisational structure includes formalisation and decentralisation, and the instruments are explained in sections 4.7.4.1 and 4.7.4.2.

4.7.4.1 Formalisation

To measure formalisation, this research utilised an instrument validated in previous research (Su, Chen and Wang, 2019; Kim and Shin, 2019; Ojra, Opute and Alsaqer, 2023). The questionnaire asked participants to rate the structural environment of their organisation on a seven-point Likert scale, with 1 indicating “strongly disagree” and 7 indicating “strongly agree”. The instrument consists of three items:

- a) Employees in my organisation are allowed to make their own decisions without checking with anybody else;
- b) My usual experience with our organisation involves doing things “by the rule book”;
- c) Many activities in our organisation are not covered by formal procedures.

4.7.4.2 Decentralisation

Decentralisation was measured in this study by utilizing a 3-item instrument used in prior literature (e.g., Hwang, 2005; Kim and Shin, 2019; Ojra, Opute and Alsaqer, 2023). The measurement instrument for decentralisation is shown below, and the participants were asked to show their perceptions on a 7-point Likert scale of 1 (strongly disagree) to 7 (strongly agree).

- a) Even small matters in our organisation must be referred to someone higher up for a final answer;
- b) Any major decisions that employees make must have the approval of top managers;
- c) Employees who want to make their own decisions would be quickly discouraged.

4.7.5 Firm Size

Contingency discourse on organisational dynamics points to the importance of company/firm size: Strategic management accounting perspectives (e.g., Cadez and Guilding, 2008; Ojra, 2014; Pasch, 2019; Cinquini and Tenucci, 2010), and marketing perspectives (e.g., Kahn, 2001; Opute, 2009). Company/Firm size has been shown to be positively related to the sophistication of management accounting systems in early contingency works (Gordon and Miller, 1976). Mainstream research on SMA also suggests the same association in different countries (Cadez and Guilding, 2008; Pasch, 2019). However, Cinquini and Tenucci's (2007) work found a negative association between several SMA techniques (competitor cost assessment and strategic pricing) and firm size. In their later work, the connection between SMA usage and firm size was found to be weak (Cinquini and Tenucci, 2010). It is possible that this mixed finding stems from the fact that there are other aspects of firm size that need to be taken into account, such as size variation within bigger organisations (Chenhall, 2007).

In measuring company/firm size, accounting perspectives have used total revenue of the company, while marketing perspectives have used the number of employees. Chenhall (2007) pointed out that different measurements are applicable to specific research contexts. The choice of which indicator to use as a measurement tool should therefore be determined by “the element of context and dimensions of MCS being studied” (Chenhall, 2007, p. 184). Following the previous accounting and SMA literature, such as Cadez and Guilding (2008), the measure used to represent the size of organisations in this research is the total revenue of the previous financial year. Instead of a seven-point Likert scale, the data was collected through an open-ended question that required information on the company’s total revenue for the last financial year.

4.7.6 Business Performance

The conventional performance system has been criticised for relying too much on financial data like cost information (Jusoh, Daing and Zainuddin, 2008). Consequently, Kaplan and Norton (2001) underline the need to consider intangible assets such as customer relationships (Kaplan and Norton, 2001). The recognition of diversified value creation has promoted the development of strategic performance measurement systems (SPMS) (Jusoh, Daing and Zainuddin, 2008). To translate organisational strategy into corresponding performance measures, these SPMS are required to combine financial and non-financial measures to provide a variety of perspectives to managers (Chenhall, 2005b).

Within the SMA discourse, scholars have emphasised the need for research that

considers both financial and non-financial performance measures (e.g., Cadez and Guilding, 2008; Alamri, 2019; Ojra, Opute and Alsaqer, 2023). Following the tradition in these SMA studies, (1) both performance aspects are explored in this study, and (2) this research utilised a modified version of the instrument developed by Hoque and James (2000) to measure business performance. In this study, the measurement items for both performance dimensions are shown below:

Financial measures:

- a) Return on investment
- b) Margin on sales
- c) Capacity utilisation
- d) Market share

Non-financial measures:

- a) Customer satisfaction
- b) Product/Service quality
- c) New product/service development
- d) Adaptability to a changing environment

The participants were requested to compare the business performance for the last three years with that of their competitors within the industry. They were asked to rank each of the eight dimensions above from 1 (below average) to 7 (above average) on a Likert scale.

Although the instrument is based on perceptual performance data, compared to secondary data, managers' perceptions of performance are still considered to be a reliable measurement that has extensive usage in empirical studies (Afonina, 2015).

Therefore, this study also follows the measurements of previous researchers (e.g. Ojra, 2014; Cadez and Guilding, 2008), and obtains the perceptions of finance executives via a questionnaire instead of checking the values in the financial statements.

4.7.7 Strategic Management Accounting Techniques

Strategic management accounting was first mentioned by Simmonds (1981) in the UK professional magazine, *Management Accounting* (p. 12), and ever since then, its importance has been reiterated in academic discourse (e.g., Cadez and Guilding, 2008; Hadid and Al-Sayed, 2021; Ojra, Opute and Alsaqer, 2023). A central emphasis in the SMA foundation is the need for management accounting focus that recognises the need for accounting for strategic positioning (e.g., Roslender and Hart, 2003; Matsuoka, 2020; Ojra, Opute and Alsolm, 2021; Langfield-Smith, 2008). In the SMA discourse, 16 management accounting techniques are identified with strategic features, and are organised into five core SMA categories (e.g., Cadez and Guilding, 2008; Ojra, 2014; Arunruangsirilert and Chonglertham, 2017; Amanollah Nejad Kalkhouran, Hossein Nezhad Nedaei and Abdul Rasid, 2017). In this study, only three of the SMA techniques (Strategic Decision-Making, Competitor Accounting and Customer Accounting) are considered:

Core strategic decision-making elements include:

- a) Strategic costing;
- b) Strategic pricing; and
- c) Brand valuation.

While Competitor Accounting includes the following:

- a) Competitor cost assessment;
- b) Competitor Position monitoring; and
- c) Competitor performance appraisal.

The third aspect - customer accounting includes the following:

- a) Customer profitability analysis;
- b) Lifetime customer profitability analysis; and
- c) Valuation customer as assets.

To measure the extent of SMA techniques usage, the respondents were expected to answer the question “To what extent does your organisation use the following techniques?”. The nine SMA techniques shown above were presented on a 7-point Likert scale with “1” being “not at all” and “7” being “to a great extent”. To enable participants to fully understand the SMA aspects, a glossary of the nine SMA techniques’ definitions was provided along with the questionnaire

Table 4.4 below presents the research instrument (including sources) for this study.

Table 4.4: The Research Instruments for this Study			
Variables		Instruments	Sources
Perceived Environmental Uncertainty (PEU)	Competitive Intensity	a) Competition in our industry is cut-throat; b) Competition for market share in our industry is intense; c) Price competition in our industry is intense; d) There are many “promotion wars” in our industry.	Khandwalla, 1972; Jaworski and Kohli, 1993; McManus, 2013; Ojra, 2014; Su, Chen and Wang, 2019; Sahi et al, 2019; Lyu et al., 2022; Ojra, Opute and Alsaqer, 2023
	Market Turbulence	a) Customers' product preferences change quite a bit over time in our industry; b) Our customers tend to look for new products all the time; c) We are witnessing demand for our products and services from customers who never bought them before; d) New customers tend to have product-related needs that are different from those of our existing customers;	Jaworski and Kohli, 1993; Hwang, 2005; Ojra, 2014; Su, Chen and Wang, 2019;

		e) We cater to many of the same customers that we used to in the past.	
Business Strategy	Prospector	a) Diversity of products and services b) Dynamic competition c) Responding to market needs d) Extensive environmental and market information	Shortell and Zajac, 1990; Cadez and Guilding, 2008; Cinquini and Tenucci, 2010; Hwang, 2005; Ojra, 2014; Ojra, Opute and Alsaqer, 2023
	Defender	a) Stable products and services b) Constant competition c) Ignore any changes that are not affected by the current business d) Continue to do the best work in your current field e) Focus on efficiency/cost control	
Organisational Structure	Formalisation	a) Employees in our organisation are allowed to make their own decisions without checking with anybody else; b) My usual experience with our organisation involves doing things "by the rule book"; c) Many activities in our organisation are not covered by formal procedures.	Hwang, 2005; Ojra, 2014; Su, Chen and Wang, 2019; Kim and Shin, 2019; Ojra, Opute and Alsaqer, 2023; Opute, Dedoussis and Tzokas, 2013; Opute and Madichie, 2016
	Decentralisation	a) Even small matters in our organisation must be referred to someone higher up for a final answer; b) Any major decisions that employees make must have the approval of top managers; c) Employees who want to make their own decisions would be quickly discouraged.	
Technology		a) Technology is a core element of the operating system of this organisation; b) Our production/services techniques are technology-based; c) The accounting information system is computer-based; d) We invest in software packages to aid our accounting and other operational systems.	Volberda et al., 2012; Ojra, 2014; Su, Chen and Wang, 2019
Firm Size		Total Revenue	Cadez and Guilding, 2008; Cinquini and Tenucci, 2010; Ojra, 2014; Hwang, 2005; Opeyemi, 2019
SMA Technique	Strategic Decision-making	a) Strategic costing (strategic cost management) b) Strategic pricing c) Brand valuation	Cadez and Guilding, 2008; Cinquini and Tenucci, 2010; Ojra, 2014; Abofazi Amanollah et al., 2017; Arunruangsirilert and Chonglertham, 2017; Taylor, 2021; Pasch, 2019; Oyewo, 2022; Ojra, Opute and Alsaqer, 2023
	Competitor Accounting	a) Competitor cost assessment b) Competitive position monitoring c) Competitor performance appraisal	
	Customer Accounting	a) Customer profitability analysis b) Lifetime customer profitability analysis c) Valuation of customers as assets	

Business Performance	Financial Performance	a) Return on investment b) Margin on sales c) Capacity utilisation d) Market share	Hoque and James, 2000; Jusoh, Daing and Zainuddin, 2008; Cadez and Guilding, 2008; Ojra, 2014; Alarmi, 2019; Oyewo, 2022; Pires and Alves, 2022
	Non-financial Performance	a) Customer satisfaction b) Product/Service quality c) New product/service development d) Adaptability to a changing environment	

4.8 Data Analysis Procedures

Before exploring the conceptualised hypotheses in the research, it was important to ensure that relevant steps were taken to ensure the reliability and validity of the measurement instruments, hence section 4.8.1 and subsections.

4.8.1 Reliability and Validity

Reliability and validity are essential to the judgment of research quality in natural science and quantitative research in social science. Positivists consider the two qualities as the ‘canons of scientific inquiry’ (Saunders, Lewis and Thornhill, 2019). Reliability refers to the replication and consistency of research. A study can be considered reliable when a previous research design is replicated and the same findings are achieved. Validity, on the other hand, is associated with 'appropriateness of the measures used, accuracy of the analysis of the results and generalisability of the findings' (Saunders, Lewis and Thornhill, 2019, p214).

4.8.1.1 Reliability

Reliability can be divided into internal reliability and external reliability. According to

Saunders, Lewis and Thornhill (2019), internal reliability is associated with consistency in the entire research process, and external reliability considers whether consistent findings can be generated when previous data collection techniques and analytic procedures are conducted in a different circumstance. Threats to reliability could come from both participants' and researchers' errors and bias. Hence, to eliminate errors and bias from participants, the researcher sent the questionnaire to particular personnel at a high managerial level, ideally, the chief accountant, chief financial officer, or chief controller. In addition, the study promised them that their personal information and business confidentiality would be protected to eliminate bias in the survey as much as possible.

One core concern regarding the quality of social scientific research relates to whether the measures of variables are accurate and stable (Easterby-Smith et al., 2021). In most cases, it can be "ascertained through pre-testing instruments before the actual research is carried out" (Easterby-Smith et al., 2021, p. 120). This highlights the significance of a reliability test, as it evaluates the instruments' ability to provide consistent results. To ensure the reliability, this study used the Cronbach's alpha values to estimate the instruments. Also, mean values and standard deviation estimates were checked.

4.8.1.2 Validity

Validity relates to the integrity of the conclusions drawn from a study (Bell, Bryman and Harley, 2022; 2019). In assessing the quality of research, validity represents the

truthfulness, accuracy and credibility of the research results. It is the extent to which measurement items accurately describe what they are supposed to describe (Easterby-Smith et al. 2021).

Scholars have different understandings and emphases of what constitutes the validity of a study. Bell, Bryman and Harley (2022; 2019) suggest the main categories of validity that should be considered in research: measurement/construct validity, internal validity, external validity, and ecological validity. Collis and Hussey (2021) emphasise that the two most commonly assessed ones in business research are face validity and construct validity.

4.8.1.2.1 Measurement/Construct validity

According to Bell, Bryman and Harley (2022; 2019), measurement validity and construct validity are synonyms and are used interchangeably. It refers to the extent to which “a measure captures the construct which it is intended to capture” (Bell, Bryman and Harley 2022, p. 48; 2019, p. 46). However, connecting it with internal validity, Saunders, Lewis and Thornhill (2019, p. 517) believe that measurement validity includes face validity, construct validity, content validity and predictive validity (2019, p. 214).

According to Collis and Hussey (2021), face validity is the most common one when assessing the tests or measurements used by researchers actually measure or represent what they are supposed to measure or represent. Content validity, in a questionnaire-based survey design, relates to the issues of whether the questions within cover the investigating objectives adequately (Saunders, Lewis and Thornhill,

2019). Finally, predictive validity concerns the assessment of how accurately the measures predict outcomes.

4.8.1.2.2 Internal validity

Internal validity is more often considered in a positivist experimental design (Easterby-Smith et al. 2021; Saunders, Lewis and Thornhill, 2019). In a questionnaire-based survey, criterion validity is more often mentioned to refer to the accuracy of measuring variables and capturing the relationship between variables (Saunders, Lewis and Thornhill, 2019). According to Bell, Bryman and Harley (2022; 2019), this is the aspect that mostly relates to the point of causality. It also involves understanding whether a conclusion containing a causal relationship between two or more variables is valid.

4.8.1.2.3 External Validity

This refers to whether the research findings can be generalised to other situations or populations.

In demonstrating external validity, Easterby-Smith et al. (2021, p. 110) emphasise that one of the threats is from history and setting:

“...at the present time, with the emergence of new economies such as China and India as global economic forces, the theories about the behaviour of financial markets that were developed during the era of US dominance are now having to be rewritten.”

(Easterby-Smith et al. 2021, p. 110)

From this perspective, the investigation of SMA usage in the Chinese context is particularly valuable in terms of demonstrating the generalisability of the

contingency-based strategic management accounting framework.

4.8.1.2.4 Establishing validity

In this section, the researcher pinpoints methodological steps taken in this research to ensure validity.

Establishing research validity is an endeavour that occurs throughout the entire research process (from research design to output and interpretation of findings) (Hassan, 2024). The steps used to ensure the validity of the study have been recommended by many researchers, like Hassan (2024) and Middleton (2022). According to Hassan (2024), validity needs to be considered from the following aspects:

- 1) *Research question and objectives defining;*
- 2) *Research designing;*
- 3) *Measuring instruments;*
- 4) *Sample representativeness;*
- 5) *Potential confounding factors;*
- 6) *Measurement and response bias;*
- 7) *Proper statistical analysis; and*
- 8) *External validity.*

Table 4.5: Methodological steps taken to ensure research validity

Steps	Establishing validity	Means this research taken	
Questions and objectives of the research	Establish precise research questions and well-defined study objectives first.	Clear and precise research objectives and questions were developed based on extensive literature; gaps and research problems that relate to Chinese particular business environment were identified	Section 1.4 and 1.5
Research design	The research plan should be chosen based on the questions and goals established for the study.	A questionnaire-based survey used to investigate the top managers' perceptions that relate to the adoption of SMA techniques and its performance implication in the Chinese listed organisations	Section 4.2, 4.5 and 4.6
Accurate and legitimate measuring tools.	Ensure the measurement tools utilized were legitimate and reliable when measuring variables or constructs	Employed well-established and validated methodologies.	Section 4.6.2 and 4.7
Make sure the sample is representative	Ensure the sample selected for a study is representative of the population to which they intend to generalize findings	Relevant demographics variables (gender, position) has considered when choosing participants.	Section 4.6.2.1
Identify possible confounding variables.	Researchers should determine potential biases or confounding factors that could influence the findings.	Variables are selected based on extensive literature reviewed and the particular business environment in China	Section 1.2.2, 2.3, 2.4 and 2.5
Reduce the biases in measurement and response.	Recognise that response and measurement biases might arise when gathering data.	To reduce these biases, clear instructions was specified in the questionnaire; standardised processes was followed in data collection process.	Section 4.6.2, 4.6.3, 4.6.4 and 4.7
Perform relevant statistical analysis	Ensure that the statistical analyses employed were appropriate for the specific data type and research design chosen.	Descriptive statistics, correlation, factor and regression analysis were performed.	Section 4.8.2.1 to 4.8.2.3, and Chapter 5
Consider external validity.	Consider the generalizability of findings; achieving high external validity might not always be practical.	The scope and limitations of the study, a clear description of the sample and study setting has be provided.	Section 4.6.2.1.1 and 4.6.2.1.1

The research questions and objectives that guided this study were specified in sections 1.4 and 1.5. In the research design process, this study correspondingly formed a questionnaire-based survey to investigate the top managers' perceptions that relate to the adoption of SMA techniques and their performance implications in the Chinese listed organisations (Sections 4.2, 4.5 and 4.6). The questionnaire was designed based on well-established and tested instruments (Section 4.6.2 and 4.7). To target the appropriate population, a random cum stratified sampling approach was used to identify listed Chinese organisations from industries with the potential to fully utilise SMA techniques (Section 4.6.2.1), and the demographic factors are considered in the questionnaire (Appendix 2) to ensure appropriate generalisability. In addition to descriptive statistics, correlation and factor analysis were performed (Section 4.8.2.1

to 4.8.2.3, and 5.4). Regression analysis was conducted to explore relationships between variables (Section 4.8.2.4 and 6.2). While internal validity focuses on the internal consistency of the study, the generalisability to other settings and populations is discussed in research findings (Section 6.4).

4.8.2 Data Analysis

Before presenting statistical results that support the reliability and validity of this study, the analytical process to ensure appropriate data analysis needs to be interpreted to explore and understand the conceptualised relationships in the study.

After completing the data collection, the information within the questionnaires needs to be coded, categorised and numbered. Since stratified random sampling was applied in this research, the case of each industry was weighted to obtain an accurate overall response rate before analysis (Saunders, Lewis and Thornhill, 2019). The resultant data were then input into SPSS (Version 28) and screened for further analysis. In this step, the type of distribution, the reliability and validity of the scale were examined.

4.8.2.1 Descriptive Statistics

“Descriptive statistics enable you to describe (and compare) a variable’s data values numerically.”

(Saunders, Lewis and Thornhill, 2019, p. 597)

To reflect the sample characteristics of respondents and their organisations, descriptive statistics (means etc.) were calculated for all variables used in the research

(Field, 2018). These descriptive statistics were estimated to understand the distribution of the sample and obtain deeper insight into the variables. More particularly, descriptive statistics like percentage, frequency and means can provide the general profile of SMA adoption status and top managers' perceptions of contingency factors of SMA practice and performance implications.

4.8.2.2 Correlation Analysis

Before conducting factor analysis, it is important to examine the statistics to confirm correlations. Hence, by conducting a correlation analysis, this research confirms relationships between variables and ensures the construct validity (Ojra, 2014).

According to Rummel (1988, p. 133), the correlation matrix is the foundation of all factor analysis models. Applied scientists often begin their data exploration with this matrix, in order to transition raw data to a more meaningful factor loading matrix (Rummel, 1988). Correlation, in statistics, reveals the connection between two quantitative variables, and it “measures the direction and strength of any linear relationship between them” (Collis and Hussey, 2021, p. 251). Despite that many statistics employed in social sciences are linear models based, Field (2017; 2018) emphasises that cause-and-effect relationship cannot be established just by conducting correlation analysis, due to the reason that “variables are measured simultaneously” (Field, 2018, p. 296).

To analyse the parametric data in this research, a Pearson's correlation coefficient was used to conduct the analysis (Collis and Hussey, 2021), which is a measure of the

strength of the relationship between two variables. “It can vary from -1 (a perfect negative relationship) through 0 (no relationship) to +1 (a perfect positive relationship)” (Field, 2018, p. 178). According to Saunders, Lewis and Thornhill (2019), perfect correlations (+1 or -1) are extremely unusual in business research; therefore, the closer the value is to ± 1 , the stronger the relationship, whereas the closer it is to 0, the weaker the relationship.

4.8.2.3 Factor Analysis

As a useful data reduction technique (Alchemer, 2018), factor analysis is a set of methods used to analyse interrelationships (Opote, 2009), which allows researchers to detect signals that are difficult to measure directly (Field, 2018; Webster, 2024). When dealing with a large number of interrelated variables, factor analysis is a powerful tool for understanding the structure of variable sets, constructing questionnaires and measuring underlying factors (Field, 2018, p. 991), simplifying complex data to a manageable size and revealing hidden patterns (Webster, 2024). Its output can be used as a solid stepping stone for further regression analysis (Collis and Hussey, 2021).

In techniques that identify clusters of variables, factor analysis is often mentioned alongside principal component analysis (PCA) and comparing similarities and differences (Field, 2018). Both of them are used to simplify the variable set into smaller sizes and manageable dimensions.

Being a derived dimension or variable, a “component” exhibits linear independence among its other derived variables; on the other hand, a “factor” or a “latent” is a

shared or underlying element that is associated with other variables (Seth, 2021). The purpose and objectives of using the two tools can also be different. PCA can be used to decompose data sets, whereas factor analysis is used to detect signals of a variable set in the whole data so that the “fundamental cause” can be uncovered (Seth, 2021). PCA attempts to identify the composite dimensions of observed predictors, and it interprets the cumulative variance of a predictor (or variable) as much as possible. Factor analysis explicitly assumes the presence of latent variables in the given data, and it explains the covariance or the correlations between variables.

In light of the above distinctions, PCA was adopted in this study as the extraction method within the factor analysis procedure. This decision aligns with the aim of reducing a large number of perceptual items into composite component scores for subsequent regression analysis. The purpose was not to explore latent theoretical constructs, but rather to derive statistically valid and interpretable dimensions that can be directly used in quantitative modelling. This approach is consistent with prior SMA research (e.g. Guilding and McManus, 2002; Guilding, Cravens and Tayles, 2000), where PCA has been used to summarise perceptual data and construct empirically derived variables for hypothesis testing.

4.8.2.4 Regression Analysis

To address the second and third research questions, the relationships among contingency factors, the SMA practice and performance implications need to be measured, just as they are demonstrated in Figure 3.1. A regression analysis is used to

understand the association between these dependent and independent variables (Field, 2018; Easterby-Smith et al., 2021). This is because a regression model has two interrelated objectives: (a) it enables researchers to analyse the relationship between the independent variable (cause) and the dependent variable (effect); and (b) it facilitates prediction and forecasting (Easterby-Smith et al. 2021, p. 371).

Based on the conceptualised framework for this study (see Figure 3.1), two levels of regression analysis were conducted. The first examined the influence of contingency factors on SMA usage, while the second assessed the effect of SMA usage on organisational performance. Multiple linear regression was employed in the first analysis to estimate the effects of the predictor variables (Easterby-Smith et al. 2021, p. 374).

This analytical approach is consistent with a well-established tradition in strategic management accounting research, where multiple regression has been widely used to examine relationships between perceptual variables and organisational outcomes (e.g. Guilding, 1999; Guilding and McManus, 2002). The use of perceptual data and composite scores derived from factor analysis enables the model to capture respondents' evaluations of contextual and behavioural factors in a quantifiable form. Multiple linear regression is particularly suitable in this case due to its capacity to estimate the relative contribution of each independent variable while controlling for others. In order to ensure the robustness of the findings, relevant diagnostic tests—such as multicollinearity (VIF), normality of residuals, and linearity—were also conducted prior to model interpretation.

While more recent quantitative studies in management and accounting research have adopted advanced modelling techniques such as structural equation modelling (SEM) or partial least squares (PLS), this study employed multiple regression analysis for both methodological and contextual reasons. As one of the first empirical investigations applying the contingency-based SMA framework in the Chinese context, this study prioritised methodological interpretability, comparability, and ease of replication with seminal SMA research (e.g. Guilding and McManus, 2002). The adoption of a contingency-based regression approach enables this study to build directly on established empirical foundations, while providing a solid basis for future research that may incorporate more sophisticated modelling techniques.

4.9 Conclusion

This chapter focused on explaining the methodological approach for implementing this study towards addressing the three research questions specified for this study. In doing that, the choice of the philosophical position, i.e. the fit of positivism to this study, was first explained. This was followed by defining the appropriate methodological strategy, how the researcher chose to collect and analyse data using a quantitative approach to ensure consistency throughout the design of the research process and the selection of the research instrument.

This chapter also details out the specific process of using an online questionnaire to collect SMA-related perceptions and opinions from financial executives of listed companies. This includes the selection of the population, sample, and industries for

the study, as well as the pilot test that was conducted to improve the research validity, and finally, the actual survey. Prior to the details that would be elaborated in Chapter 5, this chapter also explained the steps taken towards ensuring the reliability and validity of the study. Finally, explanations were provided on the analytical steps that followed data collection towards the data analysis conducted in Chapter Five.

Chapter 5 Data Analysis

5.1 Introduction

In Chapter 4, the methodological approach for this study was explained, detailing out the context of the current research, sampling approach for selecting participants, as well as explaining (including the pilot-testing process) the survey instrument for this study. The focus of this current chapter (5) is to explain the analytical steps taken to process quantitative data towards examining the relationships between the dependent and independent variables considered in this study (see sections 6.2 and 6.4) and exploring the research questions for this study.

As stated in section 4.6.4, the questionnaire was conducted online via two ways: by sending the questionnaire file via email (see Appendix 3) and by sending the QR code of a survey app (see Appendix 2). The final response was received from a total of 361 companies. After preliminary data analysis, 15 questionnaires were considered unusable due to missing data. Thus, the data for this study is based on 346 questionnaires, which amounts to a 33.04% response rate (RR).

Prior to the removal of these cases, the pattern of missingness was examined to assess whether missing data were associated with any specific organisational characteristics. No systematic trends were identified across key variables such as firm size, industry, or region, suggesting that the missing data were likely to be Missing Completely at Random (MCAR). This reduces the risk of bias from non-random exclusions and supports the robustness of the subsequent regression analysis.

The SPSS software was used to analyse the data from the 346 responses.

Methodological literature (e.g., Field, 2018; 2005) suggests two ways of analysing quantitative data: parametric and non-parametric. Next, the process taken in this study to confirm that the data is suitable for parametric analysis is explained (section 5.2). Following that, the analytical results in this study are organised in the following order:

1. The demographic results for this study are presented (section 5.3);
2. The descriptive results are presented in section 5.4;
3. The reliability test results are presented in section 5.5;
4. The validity results are presented in section 5.6; and
5. The multivariate statistics are presented in section 5.7, showing the statistical results for the explored hypotheses in this study.

5.2. Justification For Parametric Analysis in this Study

Before explaining the analytical processes followed in achieving data reliability and validity and subsequently examining the conceptualised hypotheses, this section (5.2) justifies the use of parametric analysis in this study. As shown in methodological literature (e.g., Lubke and Muthen, 2004; Field, 2009), there are several ways to justify the use of a parametric test on ordinal data, and one of these options is to examine the normal distribution evidence for all factors considered in the conceptual framework.

Thus, in this study, data were examined to understand the extent of normal (or approximate to normal) distribution of data (e.g. Field, 2005; Field, 2009). In doing

that, the frequency distribution and histogram plots for all the variables (see Appendices 5a to 5j) (Field, 2009; Diamantopoulos and Schlegelmilch, 1997). The histogram plots evidence enhances the frequency distribution evidence: the majority of the scores are within the bell-shaped curve (lie around the centre of the distribution). Based on the evidence that the largest bars on the histogram are all around the central value, a conclusion of close to normal distribution is legitimate (Field, 2005; Field, 2009).

Overall, the use of parametric analysis in this study was justified for several reasons:

1. First, as mentioned earlier, the majority of the scores lie within the bell-shaped curve (e.g. Field, 2005; Field, 2009). In other words, approximate to a normal distribution of data was evidenced.
2. On the point of the conclusions from this study, the use of parametric analysis in this study is also justified on methodological logic (e.g. Norman, 2010; Murray, 2013), and the researcher is convinced that the parametric analysis-based conclusions have not been impaired. As noted by these scholars, the results for parametric and non-parametric tests do not vary significantly from each other.
3. A core assumption in parametric tests relates to the fact that data from the participants in a study are independent (Field, 2009). The participating firms in this study assured the researcher that the behaviour of the survey respondents did not influence each other. Thus, in responding to the questionnaires, the participants acted independently.

4. Lastly, based on theoretical logic, the use of parametric analysis in this study is appropriate because several studies on SMA have utilised that analytical approach (e.g. Ojra et al, 2023; McManus, 2013; Ojra, 2014).

5.3 Demographics of Respondents in this Study

As shown earlier, the sample for this study is based on 346 responses. SPSS software was used to examine the data, and the demographic results are summarised in Tables 5.1 and 5.2 for the participating industrial sectors and survey participants respectively.

Table 5.1 Demographics of Participating Organisations						
Demographic Variables (Average values)	Participating Industries					
	<i>Manufacturing</i>	<i>ITS&ITS*</i>	<i>Financial Services</i>	<i>Construction</i>	<i>Real Estate</i>	<i>W&R*</i>
Total Assets (in CNY million)	23,492.33	22,314.77	54,669.44	64,693.55	45,021.43	19,108.33
Total Revenue (in CNY million)	20,878.22	15,711.36	43,536.11	50,390.32	21,359.52	7,066.67
Number of Employee	16,707	10,718	40,911	41,292	14,502	7,563
Business Life (years)	19.68	15.57	18.58	20.97	17.90	20.33
*ITS&ITS: information transmission, software and information technology services industry						
*W&R: wholesale and retail trade industry						

Table 5.1 shows the demographic data of organisations in the different industries participating in the study, including averages of total assets and total revenue for the previous financial year (see Appendix 2a), number of employees and years in business. As indicated in the last chapter, the participating industries cover manufacturing, information transmission and information technology services (ITS&ITS), financial services, construction, real estate, and wholesale and retail trade (W&R), and the justification of the industry selection is in section 4.6.2.1.2.

Judging from the overall figures, the construction industry excels in all indicators, with average total assets of up to RMB 64,693.55 million and total revenue of RMB 50,390.32 million, demonstrating its large organisational scale and economic strength. The financial sector also performed well, with its average total assets of RMB 54,669.44 million and total revenue of RMB 43,536.11 million, reflecting the capital-intensive nature of the sector and its high level of economic activity. In contrast, the wholesale and retail sector had average total assets of RMB 19,108.33 million, total revenues of RMB 7,066.67 million, and 7,563 employees, suggesting that these enterprises are relatively small.

From the point of number of employees, a similar trend is found for all considered sectors, with the wholesale and retail trade (7562.5) and construction (41,291.94) sectors having the lowest and highest numbers. This trend generally aligns with the *2023 Market Capitalisation Rankings of Industries in China's A-Share Market* (chyxx, 2024). The frequency statistics for business life however show a different pattern. The construction industry has the highest average operating life of 20.97 years, while the ITS & ITS industry has the lowest average operating life of 15.57 years. This shorter operating life may reflect the rapid growth and continuous innovation in the ITS & ITS industry, and thus, these firms are usually younger. The form further suggests that the focus of the industry's development has been changing over the past several decades (Chen et al. 2019). Wholesale and retail trade has a close operating life of 20.33 years, indicating the stability and maturity of this industry in the marketplace.

Table 5.2 Demographics of Respondents in the participating Organisations							
Demographic Variables		Participating Industries					
		Manufacturing	ITS&ITS*	Financial Services	Construction	Real Estate	W&R*
Average Experience in Present Position (years)		7.19	6.34	6.86	6.00	6.76	4.92
Average years serve the organisation		8.59	8.41	9.14	6.77	7.57	6.33
Average Field Experience (years)		10.65	9.55	9.14	8.65	9.38	7.42
Education	High School Level (%)	1.50%	2.30%	2.80%	3.20%	0.00%	0.00%
	Bachelor's degree (%)	64.90%	59.10%	52.80%	67.70%	61.90%	58.30%
	Master's degree (%)	31.20%	29.50%	41.70%	29.00%	28.60%	33.30%
	Phd (%)	2.00%	9.10%	2.80%	0.00%	4.80%	8.30%
	Other* (%)	0.50%	0.00%	0.00%	0.00%	4.80%	0.00%
Gender	Male (%)	45.5%	47.7%	47.2%	41.9%	57.1%	41.7%
	Female (%)	54.5%	52.3%	52.8%	58.1%	42.9%	58.3%
*ITS&ITS: information transmission, software and information technology services industry							
*W&R: wholesale and retail trade industry							
*Other: Other qualification eg. Certified Public Accountant							

Table 5.2 details key information about the demographics of the respondents from each of the industries that participated in the study, including average work experience in current position, years of service in the organisation, fieldwork experience, educational background, and gender distribution.

The first three items in the table are designed to gather information on the experience, stability and professionalism of corporate finance executives (see Appendix 2a for details), which are important factors in assessing their ability to process complex information and make strategic decisions. These data are particularly important in individual case analyses to provide a more comprehensive assessment of the professional qualities of finance executives. The table presents average values for the industry. For example, finance executives in the manufacturing sector have the

longest average length of time in their current role at 7.19 years, while those in the wholesale and retail sector have the shortest average length of time at 4.92 years. However, these industry averages are for reference only, and it is less meaningful to compare these averages across industries; they are more appropriate for individual case analyses to assess the specific experience of finance executives.

On the demographic of educational level, 64.90% (manufacturing), 59.10% (ITS and ITS), 52.80% (financial services), 67.70% (construction), 61.90% (real estate) and 58.30% (wholesale and retail trade) of participants hold at least a Bachelor's degree, which reflects good education level across the various sectors covered in this research. Further statistics on education show that at least 29% of participants across all explored sectors (with the highest of 41.70% for financial services) had master's degree qualifications. Except for the construction section, participants across the explored sectors hold PhD qualifications (at 9.10% in ITS & ITS, 4.80% in real estate, 8.30% in wholesale and retail trade, 2.80% in financial services, and 2.00% in manufacturing). Overall, the evidence of higher educational attainment, especially considering a higher proportion of master's degree and doctoral degree holders, is not only an indication of a greater demand for highly educated people in these industries, but also reflects the high demand for advanced professional Know-How in these industries.

On the point of gender, a balanced and close distribution between male and female is evident across all sectors considered in this study except for the real estate sector where the male-female proportion not only contrasts the trend shown in other sectors

(more female to male) but also shows another gender feature.

5.4 The Descriptive Results

Before carrying out core reliability and validity analyses (see sections 5.5 and 5.6 respectively), the descriptive analysis for all items (variables) for measuring the conceptualised factors in this study was undertaken. Estimating the descriptive statistics is necessary to enable the researcher to draw inferences about populations and estimate the parameters of the populations (Field, 2005; 2018). The frequency distribution and the histogram plots for all variables of every construct were checked. Doing descriptive analysis was necessary to enable the researcher to gain a fair understanding of how the measurement items were scored along the Likert scale(s) used in this study. Two levels of variables were explored in this study. The two dependent variables in this study are SMA-Total and organisational performance (financial and non-financial), while the independent variables are the contingency factors (formalisation, decentralisation, technology, firm size, competition intensity, market turbulence, and firm strategy). With regard to organisational performance as the dependent variable, SMA-Total is also an independent variable.

For the dependent variable (factors), the descriptive results are summarised in Appendices 4 and 5 for the SMA dimensions (see Appendix sections 5a, 5b and 5c for Strategic Decision-making SMA, Competitor Accounting SMA, and Customer Accounting SMA respectively. In the case of organisational performance, the descriptive results are summarised in Appendix 5 (see section 5i for financial

performance, and 5j for non-financial performance). Overall, the evidence in those sections indicates that all measurement items for the dependent factors explored in this study have been scored across all the points in the Likert scale.

A similar pattern was also found for the independent variables. The results for the independent variables are also summarised in Appendix 5 (see 5d for Formalisation, 5e for Decentralisation, 5f for Technology, 5g for Competition Intensity, and 5h for Market Turbulence). All constructs were measured on a 7-point Likert scale, except for firm size and business strategy. These two variables were categorised by the researcher: firm size was defined according to the total revenue, and business strategy was measured on a continuum from 1 (defender) to 7 (prospector). Overall, descriptive results are satisfactory and lend support to the satisfactory reliability and validity results reported in sections 5.5 and 5.6.

5.5. Reliability Results in this Study

As critical processes for ensuring credibility in research, data reliability and validity are ensured (Field, 2018). In section 5.6, factor analysis is used to validate the survey instrument for this study (questionnaire), while the purpose of this section (5.5) is to present the statistical results for confirming the reliability of the measurement scale (Field, 2005). According to Field (2005, 2018), reliability implies that a scale consistently reflects the measured construct, in other words, it confirms the internal consistency of the construct. Three statistical estimates were checked towards confirming internal consistency in this study: for each factor, Cronbach's Alpha was

calculated, while for each measurement item in each construct (factor), mean values and standard deviation estimates were calculated (Field, 2005; Streiner, 2003). Satisfactory reliability results were achieved in this for all factors. At the .70 benchmark (Nunnally and Bernstein, 1994; Streiner, 2003; Field, 2018), the Cronbach's Alpha estimates for all factors are satisfactory. The reliability estimates for the dependent variables are presented in section 5.5.1, while the reliability estimates for the independent variables are presented in section 5.5.2

5.5.1 Reliability Results for the Dependent Variables

Two levels of dependent variables were explored in this study: strategic management accounting (SMA-Total) and organisational performance (financial and non-financial).

In this study, Strategic Management Accounting (SMA-Total) is conceptualised as a multi-dimensional construct comprising three key components: Strategic Decision-Making, Competitor Accounting, and Customer Accounting. Each sub-dimension was measured using three items adapted from established SMA literature (e.g., Cadez and Guilding, 2008; Ojra, 2014), resulting in a total of nine items.

While subsequent hypothesis testing and regression analysis (see Section 6.2) were conducted using the composite SMA-Total score (calculated as the average of the nine items), separate reliability assessments were performed for each sub-dimension to ensure measurement robustness. The Cronbach's alpha values for these sub-constructs

ranged from 0.71 to 0.77 (see Tables 5.3 to 5.5), indicating acceptable internal consistency (Nunnally and Bernstein, 1994; Field, 2018).

The descriptive results further show that the mean values for all measurement items exceeded the midpoint on a seven-point Likert scale, suggesting a relatively high level of SMA technique adoption across sampled organisations.

Table 5.3: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for SMA-Strategic Decision-Making Technique (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Strategic costing (Strategic cost management) (SMA-StratDecMaking1)	5.67	1.067	.71
Strategic pricing (SMA-StratDecMaking2)	5.65	1.045	
Brand valuation (SMA-StratDecMaking3)	5.67	1.039	
Grand Mean: 5.664			

Table 5.4: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for SMA-Competitor Accounting Technique (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Competitor cost assessment (SMA-CompAcctg1)	5.52	1.145	.74
Competitive position monitoring (SMA-CompAcctg2)	5.43	1.207	
Competitor performance assessment (SMA-CompAcctg3)	5.51	1.165	
Grand Mean: 5.486			

Table 5.5: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for SMA-Customer Accounting Technique (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Customer profitability analysis (SMA-CustAcctg1)	5.61	1.219	.77
Lifetime customer profitability analysis (SMA-CustAcctg2)	5.46	1.299	
Valuation customer as assets (SMA-CustAcctg3)	5.48	1.233	
Grand Mean: 5.516			

Most importantly, the composite SMA-Total construct, used as the key independent variable in the main analysis, also demonstrated strong internal consistency, with a Cronbach's alpha of 0.813 (see Figure 5.1). This provides empirical support for the reliability of the aggregated SMA measure used in hypothesis testing.

Taken together, these results confirm the appropriateness of both the disaggregated and aggregated scale structures, and offer assurance regarding the internal consistency of the SMA measures employed in this study.

Case Processing Summary			
		N	%
Cases	Valid	346	100.0
	Excluded ^a	0	.0
	Total	346	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.813	9

Figure 5.1 Reliability output for SMA-Total (9 items)

For the Organisational Performance (financial and non-financial) variables/factors, satisfactory reliability estimates were also achieved. As shown in the summarised results in Tables 5.6 (financial performance) and 5.7 (non-financial performance), all mean values were about point 5 on the Likert scale, while high Cronbach's Alphas were achieved at the .7 benchmark.

Table 5.6: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Business Performance (Financial) (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Return on Investment (OrgPerf-Fin1)	5.54	1.016	.79
Sales margin (OrgPerf-Fin2)	5.50	1.061	
Capacity utilisation (OrgPerf-Fin3)	5.46	1.167	
Market share (OrgPerf-Fin4)	5.61	.991	
Grand Mean: 5.527			

Table 5.7: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Business Performance (Non-Financial) (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Customer Satisfaction (OrgPerf-Non-Fin1)	5.96	.959	.78
Quality of products/services (OrgPerf-Non-Fin2)	5.99	.940	
Development of new products/services (OrgPerf-Non-Fin3)	5.65	1.045	
Adaptability to changing environments (OrgPerf-Non-Fin4)	5.69	1.076	

5.5.2 Reliability Results for the Independent Variables

Reliability estimates were also calculated for the independent variables. Based on the contingency framework for this study, several independent variables were considered in this study: formalisation, decentralisation, technology, competition intensity, market turbulence, business strategy and firm size. The reliability estimates (mean values, standard deviation and Cronbach's Alpha for formalisation, decentralisation, technology, competition intensity and market turbulence are displayed in Tables 5.8 to 5.12 respectively. Unlike the five variables, the constructs business strategy and firm size were not measured on a Likert scale described on a strongly disagree to strongly agree continuum, hence reliability estimates are not summarised in the current section.

Table 5.8: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Formalisation (n=346)

Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
In our organisation, employees are allowed to make their own decisions without having to ask anyone else (OrgStr – Form1)	4.66	1.464	.87
My usual experience in our organisation is "playing by the rules" (OrgStr – Form2)	4.86	1.467	
Many of the activities in our organisation have no formal procedures (OrgStr – Form3) *	4.19	1.664	
* The respondents' scores on the Likert scale were reversed in the SPSS.			
Grand Mean: 4.572			

Table 5.9: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Decentralisation (n=346) *

Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
In our organisation, even minor matters must be referred to someone higher up for a final answer. (OrgStr – DCent1)	4.64	1.593	.76
Any major decisions made by staff must be approved by senior management (OrgStr – DCent2)	5.58	1.419	
Employees who want to make their own decisions are quickly discouraged (OrgStr – DCent3)	4.35	1.552	
Note: * = Responses for all three items in the questionnaire were reversed in the SPSS			
Grand Mean: 4.855			

Table 5.10: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Technology (n=346)

Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Technology is a core element of the organisation's operating systems (Tech1)	5.73	1.008	.79
Our production/service techniques are technology-based (Tech2)	5.77	.955	
The accounting information system in our organisation is computer-based (Tech3)	5.84	.978	
We invest in software packages to assist our accounting and other operational systems (Tech4)	5.71	.955	
Grand Mean: 5.764			

Table 5.11: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Competition Intensity (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
Competition in our industry is cut-throat (CompInt1)	5.81	1.053	.80
Competition for market share in our industry is intense (CompInt2)	5.94	.995	
Price competition in our industry is intense (CompInt3)	5.82	.993	
There are many "promotional wars" in our industry (CompInt4)	5.43	1.086	
Grand Mean: 5.752			

Table 5.12: SPSS OUTPUT: Reliability Statistics (Cronbach's Alpha, Mean Values and Standard Deviation) for Market Turbulence (n=346)			
Measurement Items	Mean Value	Std. Dev.	Cronb. Alpha
In our industry, customers' product preferences have changed considerably over time (MktTurb1)	5.55	1.114	.82
Our customers tend to look for new products all the time (MktTurb2)	5.58	1.127	
We are witnessing demand for our products and services from customers who never bought them before (MktTurb3)	5.59	.998	
New customers tend to have product-related needs that are different from those of our existing customers (MktTurb4)	5.50	1.064	
We cater to many of the same customers that we used to in the past (MktTurb5)	5.70	1.032	
Grand Mean: 5.583			

The mean values range from 5.71 to 5.84 (technology), 5.43 to 5.94 (competition intensity) and 5.50 to 5.70 (market turbulence), and the Cronbach's Alphas at .79, .80 and .82, respectively, are all above the .7 benchmark. Though slightly lower, the reliability estimates for formalisation and decentralisation are satisfactory at mean values ranging from 4.19 to 4.86 (formalisation), and 4.35 to 4.64 (decentralisation) and Cronbach's Alphas of .87 and .76.

5.6. Validity Results in this Study

Factor analysis (FA), the analysis of correlatedness (Field, 2005), was conducted in this study. Running factor analysis is critical towards confirming that the measurement items for each factor are indeed the latent variables for the conceptualised constructs/factors (Field, 2018). Furthermore, factor analysis is not only essential to confirm that the measurement items for each factor are linearly related, but also to confirm that the conceptualised factors are unique (measurement items do not significantly cross-load) (Field, 2018). Following methodological guidelines, several validity metrics were used in this study to ensure validity (e.g. Field, 2005; Neuman, 2014):

1. Factor analysis was done to ascertain the structure of all factors,
2. The inter-item correlation for each construct and the significance level for each factor were checked,
3. Factor analysis was carried out to statistically confirm that conceptualised factors are unidimensional, i.e. measurement items do not cross-load to multiple factors. Factor analysis was performed for all conceptualised constructs (Neuman, 2014), and the validity results are organised in two sub-sections, namely dependent variables (section 5.6.1) and independent variables (section 5.6.2).

Before reporting the validity results, it is important to examine the potential risk of common method bias. Harman's single-factor test was conducted by entering all 37 measurement items into an unrotated exploratory factor analysis (EFA). The result

showed that the first unrotated factor accounted for only 22.5% of the total variance—well below the commonly accepted 50% threshold. This indicates that common method bias is unlikely to pose a serious threat to the validity of this study's findings (Podsakoff et al., 2003).

Furthermore, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.873, and Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 4965.014$, $df = 666$, $p < .001$). These results confirm the suitability of the dataset for factor analysis.

5.6.1 The Validity Results (Factor Analysis) for Dependent Variables

Principal Component Analysis (PCA) was performed to understand the factor structure for all conceptualised factors in this study. In the factor analysis, the focus was on estimating the factor loadings, explained variance, eigen value significance level and inter-item correlation. Each construct (factor) in this study was analysed separately and in the analysis for each conceptualised construct SPSS was prompted to extract only one factor. As a reminder, two dependent variables were explored in this study. The validity estimates for SMA variables are summarised in Tables 5.13 (for SMA - Strategic Decision-Making), 5.14 (for SMA - Competitor Accounting), 5.15 (for SMA - Customer Accounting) and 5.16 (for SMA - Total) while the validity estimates for organisational performance are summarised in Tables 5.17 (for Financial Performance) and 5.18 (for Non-Financial Performance).

Table 5.13: Validity Results for SMA - Strategic Decision-Making Technique (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Items	SMA-SDM1	SMA-SDM2	SMA-SDM3			Factor Loadings
SMA-SDM1	1.000					.806
SMA-SDM2	.450	1.000				.785
SMA-SDM3	.464	.428	1.000			.793
Explained Variance: 63.16%			KMO Estimate: .676			
Eigen-Value: 1.895			Significance: .001			

At .806, .785 and .793, the measurement items for strategic decision-making (SDM) dimension of SMA load significantly to the factor and also reflect significant inter-item correlation between them, which suggests that they are latent variables for the SDM-SMA factor. The explained variance is 63.16% and Eigenvalue is 1.895, while the KMO value is .676 at .001 significance level.

Table 5.14: Validity Results for SMA - Competitor Accounting Technique (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Items	SMA-COMPAC1	SMA-COMPAC2	SMA-COMPAC3			Factor Loadings
SMA-COMPAC1	1.000					.793
SMA-COMPAC2	.489	1.000				.830
SMA-COMPAC3	.451	.517	1.000			.809
Explained Variance: 65.73%			KMO Estimate: .684			
Eigen-Value: 1.972			Significance: .001			

The estimates for Competitor Accounting Technique (CompAcctg-SMA) reflect strong construct validity: explained variance of 65.73% was found and all measurement items load significantly unto the factor at .793, .830 and .809 respectively. Further satisfactory construct validity estimates include Eigenvalue of 1.972, KMO of .684 and significance level of .001.

Table 5.15: Validity Results for SMA-Customer Accounting Technique (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Items	SMA-CUSTAC1	SMA-CUSTAC2	SMA-CUSTAC3			Factor Loadings
SMA-CUSTAC1	1.000					.843
SMA-CUSTAC2	.542	1.000				.821
SMA-CUSTAC3	.544	.501	1.000			.821
Explained Variance: 68.60%			KMO Estimate: .698			
Eigen-Value: 2.058			Significance: .001			

Similar to the SDM-SMA and CompAcctg-SMA dimensions, the measurement items for customer accounting (CustAcctg-SMA) load significantly to the factor (at .843, .821 and .821) at explained variance level of 68.60% and Eigenvalue of 2.058. Also, significant inter-item correlation exists between the measurement items, and KMO is .698 and significance level is .001.

Table 5.16: Validity Results for SMA-TOTAL (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Items	SMA-SDM	SMA-CompAcctg.	SMA-CustAcctg.			Factor Loadings
SMA-SDM	1.000					.759
SMA-CompAcctg.	.388	1.000				.785
SMA-CustAcctg.	.402	.441	1.000			.793
Explained Variance: 60.70%			KMO Estimate: .663			
Eigen-Value: 1.821			Significance: .001			

The satisfactory construct validity estimates for the three dimensions of SMA are also reflected in the SMA-Total. The three SMA dimensions load significantly unto the SMA-Total at .759, .785 and .793 respectively and account for explained variance of 60.705 and Eigenvalue of 1.821, while KMO is .663 and significance level is .001. Satisfactory inter-item correlation also exists between the measurement items, though

satisfactory benchmark is achieved approximately for CompAcctg-SMA on SDM-SMA.

Two organisational performance factors were explored in this study, namely financial performance (FinPerf) and non-financial performance (Non-FinPerf) and the validity estimates are summarised in Tables 5.17 and 5.18 below.

Table 5.17: Validity Results for Organisational Performance - Financial (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
	OrgPerf-Fin1	OrgPerf-Fin2	OrgPerf-Fin3	OrgPerf-Fin4		Factor Loadings
OrgPerf-Fin1	1.000					.806
OrgPerf-Fin2	.523	1.000				.780
OrgPerf-Fin3	.515	.435	1.000			.772
OrgPerf-Fin4	.474	.485	.476	1.000		.775
Explained Variance: 61.37%		KMO Estimate: .785				
Eigenvalue: 2.455		Significance: .001				

Table 5.18: Validity Results for Organisational Performance – Non-Financial (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Items	OrgPerf-NonFin1	OrgPerf-NonFin2	OrgPerf-NonFin3	OrgPerf-NonFin4		Factor Loadings
OrgPerf-NonFin1	1.000					.814
OrgPerf-NonFin2	.504	1.000				.755
OrgPerf-NonFin3	.492	.392	1.000			.752
OrgPerf-NonFin4	.524	.473	.481	1.000		.798
Explained Variance: 60.88%		KMO Estimate: .785				
Eigenvalue: 2.435		Significance: .001				

The estimates for both factors warrant a conclusion of satisfactory validity. As Tables 5.17 and 5.18 evidence satisfactory factor loading at the .7 benchmark (Field, 2005): (FinPerf at loadings .806, .780, .772 and .775) and (Non-FinPerf at loadings .814, .755, .752, and .798). Also, other validity statistics for each factor are satisfactory, which indicates that the utilised variables measure the conceptualised

construct: FinPerf (Explained variance = 61.37%, Eigen-value = 2.455, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .78 [.001 significance]), and Non-FinPerf (Explained variance = 60.88%, Eigen-value = 2.435, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .78 [.001 significance]).

5.6.2 The Validity Results (Factor Analysis) for Independent Variables

The contingency factors explored in this study were also examined for construct validity, and the validity results are presented in sections 5.6.2.1 (Organisational Structure Factors), 5.6.2.1 (Technology), and 5.6.2.3 (Perceived Environmental Uncertainty Factors).

5.6.2.1 Validity Results for Organisational Structure Factors

Two organisational structure factors were considered in this study, namely formalisation (FORM) and decentralisation (DCent). While the validity estimates for FORM are summarised in Table 5.19, the estimates for DCent are summarised in Table 5.20.

Table 5.19: Validity Results for Formalisation (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Item	OrgStr-Form1	OrgStr-Form2	OrgStr-Form3			Factor Loadings
OrgStr-Form1	1.000					.901
OrgStr-Form2	.705	1.000				.887
OrgStr-Form3	.700	.668	1.000			.885
Explained Variance: 79.40%			KMO Estimate: .739			
Eigenvalue: 2.382			Significance: .001			

Table 5.20: Validity Results for Decentralisation (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement Item	OrgStr-DCent1	OrgStr-DCent2	OrgStr-DCent3			Factor Loadings
OrgStr-DCent1	1.000					.841
OrgStr-DCent2	.529	1.000				.810
OrgStr-DCent3	.528	.469	1.000			.809
Explained Variance: 67.26%			KMO Estimate: .690			
Eigenvalue: 2.018			Significance: .001			

The statistical results for both FORM and DCent suggest construct validity. As Tables 5.19 and 5.20 show, satisfactory explained variance and Eigenvalues were achieved at 79.40% and 67.26%, and 2.382 and 2.018, respectively. Other estimates support satisfactory construct validity: FORM (Factor loadings: .901, .887 and .885; and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .74 [.001 significance]) and DCent (Factor loadings: .841, .810 and .809; and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .69 [.001 significance]). At the .40 benchmark (Field, 2009), the inter-item loadings are also satisfactory for both factors.

5.6.2.2 Validity Results for Technology

To explore technology (Tech), four measurement items were used, and the validity results are summarised in Table 5.21 below.

At .812, .725, .772 and .812, all measurement items satisfy the .7 benchmark (Field, 2009). Further estimates in that Table (Explained variance = 61.01%, Eigen-value = 2.441, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .76 [.001 significance]) reinforce construct validity for Tech. The inter-item coefficients suggest closeness among the measurement items, though one approximately at the .4

benchmark (Field, 2009).

Table 5.21: Validity Results for Technology (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n=346.						
Measurement items	Tech1	Tech2	Tech3	Tech4		Factor Loadings
Tech1	1.000					.812
Tech2	.469	1.000				.725
Tech3	.497	.393	1.000			.772
Tech4	.548	.444	.522	1.000		.812
Explained Variance: 61.01%			KMO Estimate: .785			
Eigenvalue: 2.441			Significance: .001			

5.6.2.3 Validity Results for Perceived Environmental Uncertainty Factors

Two perceived environmental uncertainty factors, i.e. competitive intensity (CompInt) and market turbulence (MrktTurb), were explored in this study. Four items were utilised to measure the former while five items were utilised to measure the latter. Tables 5.22 and 5.23 confirm construct validity for both perceived environmental uncertainty factors. At .779, .792, .796 and .804 (CompInt) and .792, .814, .720, .769 and .723 (MrktTurb), satisfactory factor loadings were achieved at the .7 benchmark (Field, 2009). That satisfactory validity conclusion is supported by further estimates for CompInt (Explained variance = 62.87%, Eigen-value = 2.515, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .80 [.001 significance]), and MrktTurb (Explained variance = 58.41%, Eigen-value = 2.920, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .82 [.001 significance]). At the .4 benchmark (Field, 2009) a significant closeness is evidenced in the inter-item correlation for both factors, though there is approximate significance (.372) for one

correlation for the MrktTurb factor.

Table 5.22: Validity Results for Competition Intensity (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n = 346.						
	ComPInt1	ComPInt2	ComPInt3	ComPInt4		Factor Loadings
ComPInt1	1.000					.779
ComPInt2	.487	1.000				.792
ComPInt3	.489	.511	1.000			.796
ComPInt4	.505	.515	.523	1.000		.804
Explained Variance: 62.87%			KMO Estimate: .801			
Eigenvalue: 2.515			Significance: .001			

Table 5.23: Validity Results for Market Turbulence (Explained Variance, Factor Loadings, Eigen-Value, Inter-item Correlation and KMO estimates). n = 346.						
Measurement Items	MktTurb1	MktTurb2	MktTurb3	MktTurb4	MktTurb5	Factor Loadings
MktTurb1	1.000					.792
MktTurb2	.579	1.000				.814
MktTurb3	.438	.426	1.000			.720
MktTurb4	.543	.579	.426	1.000		.769
MktTurb5	.437	.488	.499	.372	1.000	.723
Explained Variance: 58.41%			KMO Estimate: .822			
Eigenvalue: 2.920			Significance: .001			

In checking the measurement items for each construct to understand to what extent they reflect the conceptualised constructs, the inter-item correlation for each factor/construct was also considered. Based on the statistical evidence in the above tables (see Tables 5.13 to 5.23), it is legitimate to conclude that there is satisfactory data validity in this study, despite a few approximate inter-item correlation significance conclusions based on the .4 benchmark (Field, 2009). As noted by (Hair et al., 2014), when a correlation is statistically significant, it indicates an actual relationship rather than one due entirely to chance. As evident in Tables 5.21, 5.23, 5.18 and 5.16 respectively, tech3 correlates at .393 to tech2, MrktTurb5 correlates

at .372 to MrktTurb4, Non-FinPerf3 correlates at .392 to Non-FinPerf2, and CompAcctg-SMA correlates at .388 to SDM-SMA. Statistically, the deviations from the .4 benchmark are minimal and insignificant, thus approximate satisfactory inter-item correlation conclusion is appropriate.

Overall validity statistics indicate that the items for each factor are strongly correlated and measure the conceptualised constructs.

5.6.3 Convergent and Discriminant Validity

To ensure comprehensive construct validation, this section presents an interpretation of the factor analysis results in terms of convergent and discriminant validity. Although this study adopts an exploratory approach based on principal component analysis (PCA), rather than confirmatory factor analysis (CFA), the structure and strength of factor loadings, explained variance, and inter-construct correlations provide a robust basis for construct validation (Field, 2005; Guilding & McManus, 2002).

The following sub-sections summarise how the results support the convergent validity (5.6.3.1) and discriminant validity (5.6.3.2) of the constructs employed in this study.

5.6.3.1 Convergent Validity

Convergent validity was assessed using conventional exploratory factor analysis (PCA). According to Field (2009), convergent validity is supported when factor loadings exceed .7 and the extracted factor explains a substantial portion of variance.

As shown in Tables 5.13 to 5.18, all factor loadings exceed .70 and explained variances range from 58.41% to 79.40%, indicating strong convergence of items onto their intended constructs.

5.6.3.2 Discriminant Validity

Following analytical guidelines for gauging hypothetical relationships in a multivariate analysis (e.g., Field, 2009), the data for this study were examined to confirm the discriminant validity of explored factors/constructs in the process of examining the conceptualised relationships. According to methodological scholars, discriminant validity confirms that the conceptualised constructs are distinct and do not exhibit significant intercorrelations. Methodologists emphasise that researchers should examine all predictors in a model and ensure that there is no multicollinearity threat. As noted by Field (2005, p. 170): “There should be no perfect linear relationship between two or more of the predictors; i.e. the predictor variables should not correlate too highly”. Field (2005) elaborates that when there is a perfect collinearity (inter-correlation coefficient of 1) between predictors, it is not possible to obtain unique estimates of regression coefficients.

Three analytical statistics were considered in this thesis towards confirming discriminant validity: (1) inter-construct correlation evidence – correlation matrix (Field, 2005, 2018) and collinearity diagnostics (Tolerance and VIF) (e.g., Myers, 1990; Menard, 1995) respectively. While the inter-construct correlation evidence is presented here, the collinearity diagnostics are presented in Chapter 6 along with the

regression coefficients.

In this study, no significant correlations (R above .8 or .9) existed between the predictors (Field, p 185). Even in the case of SMA-Total, which is a higher-order construct containing three lower-order constructs (where based on conceptualisation close association was expected between these constructs), the highest correlation was .441 (between SMA-Customer Accounting and SMA-Competitor). Based on this statistical evidence, no multicollinearity threat conclusion is appropriate, therefore, no threat of the validity of the multiple regression analysis. This statistical result is aligned with the multicollinearity analysis in the next chapter (Section 6.2 and Table 6.2).

Furthermore, for the multicollinearity check, a sensitivity analysis was conducted to assess the significance of the inter-construct correlations in the multiple regression analysis. Based on the sensitivity logic proposed by Belsley, Kuh and Welsch (1980), multicollinearity threat exists if an estimated coefficient with a condition index higher than 20 contributes significantly to the variances of two or more variables. As Tables 6.2 (Collinearity Diagnostics - SMA Total Usage), 6.3 and 6.4 (Collinearity Diagnostics - Organisational Performance for both Financial and Non-Financial) show, this is not the case in this study: the condition index for all independent variables in the multivariate regression analysis was below the benchmark (ranging from 1.000 to 1.784). The full multicollinearity analysis is conducted and demonstrated in Section 6.2.

Thirdly, to ensure that the regression results are free from multicollinearity threat, the

Variance Inflation Factor (VIF) and the Tolerance statistics were examined. The VIF was examined to find out if there existed a strong linear relationship between predictors, and the results are displayed in Table 6.5. As the table shows, no relationship had a value close to 10 (Myers, 1990), thus, no multicollinearity threat. In addition, the Tolerance statistics support the no multicollinearity threat conclusion (see Section 6.2, Table 6.5): the Tolerance statistics ($1/\text{VIF}$) measure for this study are between .763 and .863, all above .2 (Menard, 1995).

5.7 Multivariate Analysis (Exploring the Conceptualised Hypotheses)

In Chapter three (3), nine (9) hypotheses were forwarded for this study. In order to examine these relationships, regression analyses were carried out. As reminded in Section 5.6.1, two dependent constructs are considered in this study, namely SMA total usage (SMA-Total) and Organisational Performance (OP). In this study, linear regression analyses were conducted to understand the association between conceptualised constructs and these dependent variables. First, linear regression was undertaken to estimate the association of the contingency variables on SMA-Total. Second, linear regression was carried out to estimate the association between SMA-Total and organisational performance. Two levels of organisational performance (Financial Performance and Non-Financial Performance). In exploring the conceptualised relationships, the linear regression analyses were focused on checking

the estimates, confidence intervals, model fit, R^2 change, and collinearity diagnostics. For the two dependent variables explored in this study, the regression statistics are presented in Tables 6.5 and 6.6 for Strategic Management Accounting (SMA-Total) and Organisational Performance respectively. The statistical results are also demonstrated in Figures 6.1, 6.2 and 6.3 in Chapter 6, where the findings from this study are presented and discussed.

Chapter 6 Regression Analysis, Findings and Discussion of Findings

6.1 Introduction

It is essential to reiterate that the purpose of this study is to investigate the application of SMA in Chinese organisations, the contingency factors influencing SMA application, and its performance implications (both financial and non-financial) for organisations.

With the reliability and validity of the research confirmed in the previous chapter (Sections 5.5 and 5.6), the conditions for carrying out the regression analysis were established. Therefore, this chapter consists of two main parts: Section 6.2, interpreting the results of the regression analyses conducted in this study, and Section 6.3, discussing the findings on the relationships between variables.

6.1.1 Regression Model Specification and Justification

To empirically examine the hypothesised relationships developed in Chapter 3, two regression models were specified in this study. These models align with the conceptual framework (see Figure 3.1) and aim to assess both the antecedents and outcomes of Strategic Management Accounting (SMA) adoption in Chinese listed companies. The specification of each model is grounded in contingency theory and consistent with methodological practices in prior SMA research (e.g., Cadez and Guilding, 2008; Guilding and McManus, 2002; Ojra, 2014).

The first regression model investigates the influence of five contingency factors on the extent of SMA technique adoption (SMA-Total), which is conceptualised as a composite variable encompassing strategic decision-making, competitor accounting, and customer accounting techniques. The five predictors include:

- a. Environmental uncertainty (Competitive Intensity and Market Turbulence)
- b. Organisational strategy (Prospector vs. Defender strategic orientation)
- c. Technology
- d. Organisational structure (Formalisation and Decentralisation)
- e. Company size

The specification of these contingency variables follows the logic of contingency-based SMA literature, which posits that contextual conditions determine the extent to which advanced management accounting techniques are adopted (Cadez and Guilding, 2008; Chenhall, 2003).

The second model evaluates the performance implications of SMA adoption, specifically examining its association with two dimensions of organisational performance:

- a. Financial Performance
- b. Non-Financial Performance

In this model, SMA-Total serves as the independent variable, with performance outcomes as the dependent variables. This reflects the theoretical proposition that SMA practices enhance organisational decision-making and strategic alignment, thereby improving both financial and non-financial outcomes (Langfield-Smith, 2008;

Cadez and Guilding, 2012).

Both models were estimated using linear regression analysis. The selection of linear models is justified by the nature of the constructs, the scale of measurement (composite interval-type scales derived from perceptual survey items), and the theoretical expectation of linear relationships among variables. Moreover, this approach is consistent with prior quantitative studies in SMA that adopt cross-sectional survey designs and perception-based measurement (e.g., Cadez and Guilding, 2008; Ojra, 2014; Pavlatos and Kostakis, 2018).

The detailed regression diagnostics, including multicollinearity checks, residual normality, and linearity assumptions, are presented in Section 6.1.2, while the statistical results of both models are reported in Section 6.2.

6.1.2 Regression Assumptions and Diagnostic Tests

Before presenting the regression results, it is essential to examine whether the key statistical assumptions underlying linear regression have been met. These include linearity, normality of residuals, homoscedasticity, and absence of multicollinearity (Field, 2018; Hair et al., 2014).

6.1.2.1 Linearity and Outliers

According to the general procedure suggested by Field (2018, p. 522), the scatter plots of the relationships between the dependent and independent variables were examined to check for linearity (Morgan et al., 2020). These plots indicated that the

relationships were approximately linear, and there were no obvious outliers (Field, 2018, p. 534).

6.1.2.2 Normality and Homoscedasticity

The residuals were assessed using standardised residual plots, histograms, and normal probability plots. These plots indicate that the residuals are approximately normally distributed and exhibit a linear relationship with predicted values (Appendix 6 contains examples of the plots).

Furthermore, no visible patterns were observed in the residual plots, suggesting that the assumption of homoscedasticity (constant variance of residuals) was reasonably satisfied.

6.1.2.3 Multicollinearity Diagnostics

Prior to reporting the regression results, multicollinearity must be examined, as it can undermine the reliability and interpretability of the model (Hair et al., 2014, p. 186).

According to Hair et al. (2014, p. 22), “as multicollinearity rises, the ability to define any variable’s effect is diminished.” To assess this, the Pearson correlation matrix for predictor variables was first examined. No high inter-correlations (r-values above 0.80 or 0.90) were identified.

Next, the variance inflation factor (VIF) and tolerance statistics were checked. As per Field (2018, p. 534), a VIF below 10 and a tolerance value above 0.1 suggest the absence of significant multicollinearity (Bowerman & O’Connell, 1990; Myers, 1990).

The current study's regression analysis yielded VIF values ranging from 1.146 to 1.311 and tolerance statistics between 0.763 and 0.863, indicating that multicollinearity was not a significant issue.

Additional collinearity diagnostics, including eigenvalues, condition indexes, and variance proportions, are presented in Tables 6.2, 6.3, and 6.4. As Field (2018, p. 554) advises, "...look for large variance proportions on the same small eigenvalues." The results show that variance proportions are mainly distributed across different eigenvalues, confirming the absence of high intercorrelation among predictor variables.

Table 6.1 Collinearity Diagnostics - SMA Total Usage

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	OrgStr-Form	OrgStr-DCent	CompInt	Tech	MktTurb
1	1	1.804	1.000	.00	.02	.03	.13	.13	.12
	2	1.304	1.176	.00	.31	.28	.02	.03	.02
	3	1.000	1.343	1.00	.00	.00	.00	.00	.00
	4	.684	1.624	.00	.00	.00	.30	.07	.82
	5	.642	1.676	.00	.66	.67	.00	.02	.00
	6	.567	1.784	.00	.00	.02	.55	.75	.04

a. Dependent Variable: REGR factor score for SMA-TOTAL

Table 6.2 Collinearity Diagnostics - Organisational Performance (Financial)

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SMA-TOTAL
1	1	1.000	1.000	1.00	.00
	2	1.000	1.000	.00	1.00

a. Dependent Variable: REGR factor score for OrgPerf-Financial

Table 6.3 Collinearity Diagnostics - Organisational Performance (Non-financial)

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SMA-TOTAL
1	1	1.000	1.000	1.00	.00
	2	1.000	1.000	.00	1.00

a. Dependent Variable: REGR factor score for OrgPerf-Non-Financial

6.2 Results of Regression Analysis

As demonstrated in Figure 3.1, the core element, SMA usage, serves a dual role as both the dependent and independent variable. It is influenced by the five identified contingency factors (independent variables: external environmental uncertainty, business strategy, technology, organisational structure and size), and eventually affects the financial and non-financial performance of the organisation. The variables involved in the regression analysis are summarised in Table 6.1.

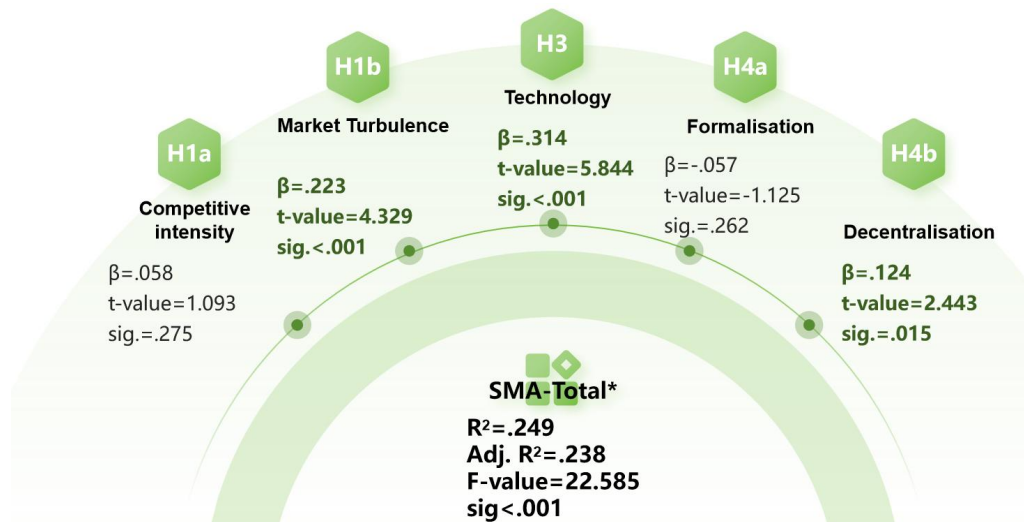
Table 6.4 Variables in the analysis

Variables			Abbreviation	Hypothesis	Expected sign
Independent Variables	Environmental uncertainty	Competitive Intensity	CompInt	H1a	+
		Market Turbulence	MktTurb	H1b	+
	Business strategy	Prospector		H2	+
		Defender		H2	—
	Technology		Tech	H3	+
	Business structure	Formalisation	OrgStr-Form	H4a	+
		Decentralisation	OrgStr-DCent	H4b	+
	Size			H5	+
Dependent Variables	SMA usage		SMA TOTAL		
	Performance	Financial	OrgPerf-Fin	H6a	+
		Non-financial	OrgPerf-NonFin	H6b	+

Therefore, based on the framework conceptualised in Chapter 3 (Figure 3.1), the regression analysis of total SMA usage (dependent variable) and internal and external environmental contingency factors was conducted (Section 6.2.1). This was followed by a regression analysis of organisational performance and total SMA usage (Section 6.2.2), with Section 6.2.2.1 focusing on financial performance and Section 6.2.2.2 on non-financial performance.

6.2.1 Regression Results - SMA Total Usage

The results of the regression analysis, conducted to investigate the relationships between SMA usage and contingency factors, are displayed in Figure 6.1. The full information of regression analysis on SMA usage and its different dimensions (strategic decision-making, competitor accounting and customer accounting) is summarised in Table 6.5. Due to the limitation of the word count of this dissertation, the discussion of findings focuses on SMA total usage. The predictors that were included in the model are competitive intensity, market turbulence, technology, formalisation and decentralisation. Business strategy and size are measured separately and not included in this multivariate regression analysis.



*The Business Strategy (Defender/Prospector) and Size variables were measured separately and not involved in the multivariate regression analysis.

Figure 6.1 The regression results for SMA total usage

As demonstrated in Figure 6.1 and Table 6.5, the combination of variables to predict SMA total usage from competitive intensity, market turbulence, technology, formalisation, and decentralisation was statistically significant, $F(5, 340) = 22.585$, $p < .001$. The standardised coefficient beta (β) for each predictor is also shown in the figure. Market turbulence, technology and decentralisation significantly predict the SMA total usage when all 5 variables are included. The adjusted R-squared value (Adj. R^2) is .238, which means that 23.8% of the variance in SMA usage was explained by the model. According to Cohen's (1988) benchmark, where R^2 equals 0.02 represents a small effect, 0.13 a medium effect, and 0.26 a large effect, this falls between a medium and large effect size (Field, 2018, p. 520; 2024, p. 439). Moreover, the value difference between the R^2 and the adjusted R^2 is rather small, and according to Field (2018, p. 546): "The adjusted R^2 gives us some idea of how well our model

generalises, and ideally we'd like its value to be the same as, or very close to, the value of R^2 ."

<i>Table 6.5 Regression results summary of SMA usage dimensions (N = 346)</i>										
<i>Variables</i>	StrDec-Mk		CompAcctng		CustAcctng		SMA-Total		Collinearity	
	β	Sig.	β	Sig.	β	Sig.	β	Sig.	Toler.	VIF
<i>Competition Intensity</i>	.054	.346	.099	.070	-.017	.771	.058	.275	.779	1.284
<i>Market Turbulence</i>	.138	.014	.179	<.001	.205	<.001	.223	<.001	.829	1.207
<i>Technology</i>	.250	<.001	.267	<.001	.218	<.001	.314	<.001	.763	1.311
<i>Formalisation</i>	-.029	.587	-.025	.632	-.077	.153	-.057	.262	.872	1.146
<i>Decentralisation</i>	.022	.692	.136	.009	.129	.018	.124	.015	.863	1.158
<i>Model Summary</i>	StrDec-Mk		CompAcctng		CustAcctng		SMA-Total			
<i>R Squared</i>	.127		.209		.137		.249			
<i>Adj. R Squared</i>	.115		.197		.125		.238			
<i>F-value</i>	9.934		17.976		10.828		22.585			
<i>Sig.</i>	<.001		<.001		<.001		<.001			

6.2.2 Regression Results - Organisational Performance

To answer the final research question and reveal the relationship between the application of SMA techniques and organisational performance, the current research performed a simple linear regression analysis to observe how SMA total usage predicts financial and non-financial performance separately. Both of the results are significant and are shown in the table below (Table 6.6).

Table 6.6: Simple linear regression for financial and non-financial performance						
	Financial Performance			Non-financial Performance		
	β	t	Sig.	β	t	Sig.
SMA-TOTAL	.535	11.736	<.001	.506	10.877	<.001
Model Summary	Financial Performance			Non-financial Performance		
R	.535			.506		
R Squared	.286			.256		
Adj. R Squared	.284			.254		
F-value	137.736			118.318		
Sig.	<.001			<.001		

The full information of regression analysis for the two dimensions of organisational performance is summarised in Table 6.6, which presents the standardised coefficient beta (β), significance level and collinearity statistics (tolerance and VIF) of each variable in both models, as well as R^2 , adjusted R^2 , F-value and significance level for both models. The results of regression analysis are interpreted separately in Section 6.2.2.1 for financial performance and 6.2.2.2 for non-financial performance.

6.2.2.1 Financial Performance

The results of this regression analysis, as displayed in Figure 6.2 as well as summarised in Table 6.6, indicate that the adoption of SMA in general (SMA-TOTAL) is a significant positive predictor of organisational financial performance (OrgPerf-Financial). Specifically, for every unit increase in SMA-TOTAL, the financial performance is expected to increase by 0.535 units, a relationship that is statistically significant ($p < .001$), indicating that the model's predictions are reliable.

The R^2 value of the model is 0.286, which means that there are 28.6% of the variance in financial performance can be explained by SMA total usage, implying that there may be other factors affecting organisational performance that are not considered in the current model. Nonetheless, this is still a large effect size according to Cohen's (1988) benchmark that is used by Field in his latest version of *Discovering Statistics Using IBM SPSS Statistics* (2024, p. 430).

In addition, the ANOVA analysis further confirmed the validity of the model with an F-value of 137.736 and a significance level of less than 0.001, which suggests that the independent variable in the model has a significant effect on the dependent variable. The adjusted R^2 of 0.284 is slightly lower than the R^2 value ($0.286 - 0.284 = 0.002$), which indicates a slight decrease in the explanatory power of the model when considering the number of variables in the model. However, according to Field (2018, p. 546), this signals a better generalisability of the model than the one of the SMA total. As the current one is a simple linear regression model, the values of the statistical indicators of collinearity (Tolerance and VIF) are both 1.000.

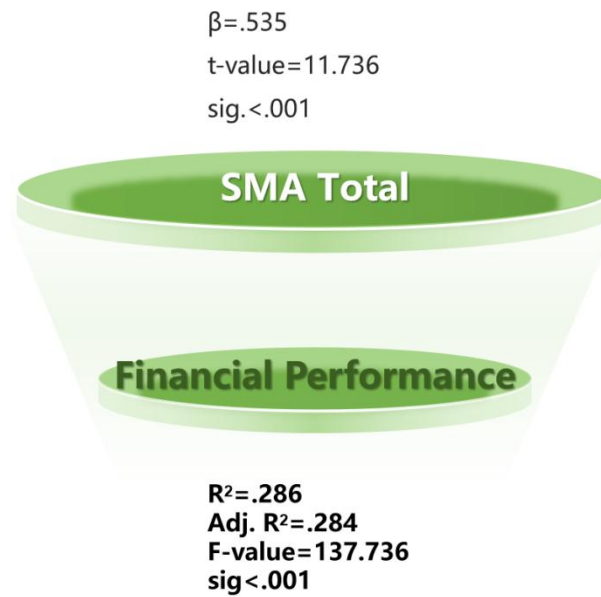


Figure 6.2 The regression results for financial performance

6.2.2.2 Non-financial Performance

In the linear regression analysis for the non-financial performance (OrgPerf-Non-Financial), the researcher found that the SMA general usage (SMA-TOTAL) was also a significant positive predictor. As the results are shown in Figure 6.3 and Table 6.6, the model shows a moderate positive correlation between the variables ($R = 0.506$). This is also a relationship that is statistically significant ($p < .001$) and suggests that SMA total usage has a significant positive impact on the non-financial aspect of organisational performance. The R^2 of the model is 0.256, implying that 25.6% of the variance in non-financial performance can be explained by SMA total usage. According to Cohen (1988), as quoted by Field (2018, pp. 519 - 520), this is a comparatively large effect.

Further ANOVA analysis showed that the F-value of the model was 118.318, with a

significance level lower than 0.001, which further confirms that SMA usage is a significant predictor of non-financial performance. The statistical indicators of collinearity (Tolerance and VIF) are both 1.000, meaning that there is no multicollinearity issue that needs to be considered in the model. The difference between the adjusted R^2 value and the R^2 value is very small (also only 0.002). This suggests a better generalisability of the model (Field, 2018; 2024).

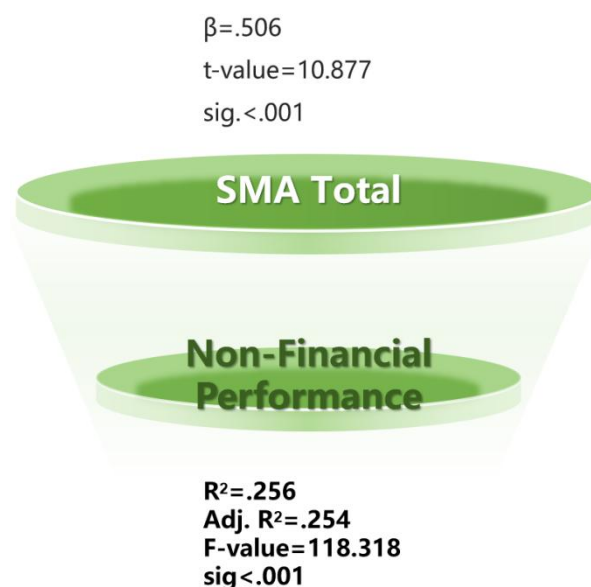


Figure 6.3 The regression results for non-financial performance

6.3 Findings Discussion

Using the three regression models, this study explores the associations between five contingency factors and SMA total usage, as well as the relationship between SMA usage and financial and non-financial performance. The specific discussion of the research results is divided into the following sections:

This study investigated two dimensions of perceived environmental uncertainty. Therefore, the results of the study are discussed separately, with competitive intensity discussed in section 6.3.1.1 and market turbulence in section 6.3.1.2. The impact of business strategy, technology, organisational structure and firm size on SMA is discussed in sections 6.3.2, 6.3.3, 6.3.4 and 6.3.5, respectively. The discussion of the association between SMA usage and organisational performance is in Section 6.3.6.

6.3.1 The relation between environmental uncertainty and SMA usage

The influence that the external environment has on business operations is significant, and its uncertainty is proven to be associated with broad-scope information use in MCS research (Chenhall and Morris, 1986). According to Chenhall (2007, p. 172), it is “a powerful contextual variable that is at the foundation of contingency-based research”. Environmental uncertainty is one of the variables investigated in pioneer contingency studies, given its impact on the structures and systems of organisations (Otley, 2016; Pires and Alves, 2022). Management should address environmental uncertainty in the strategic decision-making process (Milliken, 1987) because it can prevent firms from making effective strategic decisions due to a lack of information (Duncan, 1972; Milliken, 1987). Evidence suggests that access to a more sophisticated, strategically related and broader scope of accounting information is effective in reducing the level of perceived environmental uncertainty (PEU), thereby improving the quality of decision-making (Chenhall and Morris, 1986; Gul and Chia, 1994; Agbejule, 2005). Numerous studies (Tymon, Stout and Shaw, 1998; Pavlatos

and Kostakis, 2018; Abu Afifa and Saleh, 2021) have also shown that PEU has a significant impact on the strategic choices and performance of firms. SMA, by providing more complex and wide-ranging accounting information, can help firms better understand the external environment and thus make more informed decisions. Although the connection between the level of PEU and accounting information is so obvious, inconsistent results exist in the related studies (Sharma, 2002). Such inconsistencies shall be reduced through appropriate conceptualisation, and to consider it as a multidimensional construct (Sharma, 2002; Milliken, 1987). Building on the previous literature (Khandwalla, 1977; Jaworski and Kohli, 1993), the current study divides PEU into two dimensions, competitive intensity and market turbulence, and investigates and discusses them separately.

6.3.1.1 Competitive Intensity

Changes in a competitive environment, suggested by Baines and Langfield-Smith (2003), affect the strategy, design and technology in organisations, which eventually affect their non-financial indicators. A high level of competitive intensity forces organisations to gather external information from the market in order to adapt to the changing environment (Taoketao et al., 2018; Feng et al., 2019; Lyu et al., 2022). Researchers like Foster and Gupta (1994) believed that SMA techniques such as customer accounting are particularly suitable for organisations in the market with a high level of competitive intensity. Hence, this research proposed that:

H1a: The higher the competitive intensity level, the greater the adoption of SMA techniques.

Based on the statistical results from the regression analysis on SMA total usage, the significance level is .275. This indicates that the relation proposed in H1a is not supported. This result is in line with the findings of Ojra's (2014) study on the application of SMA in Palestinian enterprises.

However, there are some other studies that have yielded opposite results, for example, the studies of McManus (2013) and Ojra, Opute and Alsaqer (2023). One key similarity between the two studies is that they are more narrowly focused. First, they both restricted their research to the customer accounting dimension, and second, their practical application investigations were confined to one industry (hospitality and financial services). With a more narrowly focused scope, these studies are more likely to detect stronger relationships between variables. Similar to Ojra's (2014) research, the current study examines the comprehensive application of SMA techniques (three dimensions) across different industries.

These substantially contrasting findings above also reflect the complexity of perceived competitive intensity in the context of contingency-based SMA research. It could imply that future research could explore deeper into the application of specific SMA technique categories in different industries to gain a more comprehensive understanding of the relationship between SMA and the competitive intensity dimension.

6.3.1.2 Market Turbulence

Compared to competitive intensity, the investigation of market turbulence in contingency-based management accounting research is limited. When markets are

turbulent, organisational performance depends on the ability to cope with strategic changes (Teece, 2007; Peters, Gudergan and Booth, 2019). Therefore, there is a greater need for SMA techniques to optimise operations and improve business performance in turbulent markets. Based on the linkages mentioned above, this study proposes the following hypotheses:

H1b: The higher the market turbulence level, the greater the adoption of SMA techniques.

The statistical results presented in Figure 6.1 and Table 6.5 support the above hypothesis and suggest a positive relation between market turbulence and SMA total usage. The standardised coefficient beta (β) is .223, indicating the strength and direction of the relationship between market turbulence and SMA-Total. A positive value suggests that when the market turbulence perceived by top managers increases in the sample organisations, it leads to greater adoption of SMA techniques. Sig. < .001 signifies that the relationship is statistically significant at the 0.1% level, a very strong indication that the observed relationship is not due to chance.

The research that studies the direct association between SMA usage and market turbulence is rare. Ojra's (2014) finding suggests a negative relation between the two variables, which indicates that the increase of turbulence in the Palestinian market does not lead to higher adoption of SMA techniques.

Based on the statistical results of the two dimensions of PEU in the above two sections, the findings about PEU in this study should be drawn separately for each dimension, rather than as a whole: the market turbulence dimension under PEU

significantly and positively affects the application of SMA in the mainland China context, whereas the relationship between the competitive intensity dimension and SMA is not supported by statistics.

Contingency theory provides a comprehensive framework for understanding how organisations implement their management control systems under different environmental conditions. However, as noted by scholars (Granlund and Lukka, 2017; Sharma, 2002), inconsistent research results occur across studies when investigating the perceptions of environmental uncertainty of top managers. This inconsistency can be attributed to the complexity of the PEU construct, which could be affected by a combination of the following reasons:

First, PEU is a multidimensional concept that usually includes Competitive Intensity, Technological Turbulence and Market Turbulence (Jaworski and Kohli, 1993). Each dimension affects different aspects of the organisation and decisions at different levels. For example, technological change may affect IT and production departments' decisions more directly, while market change may affect sales and marketing strategies more. Inconsistencies in the findings may be caused by different understandings and measurements of the impact of these dimensions.

Secondly, although the studies are conducted under contingency-based frameworks, different approaches, such as different data collection and analysis techniques, are adopted. This may lead to different findings about PEU. In addition, samples from different regions and industries may face different types and degrees of environmental uncertainty, which may also affect the findings.

Finally, as mentioned in section 2.5, the practice of management accounting in China is still too young, and in addition, the overall political and economic environment is vastly different from that of the West; many of the management accounting methods cannot be copied directly but need to be localised. During the data collection process, the researcher found that many companies do not know or are not interested in SMA. This may also indirectly indicate that firms may not be aware of the use of SMA to cope with uncertainty in the external environment to enhance competitive advantage. This might also be the reason for the discrepant findings in the relationship between SMA and the two dimensions of PEU.

Therefore, a deeper understanding of the PEU concept requires more theoretical innovations. Being a central concept of studies on management accounting systems, the discussion on the construct and measurement of uncertainty is limited (Granlund and Lukka, 2017). These measurements were pointed out to portray only a limited feature of the complexity of real organisational environments, which may lead to mixed results and problems in theory development (Chapman, 1997). Therefore, the researchers who conduct contingency-based research need to break the routine practices of the CBMA model and explore new constructs and instruments that capture the traits of uncertainty in “real-life organisational settings” (Granlund and Lukka, 2017, p. 66).

Further, researchers could consider deepening their empirical research design. Future research could consider using a mixed-methods research design that combines quantitative and qualitative data to explore how the different dimensions of PEU

specifically affect SMA (Chapman, 1997; Otley, 2016). By conducting in-depth interviews and case study approaches, researchers could explore how different organisations understand and adapt themselves to uncertain environments. Through combining qualitative approaches, this mixed research design will not only help to enrich and refine the contingency theory, but also improve management accounting practice to more precisely design and enhance the adaptability of management control systems in complex and changing business environments.

6.3.2 The relation between business strategy and SMA usage

Literature shows that business strategy significantly influences the design and use of SMA systems (Cadez and Guilding, 2008; Guilding, 1999). In particular, firms with different strategic goals exhibit different characteristics (Miles and Snow, 1987; Gupta and Govindarajan, 1984; Porter, 1980). Prospectors, who are constantly looking for product and market opportunities, have a higher demand for management accounting methods for market information, such as competitors and customers (Guilding, 1999). Defenders, on the other hand, which focus on efficiency and invest less in marketing departments and research and development (R&D), have a lower demand for SMA methods (Cinquini and Tenucci, 2010). Thus, this study proposed the hypothesis:

H2: The adoption of SMA techniques would be greater in prospectors than in defenders.

To understand the relationship between business strategy and SMA usage, participants were requested to indicate whether their organisation reflected features of a defender type or a prospector type company. In other words, a Likert scale was not used in this

regard; rather, the participants were requested to indicate what describes their organisation based on a continuum with the defender type of company on the left and the prospector type of company on the right side of the continuum. Thus, companies that showed features that reflected the type A company description were defender-type companies, and companies that showed features that reflected the type B company description were prospector-type companies. To determine the level of relationship, this study compared the mean values for the SMA usage at each of the scale points created for business strategy. Based on the responses from the participants, a 7-point scale was created as shown in Table 6.7. To understand if SMA usage is positively related to business strategy, the mean values for SMA usage at all points on the created scale were calculated. Table 6.7 below shows higher mean values for firms that exhibit prospector strategy features.

Table 6.7: The extent of SMA Usage based on the Business Strategy Description			
Scale Points	Description of Business Strategy based on a Defender – Prospector Continuum	Valid Percent	Mean Value for SMA Usage
1	Exactly like A	4.9%	2.983
2	Mostly like A	14.2%	2.995
3	Leans more towards A	12.4%	3.411
4	Balanced between	2.6%	3.217
5	Leans more towards B	21.1%	4.192
6	Mostly like B	36.7%	5.001
7	Exactly like B	8.1%	4.989

Based on the above statistical evidence, it is logical to suggest that prospector-type Chinese firms would have more need of strategic management accounting practices than defender-type firms, as prospector-type firms achieved higher mean values than

defender-type firms (see Table 6.7). Thus, *H2* (SMA practices adoption would be greater in prospector-type firms than in defender-type firms) is supported. This finding is consistent with the results of mainstream SMA empirical studies (e.g. Cadez and Guilding, 2008; Ojra, 2014; Ojra, Opute and Alsaqer, 2023).

Cadez and Guilding (2008) have studied the association between the two factors (strategy type and SMA usage) by collecting quantitative data through questionnaires, supplemented by qualitative data obtained from interviews with senior accountants from ten different organisations (in variate industries). The interviews further explored the employment of SMA techniques. The statistical results show a positive correlation between prospectors and SMA adoption, and respondents of the interview generally support this conclusion. Some of them believe that the prospectors' pursuit of new business opportunities has prompted them to innovate in various aspects, including the adoption of new accounting techniques. In addition, some respondents pointed out that the use of market-oriented SMA techniques provides important decision-making support.

Although many studies have shown a positive correlation between strategic choice and SMA application (Ojra, 2014; Ojra, Opute and Alsaqer, 2023), some studies have pointed out that this overall positive correlation is not obvious in different environments. For example, Cinquini and Tenucci's (2010) study of multiple dimensions of strategy found that the correlation between strategic choice and SMA application was inconsistent across different dimensions. In particular, the correlation between prospectors and external market information orientation of SMA was not

significant, while defenders tended to use cost-related SMA techniques because they focused on efficiency. As this research is based on 92 large manufacturing companies in Italy, these variations might be attributed to the sample size, the industry focus, as well as the particular environmental characteristics of the country.

6.3.3 The relation between technology and SMA usage

Research directly addressing the relationship between technology and SMA applications is relatively limited. This is related to the complexity of the term ‘technology’. It should include both production-related technology and technology related to the management of business operations in organisations (Chenhall, 2007). Past research has found many features of technology to be relevant to the implementation of management accounting (Macintosh and Daft, 1987), as well as specific MA techniques, such as *Just-in-Time* (JIT), *total quality management* (TQM) and *flexible manufacturing* (FM), to be associated with management control systems. Therefore, this study proposes:

H3: Organisations with higher levels of technology would have greater SMA adoption.

This association is also supported by the regression results. The standardised coefficient for technology ($\beta = .314$) is statistically significant ($p < .001$). This indicates a positive relationship between the level of technology and the adoption of SMA techniques.

The above results are consistent with those of a series of previous results (Ojra, 2014; Chenhall, 2003). The present study incorporates Chenhall’s (2007) recommendations,

taking into account technologies related to production as well as organisational operations management, and is reflected in the measuring instrument (which investigates the level of importance that firms place on production and information technology, and their willingness to upgrade their technology). Therefore, the results of this study suggest that organisations with higher levels of technology have a greater use of SMA in mainland China.

Despite the significant relationship in the results of this study, there are, however, some contingency-based SMA research that have inconsistent findings. For instance, Oyewo (2022) conducted a questionnaire to senior financial decision makers in 102 manufacturing firms (covering food and beverages, chemicals and pharmaceuticals, and other manufacturing-related industries) in Nigeria to study the association between Quality of Information Technology (QIT) and SMA. From the statistics of the study, although there is a positive relationship between QIT and SMA use and competitive advantage, the relationship is not statistically significant. This suggests that high-quality information technology has a limited effect in supporting SMA implementation and that the quality of IT does not directly and significantly contribute to competitive advantage. These findings suggest that while IT plays a supportive role in SMA practice, its direct impact on competitive advantage is limited and needs to be combined with other organisational and strategic factors to achieve more effective strategic decision-making and organisational advantage.

Such inconsistencies in the findings may be due to the researchers' different interpretations of the role of technology in organisational operations. The

measurement of technology in the current study did not analyse it multidimensionally, although it included both production and management technologies. In contrast, Oyewo (2022) used a scale based on the one developed by Teng, Cheon and Gover (1995), which includes accuracy, precision, reliability, completeness and relevancy to reflect the quality of information technology. Although this study has captured the overall relationship between technology and SMA usage, a deeper understanding of technology as a contextual factor may require more appropriate measurement tools that reflect its multidimensional characteristics.

Another study worth mentioning is that of Pondeville, Swaenb and Rongé (2013). Although the study did not directly investigate the technology-SMA link, it discussed the relationship between environmental information systems (EIS) and environmental management control systems (EMCS) in the context of corporate environmental responsibility. The study analysed data through a survey of 256 Belgian manufacturing companies, and the final statistical results show that there is a significant positive association between EIS and both formal and informal EMCS. This suggests that the development of environmental information systems is essential for the implementation of more systematic and comprehensive environmental management strategies (Pondeville, Swaenb and Rongé, 2013). Such results are a good example of the core ideas of contingency theory, which suggests that organisational success depends on the fit between internal operating systems and the external environment. In this study, the relationship between the Environmental Information System (EIS) and the Environmental Management Control System

(EMCS) indeed demonstrated this fit.

Therefore, even though inconsistent results such as Oyewo's (2022) study have been found in research on technology and SMA application, however, in future studies, a proper decomposition of the technology variable into multiple related dimensions (such as information, operation and production technology etc.) should provide a deeper insight of the contingencies for understanding the application of SMA.

6.3.4 The relation between organisational structure and SMA usage

The structure of an organisation formalises the specific tasks and roles for its members to ensure the execution of organisational activities (Chenhall, 2007). Management accounting literature has emphasised the importance of organisational structure in the implementation of management control systems (Bruns and Waterhouse, 1975; Merchant, 1981; Abernethy and Bouwens, 2005). Based on the empirical research on the commonly studied structural mechanisms (Pugh et al., 1968; 1969), the current study has investigated the impacts of formalisation and decentralisation on SMA usage, and the findings are discussed in the following sections (6.3.4.1 and 6.3.4.2).

6.3.4.1 Formalisation

Contingency literature has indicated that organisational structures with formalisational mechanisms could influence the adoption of SMA techniques (Ojra, Opute and Alsaqer, 2023). Hence, it is proposed in the study that:

H4a: Greater SMA adoption is positively associated with formalised organisations.

According to the statistical results, $\beta = -.057$ and $\text{sig.} = .262$, the relation between formalisation and SMA total usage that is proposed by the above hypothesis is not supported. However, it is worth noting that table 6.5 presents regression results of the three dimensions of SMA usage (strategic decision-making, competitor accounting and customer accounting); despite the significant values being above .05, the beta coefficients (β) of all dimensions in the formalisation row are showing negative directions. Such a pattern provides some reference value for further understanding of the association between formalised organisational structure and the application of SMA techniques.

Recently, however, in a questionnaire survey of senior finance and accounting professionals in the financial services industry in Kuwait, Ojra, Opute and Alsaqer (2023) found a highly significant positive association between the two variables. The regression coefficient was 0.665 with a p-value of .000, indicating that formalisation has a strong and statistically significant positive effect on the implementation of customer accounting.

The contradictory findings may be due to the inherent dual nature of formalisation as an organisational structure. This structural characteristic is often seen as “red tape” that may restrict effective execution; at the same time, it is also considered essential for providing strategic direction (Hempel, Zhang and Han, 2009). One method to balance these opposing views, according to Hempel, Zhang and Han (2009), is to focus on the implementation of formalisation. When formalisation enhances employees’ control over their work, it is considered beneficial; when it compels

employees to comply, it can be seen as restrictive (Adler and Borys, 1996). It is this duality (or complexity) that makes it necessary for formalisation to be studied in relation to areas of practice such as organisational behaviour or management control systems, and for measurement instruments to be developed that better capture its characteristics.

In their research, Ojra, Opute and Alsaqer (2023) also commented Ojra's (2014) early work in Palestinian organisations that did not find the connection between formalisation and SMA usage. They also point out that existing literature lacks clarity, prompting contingency scholars to advocate for studies that connect specific accounting system aspects with defined circumstances and demonstrate suitable matching.

6.3.4.2 Decentralisation

Early accounting research has investigated and proved the association between decentralised organisational structure and accounting information systems (Bruns and Waterhouse, 1975; Merchant, 1981; Chenhall and Morris, 1986). After reviewing previous literature, Chenhall (2007) proposed that larger organisations that are more decentralised in structure, with advanced technologies and high levels of diversity, are associated with more formal and traditional management control systems (MCS) such as budgeting and formal communications. Moreover, decentralisation is found to be related to participative budgeting (Gul et al. 1995) and the “aggregation and integration” features of MCS (Chenhall, 2007, p. 181). This connection has also been proven in SMA literature. For example, McManus (2013) has found that a

decentralised hotel structure had a moderate effect on the application of customer accounting. With a rich literature base to support the association, this research proposes that:

H4b: Greater SMA adoption is positively associated with decentralised organisations.

The results of the regression analysis (Table 6.5 and Figure 6.1) support the above association proposed in the hypothesis. The beta coefficient is .124 signifies a positive relation between decentralisation and SMA total usage, and sig. = .015 indicates that there is a small probability (1.5%) that the observed results occurred by chance. Since it is still less than .05, the result is statistically significant (Field, 2018, p. 528).

Such a result is consistent with a number of contingency-based SMA studies. In her exploration of customer accounting and marketing performance measures in the Australian hotel industry, McManus (2013) found greater implementation of customer accounting in hotels with a decentralised structure.

Oyewo (2022) identified the relationship between organisational structure and strategic management accounting (SMA) application, specifically by moderating regression models to test the moderating influence of organisational structure on the effectiveness of SMA practice. The study found that organisational structure significantly moderated the relationship between SMA use and competitive advantage. Specifically, the results indicate that a more decentralised structure enhances the effectiveness of SMA, suggesting that the decision-making flexibility associated with a decentralised structure may lead to better strategic management practices as well as improvements in their competitive positioning.

There have been some findings in the literature in the past that are not quite the same. In the recent investigation on the contingency factors of customer accounting in Kuwait financial service organisations, the association was not found in the sample set (Ojra, Opute and Alsaqer, 2023). Similarly, a significant positive connection was also absent in the Palestinian context (Ojra, 2014). The mixed findings in previous literature underline the complexity of the organisational structure constructs (Ojra, Opute and Alsaqer, 2023), both formalisation and decentralisation.

It is worth noting that, as the reform of state-owned enterprises is still ongoing, the levels of formalisation and decentralisation reflected in this survey only represent the current structural status of the enterprise. These levels will continue to change as the reform deepens. Against this background, the structure, environment, and strategy of state-owned enterprises and their fit with the SMA could be areas worth exploring further. Therefore, future research should continue to observe the two aspects of the organisational structure in order to draw conclusions that are more in line with the evolving environment.

6.3.5 The relation between firm size and SMA usage

Multiple studies support the impact of organisational size on accounting practices (e.g. Guilding, 1999; Chenhall, 2007). Larger firms typically face more complex environments and, therefore, require more sophisticated management accounting systems (Khandwalla, 1972, 1977). In addition, the application of SMA techniques is believed to have a positive impact on firm performance, especially in highly uncertain market environments (Ojra, 2014). Therefore, larger organisations are indeed more

likely to use SMA to respond to market changes and improve performance. Cadez and Guilding (2008) also confirmed that the application of SMA is positively related to firm size. Therefore, this paper hypothesised:

H5: SMA adoption is positively associated with firm size.

To gauge the relationship between firm size and SMA usage, participants were requested to indicate the total revenue of the previous financial year. In other words, a Likert scale was not used in this regard. Therefore, to ascertain the level of relationship, this study compared the mean values for the SMA usage at each of the scale points created for the Company's total revenue for the last financial year. Based on the responses from the participants, a 5-point scale was created as shown in Table 6.8. To understand if SMA usage is positively related to firm size, the mean values for SMA usage at all points on the created scale were calculated. Table 6.8 below shows higher mean values for larger firms.

Table 6.8: The extent of SMA Usage based on the Firm Size			
Scale Points	Company's Total Revenue for last Financial Year (in Chinese Yuan)	Valid Percent	Mean Value for SMA Usage
1	Less than 100,000,000	18.2%	2.821
2	100,000,000-999,999,999	30.9%	2.987
3	1,000,000,000-9,999,999,999	26.0%	3.431
4	10,000,000,000-99,999,999,999	15.3%	3.901
5	Over 100,000,000,000	9.5%	4.029

Based on the above statistical evidence, it is logical to suggest that larger Chinese firms of the type considered in this research would have more need for strategic management accounting practices than smaller ones. Thus, H5 (SMA adoption is positively related to organisational size) is supported.

Cadez and Guilding (2008) used total firm revenue as a measure of firm size, employing a questionnaire method to collect data from 193 large firms in Slovenia. The finding of the study is that there is a significant positive relationship between firm size and SMA use, i.e. larger firms are more likely to use more sophisticated SMA techniques in the three dimensions of strategic decision-making, customer accounting and competitor accounting.

While the majority of studies are in favour of a positive correlation between the two variables (e.g. Ojra, 2014; Pasch, 2019), however, there are some mixed findings in the literature. For example, Cinquini and Tenucci (2007) find that Competitor Cost Assessment and Strategic Pricing are negatively related to firm size. These SMA techniques are more frequently used by smaller firms, possibly because these firms rely more on competitor information to remain flexible in highly competitive markets. Furthermore, in their later study, a weaker correlation was found between firm size and the use of SMA techniques (Cinquini and Tenucci, 2010).

These different findings may support Chenhall's (2007) view that aspects like size variation and choice of techniques also need to be considered when examining organisational size. While it is reasonable to assume that large companies use formal MCS, depending on size, organisations may use different types of controls (Chenhall, 2007).

6.3.6 The relation between SMA usage and organisational performance

The application of the contingency framework in organisational management research aims to find proper management methods for enterprises to improve their business performance (Boyd et al. 2011; Chenhall, 2003). Research that basing on this framework has been emphasising that the fit between endogenous variables (e.g. organisational structure, accounting information attributes and management control systems) and exogenous variables (e.g. environmental uncertainty) could contribute to improved organisational performance (Baines and Langfield-Smith, 2003; Chenhall, 2007; Turner et al. 2017; Ojra, Opute and Alsolm, 2021; Pires, Alves, and Rodrigues, 2024). Particularly in an uncertain environment, greater emphasis on non-financial and external information could lead to better outcomes for organisations (Pires and Alves, 2022; Al-Mawali and Lam, 2016; Hoque, 2004; Hoque and James, 2000). Additionally, a large body of literature suggests that some characteristics (like strategic or customer-related features) of accounting information or management accounting practices have a direct and positive impact on performance (Cadez and Guilding, 2008; Turner et al. 2017; Ojra, Opute and Alsolm, 2021).

There are some pieces of evidence that reflect the association between the adoption of SMA and organisational performance (Cadez and Guilding, 2008; Turner et al. 2017; Ojra, Opute and Alsaqer, 2023). Mixed results can also be found in the performance implication of SMA practice. This research examined the impact on performance by dividing it into financial and non-financial aspects. The statistical results are

summarised in Table 6.6, and the findings are discussed in the following two sections (6.3.6.1 and 6.3.6.2)

6.3.6.1 Financial performance

Various studies on the improvement of management accounting, as well as the application of SMA, have given great importance to financial performance and obtained evidence of a positive correlation between the two (Ojra, Opute and Alsolm, 2021; Turner et al. 2017). Therefore, this study proposes the following hypotheses:

H6a: Greater SMA adoption is positively associated with financial performance.

The hypothesis is supported by the statistical results according to section 6.2.2.1 (Figure 6.2). The model further shows that the effect of SMA on financial performance is statistically significant ($F = 137.736$, $p < .001$), suggesting that the financial performance of the organisations increases as the application of SMA increases.

These findings are consistent with the research of Cadez and Guilding (2008). As the originator of the contingency-based SMA research stream, Cadez and Guilding examined not only the impact of contingency factors on two different dimensions of SMA practice but also their mediating role on firm performance. By employing a structural equation model, the research has found that SMA usage affects performance positively. Although the study did not analyse financial and non-financial performance separately, the instrument used to measure performance contained seven indicators for both types of performance.

Such findings are in line with the study of Turner et al. (2017), in which they used a sample of 80 hotel properties to investigate SMA usage and its impact on hotel property customers and financial performance. The findings elucidate the mediating effects of SMA practice in hotel properties on the relationship between market orientation, business strategy and financial performance.

However, in their research examining the effectiveness of different configurational archetypes of strategic and SMA, Cadez and Guilding (2012, p. 495) claim that “only limited support is provided for the configurational proposition that internally consistent strategy and SMA system configurations are associated with higher performance”. As acknowledged by the authors: “...this finding challenges much traditional mainstream contingency based modelling in management accounting” (Cadez and Guilding, 2012, p. 495), the inconsistent findings reflect the complexity of SMA practice and its performance implications. Thus, this research believes that more diverse explorations of the relationship between the two variables are required to gain a deeper understanding.

6.3.6.2 Non-financial performance

Non-financial performance has received increasing attention in SMA application research and is seen as an important dimension in measuring organisational success, complementing traditional financial measures. Previous empirical studies have found a significant positive relationship between SMA application and non-financial performance (Cadez and Guilding, 2008). Accordingly, this study proposes the

following hypothesis:

H6b: Greater SMA adoption is positively associated with non-financial performance.

The results of the regression analysis presented in Section 6.2.2.2 indicate a statistically significant association between SMA usage and non-financial performance ($F = 118.318$, $p < .001$). This suggests that greater use of SMA techniques may be related to enhanced non-financial outcomes such as product/service development and customer satisfaction.

In Ojra, Opute and Alsolm's (2021) literature study, they emphasise the importance of non-financial performance measurement. Measure instruments include externally oriented metrics that reflect the organisation's ability to adapt to market changes and remain competitive. It is found that the positive impact of SMA practices on non-financial performance is more significant than on financial performance, with organisations demonstrating higher customer satisfaction and greater operational efficiency as a result of effective SMA implementation. The current study confirms this observation.

Alamri's (2019) research indicates similar results. Collecting from 435 accounting managers in 124 Saudi listed companies, Alamri has developed a conceptualisation of SMA facets and investigated the influence that these facets have on both financial and non-financial performance. The research finds that although the beta coefficient is not as high as financial performance, the results of non-financial performance still indicate a significant positive impact from SMA facets ($\beta = 0.352$, $p < 0.005$).

A recent empirical study based on the client accounting practices of 115 Kuwaiti

financial services organisations also demonstrated a strong relationship between the implementation of the techniques and improvements in non-financial performance (Ojra, Opute and Alsaqer, 2023). The findings of this series of studies provide strong evidence that non-financial performance metrics, such as customer satisfaction and new service development, are critical to assessing the overall effectiveness of strategic management accounting (SMA) techniques. These metrics provide a broader perspective on performance, especially in volatile environments where financial metrics alone may not provide a full picture of an organisation's results.

Multiple studies have confirmed the consistent positive relationship between SMA and non-financial performance, which indicates a close connection between the two. This signals the critical role of SMA in improving key non-financial indicators such as customer satisfaction and the development of new products/services.

6.4 Summary of findings and generalisability

All the findings that are related to the hypothesis proposed in Chapter 3 are summarised in Table 6.9:

Table 6.9: Hypothesis Summary		
No.	Hypothesis	Supported or not
H1a	The higher the competitive intensity level, the greater the adoption of SMA techniques.	Not supported
H1b	The higher the market turbulence level, the greater the adoption of SMA techniques.	Supported
H2	The adoption of SMA techniques would be greater in prospectors than in defenders.	Supported
H3	Organisations with higher levels of technology would have greater SMA adoption.	Supported
H4a	Greater SMA adoption is positively associated with formalised organisations.	Not supported
H4b	Greater SMA adoption is positively associated with decentralised organisations.	Supported
H5	SMA adoption is positively associated with firm size.	Supported
H6a	Greater SMA adoption is positively associated with financial performance.	Supported
H6b	Greater SMA adoption is positively associated with non-financial performance.	Supported

In order to optimise the consideration of the generalisability of this study, the researcher has followed the advice and criteria suggested by academics (e.g. Collis and Hussey, 2021; Field, 2018; 2024):

The participating organisations are randomly selected from the SSE and SZSE. The heterogeneity of the participating companies has been ensured as much as possible while remaining relevant to the SMA practice. As reported in Section 4.6.4, the sample has achieved a sufficient size to generate the findings of the research according to Krejcie and Morgan's (1970, p. 608) criteria that have also been suggested by Collis and Hussey (2021). Moreover, as reminded by Collis and Hussey (2021, p. 192), the threat of non-response bias has been considered in the research.

Furthermore, the value differences between R^2 and adjusted R^2 in the three regression models have been checked, and they range from 0.002 to 0.011. The differences indicate that if the three regression models in the study were derived from the population rather than the sample it would account for 0.2% to 1.1% less variance in the outcome (Field, 2018, p. 546).

Overall, the researcher has made efforts to ensure the generalisability of the study's findings.

However, the following points should be noted when interpreting the results:

The findings are based primarily on listed organisations in mainland China, and specific economic and business contexts may affect the relationship between contingency factors and SMA. Hence, the applicability of the findings in other contexts may be limited, especially in environments with significant differences in market conditions, industry competition, and corporate culture.

This study is the first to explore the current status of SMA adoption in the region. To ensure the data relevance, the study selected large enterprises and those in highly competitive or volatile market environments. However, the adoption pattern of SMA techniques may differ for SMEs with limited resources. Therefore, the generalisability of the findings to SMEs needs further validation.

To test the generalisability of the research results, future studies should replicate this research in different countries and industries, especially in environments with highly competitive intensity and market uncertainty, to further assess the impact of SMA adoption on firm performance.

Chapter 7 Conclusion

7.1 Introduction

This chapter concludes the thesis by reviewing the purpose and research questions of this study, summarising the relevant key findings and discussing their contribution to existing theory and practice. In order to gain a deeper understanding of the application of SMA techniques in listed firms, this study used a web-based survey questionnaire to examine factors associated with their use and the relationship between SMA usage and firm performance, leading to several key findings. Although this study contributes to the theoretical development and management practices in the field of SMA, there are some limitations. Therefore, this chapter also presents recommendations for future research to facilitate further exploration of SMA techniques. This chapter consists of the following main sections:

1. Review of the research objectives and questions (Section 7.2);
 2. Summarise key findings (Section 7.3);
 3. Discussing the contribution and limitation of the study (Sections 7.4 and 7.5);
- and
4. Proposing recommendations for future research directions (Section 7.6).

7.2 Core Conclusions from the Study

As illustrated by the literature review (Chapter 2), research on strategic management accounting has not yet reached a consensus in various areas (Langfield-Smith, 2008;

Rashid, Ali and Hossain, 2020; Ojra, Opute and Alsolm, 2021; Pires, Alves, and Rodrigues, 2024). Therefore, an empirical study from an under-researched area is important for a deeper understanding of SMA (Duh, Xiao and Chow, 2008; Rashid, Ali and Hossain, 2020). Focusing on listed companies in mainland China, this study aims to explore the nature of SMA adoption from the perspective of a developing country. By identifying the internal and external factors associated with the implementation of SMA in these organisations and examining how these factors relate to organisational performance, this study attempts to provide new insights into the theory and practice of SMA.

This study, therefore, breaks down the above aim into three objectives (Section 1.5) and poses the following three research questions:

1. To what extent are different types of strategic management accounting (SMA) techniques adopted by Chinese listed companies?
2. What is the relationship between contingency factors and the adoption of SMA techniques?
3. What is the relationship between the adoption of SMA techniques and organisational performance in Chinese listed companies?

In order to obtain answers to these questions, this study used an internet questionnaire to collect information from finance executives of listed companies. For the first question, the researcher collected data on the nine SMA techniques for the three categories that have been studied less frequently (strategic decision-making, competitor accounting and customer accounting).

To answer the second question, the researcher reviewed the relevant literature and compared the basic situation of management accounting practice in organisations in China, and obtained several most relevant factors, which include: environmental uncertainty (competitive intensity and market turbulence), business strategy (prospector and defender), technology, organisational structure (formalisation and decentralisation), and organisational size. This was followed by the selection of suitable measurement instruments (Table 4.4) to collect data from financial managers. Finally, eight performance measurements were selected for this study for the performance implication of SMA usage in Chinese organisations, including four financial and four non-financial indicators. Financial managers were asked to use these indicators and apply a 7-point Likert scale to assess where their company's performance stood relative to the industry average, ranging from "significantly below average" to "significantly above average".

This study has proposed nine hypotheses to explore the environmental factors for the adoption of SMA techniques and the impact of their implementation on organisational performance. The results of the study, as demonstrated in Table 6.7, revealed that the level of market turbulence (H1b), the prospector strategy (H2), the general technology level of the organisation (H3), the decentralised organisational structure (H4b), and the size of the organisation (H5) are significantly and positively associated with the adoption of SMA techniques. In addition, extensive adoption of SMA techniques is significantly and positively related to both the financial (H6a) and non-financial performance (H6b) of the organisation. However, the expected positive relations of

high level of competitive intensity (H1a) and formalised organisational structure (H4a) on SMA adoption were not supported.

7.3 Contributions to Knowledge

The contributions of this research are discussed separately from academic theories (Section 7.3.1) and business practice (Section 7.3.2) perspectives.

7.3.1 Theoretical Contributions

This study conducted a questionnaire survey on the practice of SMA among listed companies in mainland China from a contingency perspective. By doing this, the explanatory ability of the contingency theory in the Chinese environment was explored. While contingency theory proposes that the fitness between organisational systems and their contexts is the essence of improved outcomes, the different features of contingency factors in mainland China, particularly aspects like unique organisational structures due to the reforming of SOEs, make the evidence from this particular economic entity valuable to explore in order to gain a deeper understanding on contingency theory. The findings of this research have made several specific contributions to the research on contingency factors of SMA practice.

Firstly, this study provides further supportive evidence of the impact of PEU in SMA practice. Although previous literature has highlighted the significant impact of PEU on managerial accounting practices in organisations, some empirical results have been inconsistent. Sharma (2002) proposes that this inconsistency in results is due to the

fact that PEU belongs to a complex structure and needs to be explored in a multidimensional way. The design of the research process, as well as the results of this study, validate this view. By applying Jaworski and Kohli's (1993) perspective, this study measured, collected and analysed data on each of the two dimensions under PEU. It was found that only the market turbulence dimension was significantly related to SMA total usage, while the competitive intensity dimension correlation hypothesis was not supported. These results support Sharma's (2002) view to some extent. In order to reduce the inconsistency in the results of the PEU study, decomposing it into multiple dimensions to be analysed separately would enable a better understanding of the impact of this exogenous variable on SMA practice.

This study provides statistical evidence to validate Ojra's (2014) finding of a positive relationship between the comprehensive technological environment and SMA practices. While there has been relatively limited research on the relationship between the two variables in the existing literature, the current study further supports this connection in different contexts, enhancing the research foundation in this area. A recent study (Oyewo, 2022) has mainly focused on a specific technological dimension (the quality of information technology) and failed to find a correlation with SMA practices. Through a broader technological environment analysis, this study verifies the positive correlation between the comprehensive technological environment and SMA practices. This finding lays the foundation for further exploration of different dimensions of technology, such as the quality dimensions of information technology (Oyewo, 2022) and the technological dimension that has a significant impact on the

design of management control systems (Chenhall, 2007).

In line with the contingency-based management accounting (CBMA) framework, this study also verified the significant positive correlation between the contingency factors of decentralised organisational structure, prospector strategic type and larger organisational scale and SMA practices. By collecting data such as the strategic orientation and organisational structure of firms and analysing the role of these contingencies, this study further demonstrates the applicability of the CBMA framework. Where environmental factors match SMA practices, such as in decentralised and larger organisations, SMA techniques can more flexibly support strategic decision-making, leading to better financial and non-financial performance. This study not only explores the application of SMA in different environmental contexts but also further examines the adaptability of the CBMA framework in mainland China, and enhances its explanatory ability in multidimensional environments.

These findings not only contribute to the SMA literature from a contingency perspective but also offer implications for broader organisational behaviour theory by revealing how contextual alignment influences managerial accounting outcomes.

Contingency theory has its intellectual roots in organisational behaviour literature and has long been employed to explain the fit between organisational systems and their contexts (Donaldson, 2001; Hamann, 2017). This study, by empirically examining contextual variables such as decentralisation, strategy type, and size, contributes to this broader theoretical conversation. The findings support the core proposition in

organisational behaviour research that alignment between structure and environment enhances organisational effectiveness (Burns and Stalker, 1961; Boyd et al., 2012), and they reaffirm the relevance of structural contingency theory in modern accounting settings.

In particular, the observed effects of decentralised structures and prospector strategies on SMA usage reflect managerial discretion in designing adaptable systems—an issue central to structural contingency thinking (Miles and Snow, 1978). These insights reinforce the value of adopting a contingency-based view when evaluating how accounting tools are embedded in broader organisational designs, particularly in transitional economies like China.

7.3.2 Managerial Contributions

This study offers multiple contributions to financial managers, management accountants, and decision-makers who utilise management accounting information frequently. It provides both theoretical insights and practical application suggestions, which are characterised by distinctive regional economic features. This study supports the core logic of contingency theory, which argues that firms need to observe and interact with the environments in which they operate, and that the application of SMA needs to consider a range of internal and external environmental factors in order to adapt to change and enhance performance.

The findings of this study provide managers with several observations for their

practical activities. Firstly, the use of SMA techniques (including strategic decision-making, competitor and customer accounting) has been shown to enhance organisational performance, particularly non-financial performance such as customer satisfaction and development of new products/services. The results of the study show that, just like financial performance, there is a significant positive correlation between non-financial performance and the use of SMA. Therefore, both financial and non-financial performance indicators should be included when conducting performance assessments, and the importance of non-financial indicators should not be overlooked.

Moreover, this research provides specific and practical guidance for companies on the application of SMA techniques. Some commonly applied SMA dimensions (costing, planning, control and performance measurement) have been shown to play critical roles in different contexts; however, the current research further emphasises the importance of strategic decision-making, customer accounting and competitor accounting dimensions in environments with high uncertainty. These techniques can assist organisations in responding to market fluctuations, competitive pressures and changes in customer demand by providing more comprehensive strategic information, thereby optimising strategic and management decisions. For example, when the level of market turbulence is high, firms need these market-oriented techniques to analyse the external environment in order to enhance strategic decision-making; firms that pursuing a prospector strategy and organisations with decentralised structures are more likely to implement SMA to gain better outcomes; and large firms and highly

technology-based organisations are similarly more inclined to adopt advanced approaches such as SMA in order to enhance their performance.

Overall, this study provides feasible guidance for strategic and managerial decision-making, especially on how to respond flexibly to changes in the organisational environment and adapt the SMA application according to the changes. This study offers a reference for organisations to address complex market challenges and achieve better financial and non-financial performance through the flexible application of SMA techniques.

7.4 Limitations of the Study

Fulfilling the purpose of this study, the researcher has investigated SMA usage from a contingency perspective through an online questionnaire survey. By doing so, this research can assist in:

- 1. Understanding the general SMA adoption in mainland China, the contingency factors that influence it, and its performance implications;*
- 2. Gaining deeper comprehension of the contingency theory and CBMA model.*

Although the researchers tried to ensure generalisability and reduce bias throughout the various steps of the study, there are still some limitations that need to be clarified:

The first one would be the sample representation and selection bias. This study relies on data collected from an online questionnaire sent to management accounting (MA) professionals. While this method is effective in reaching a large number of potential participants, it may not fully capture the diversity of the MA professional community. Particularly in relation to the fact that the main component of responses for this study

was collected via the Survey App (by sending the questionnaire QR code to potential participants). Thus, there could be potential selection bias in this process, as respondents who choose to participate may be different from those who do not. For example, participants may be those who are more familiar with or supportive of digital communications, which may influence their responses, particularly to questions related to their perception of the technology environment.

Secondly, it is relatively difficult to guarantee the quality of responses to online questionnaires. Compared with the traditional method of sending the questionnaire to the company by post and then having the respondents fill in the answers on paper, online questionnaires, while having advantages in terms of time-saving and convenience, may not be taken equally seriously by the respondents. In addition, the researcher found that responses to online questionnaires often contained patterned answers, such as choosing the same answer for multiple questions in a row (e.g., typing “7” consecutively), which made it more difficult to screen and analyse the data.

The third limitation lies in the limited depth of data collected in this study. Although this study efficiently collected rich quantitative data from a large number of respondents with an online questionnaire, however, limited to that format, the questionnaire could not be too long, so the data lacked depth. Compared to qualitative methods such as interviews or case studies, questionnaires are difficult to capture the full context and details of management accountants as they implement their practices and address their challenges. This limits an in-depth exploration of the complexity of

management accounting practice. Furthermore, while this study provides evidence of the application of the contingency theory in developing economies to a certain extent, from the perspective of understanding the theory of SMA and its practices in depth, it is difficult to gain insights into the specific effects of these practices in that national context by merely probing management accountants' perceptions of SMA practices through questionnaires.

Fourthly, the quality of the answers to the online questionnaire is very much dependent on the understanding of the respondents. Because there is no two-way communication like in-depth interviews, any misunderstanding of the survey items due to ambiguous wording or differences in the respondents' level of expertise may affect the accuracy of the data. In addition, this study needs to translate the English measuring instruments into Chinese, and although the researcher has sought the help of professionals who are strong in both accounting and English, there is still a need to consider the issue of information loss during the translation process.

Finally, this study seeks to synthesise and analyse the key factors in the existing contingency theory literature on the application of strategic management accounting (SMA). However, due to the limitation of the length of this paper, some important factors that may affect the implementation of SMA (e.g., cultural context, market orientation, and accountants' participation) are not covered. The fact that these elements are not included in this study does not mean that their importance has been ignored by the researcher, but is simply a necessary trade-off due to space and methodological considerations.

In addition, although firm size and business strategy are widely acknowledged as influential contingency variables in prior SMA research, they were not included in the regression model of this study. This decision was primarily based on the difference in measurement approach. Specifically, business strategy was assessed using a continuum between defender-type and prospector-type descriptions, while firm size was captured through revenue categories. These variables differ fundamentally from the Likert-scale constructs used for other predictors in the model, and their inclusion could have compromised the internal consistency of the regression analysis. As such, their effects were examined separately through descriptive statistics and mean comparisons. While this modelling decision may result in a certain degree of omitted variable bias, it is acknowledged here as a limitation. Future research may consider integrating these and other relevant factors into a more comprehensive modelling framework.

7.5 Recommendations for Future Research

This study examines the practice of SMA and the applicability of the contingency theory in Chinese organisational studies through a questionnaire survey of finance executives in Chinese listed companies. Although this study provides a preliminary understanding of SMA practice in mainland China, certain contingency factors were not covered. For example, in Cadez and Guilding's (2008) study exploring the Contingency model of SMA, they summarised two dimensions of SMA: the application of strategy-oriented management accounting techniques and the

involvement of accountants in strategic decision-making. Only the first dimension is examined systematically in this study. According to Pires, Alves, and Rodrigues (2024), the existing research on SMA practices based on a contingency perspective has explored relatively little about the second dimension. Therefore, in order to gain a deeper understanding of the different elements that influence SMA practice and outcome implications, future research could explore contingency factors such as accountants' participation, cultural influences, and so on.

In the application of contingency theory, it is crucial to understand its multidimensional factors, especially in the field of management accounting. For example, when examining the dimensions of business strategy, the prospector and defender, although widely studied, represent only part of the strategic understanding. Based on the work of Cinquini and Tenucci (2010), SMA researchers should reconfigure these dimensions in order to explore the “fit” of contingency theory in greater depth and to enhance the practical value of SMA applications. In addition, the dimension of organisational structure exhibits different characteristics in different countries, especially in countries that are differentiated from the Western concepts of decentralisation and formalisation. For example, many Chinese state-owned enterprises have gradually become independent in the process of decentralisation of state institutions. In the context of deepening reforms, these enterprises not only need to be accountable to the state (i.e., the majority shareholder) for policy and social responsibilities, but also to be self-financing, which complicates the measurement of characteristics of decentralisation or formalisation. Therefore, this study suggests that

SMA researchers should incorporate specific contexts into the analysis of factor dimensions and the development of measurement instruments. This approach will provide recommendations related to SMA practice that are customised to a specific context, thereby increasing the effectiveness and applicability. At the same time, it will greatly enrich the scope of application of the contingency theory, aligning it more closely with practical needs.

In conducting further research on China-specific SMA practices (or SMA practices in similar environments for that matter), it is important to consider the context of the deepening reform of state-owned enterprises (SOEs). With a large number of SOEs undergoing a gradual transformation towards marketisation, this shift has led to significant differences in organisational structure design, strategic goal setting and decision-making processes between SOEs and private firms. Therefore, in-depth exploration and comparison of the differences in SMA practices between these two types of enterprises not only enriches the development of the theory, but also provides an important perspective and value for optimising management practices.

Finally, as discussed in the previous section, many of the limitations of this study arise from the constraints of the research methodology itself. Future research on SMA could be conducted with a mixed methods approach, which would allow for the collection of a large amount of data in order to gain a greater understanding of the overall situation, as well as an in-depth exploration of the practice of SMA. In particular, some of the factors mentioned in the previous paragraph, such as in-depth interviews or case studies on the role of accountants' involvement in strategic

decision-making, may be a good addition to the strategic management accounting practice understanding.

7.6 Closing Summary

In summary, this study has systematically explored SMA practice in listed organisations, its contingency factors, and examined its performance implications, providing valuable contributions to both the practical and theoretical development of strategic management accounting. With the deepening of state-owned enterprise reform and the acceleration of globalisation, the demand for modern management tools is increasing. The Chinese government, in its recent 14th Five-Year Plan, has also proposed plans to promote accounting informatisation. This study aligns with this trend and provides strong support for the integration of informatisation into strategic decision-making within organisations.

While based on data from a single country, the findings of this research offer valuable insights and a useful reference for advancing SMA theory and practice, with potential relevance for both Chinese organisations and broader international contexts.

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Appendices

Appendix 1 Covering letter

Dear Sir/Madam,

I am a DBA candidate at the University of Wales Trinity Saint David (UWTSD). I would like to invite you to participate in my research on strategic management accounting (SMA) practice and its performance implication in Chinese listed companies.

Central Bank Governor Yi Gang cited a group of data at the 2018 Financial Forum: "the average life expectancy of SMEs in the US is about eight years, the number in Japan is 12 years, and the average life expectancy of SMEs in China is about three years." A series of updated relevant data shows that the average life expectancy of private SMEs in China is 4.13 years, while the average life expectancy of non-SMEs is 6.61 years.² The reasons for the short life span of Chinese companies are manifold. The purpose of my study is to attempt to explore, from the perspective of the application of management accounting techniques within enterprises, that is the current state of application of SMA techniques in listed companies, and the impact of its application on company performance.

According to the newly issued "Fourteenth Five-Year Plan for Accounting Reform and Development" which requires that "..... Strengthen research on accounting theory and practice To conduct forward-looking and strategic research around the key tasks of accounting reform and development." The research on SMA practice in listed companies can enhance the understanding of the application of management accounting techniques in China.

For the reasons above, this study invites the Chief Controller/Chief Financial Officer/Chief Accountant in your organisation to participate and complete a questionnaire.

This questionnaire will take approximately 15 minutes to complete. As a token of my appreciation for your participation and completion of the questionnaire, the summarised results of this study will be shared with you in the form of a comprehensive report upon completion. You are also assured that any information you provide will be used for academic research purposes only and will be kept strictly confidential.

Your opinion is important to this study. The success of this study depends to a large extent on your participation in answering all the questions in the questionnaire. If you have any questions, please feel free to contact me or my supervisor, Dr Opute. Our contact details are provided below.

Thank you for taking the time to read this letter. I would like to thank you in advance for your valuable time and cooperation.

Yao Xia Liang

² Ren Zeping, 2021, A study on the current state of business of China's small and micro enterprises.
<https://finance.sina.com.cn/zl/china/2021-12-20/zl-ikyamrmz0029687.shtml>

Email:

Mobile: 18873016733

Supervisor: Abdullah Promise Opute (PhD)

Email:

Mobile:

General Instruction

1. The purpose of the study is to explore the SMA practice in listed companies and its impacts on both the financial and non-financial performance of the business;
2. Please ensure that you read and answer all questions carefully. If there is any question to which you are not sure of the answer, please estimate the information to the best of your ability. It is important that all questions are answered and that nothing is left out.
3. The questionnaire is divided into two main sections. The first section contains general demographic information about your organisation and the respondent. The second part is divided into questions covering six areas of strategic management accounting practice.
4. This study will strictly adhere to the Code of Conduct for Social Science Research, hence, all responses will be kept strictly confidential and neither the company nor the respondent will be divulged.
5. A glossary of terms related to strategic management accounting is provided on the last page of the questionnaire to enable you to understand these terms and their context in the research.
6. Participation in this study is voluntary and you can withdraw at any time.

Appendix 2

Appendix 2a

Part I: Basic company and personal information

(1) Industry in which your company operates:

☐ Agriculture, forestry, livestock and fisheries	☐ Real estate
☐ Mining	☐ Leasing and business services
☐ Manufacturing	☐ Scientific research and technology services
☐ Electricity, heat, gas and water production and supply	☐ Water, Environment and Public Facilities Management
☐ Construction	☐ Residential services, repairs and other services
☐ Wholesale and retail trade	☐ Education
☐ Transport, storage and postal services	☐ Health and social work
☐ Accommodation and catering	☐ Culture, sport and entertainment
☐ Information transmission, software and information technology services	☐ General
☐ Financial Services	

(2) What is the approximate balance sheet value of your company's total assets?
_____ (RMB)

(3) What was your company's total revenue for the last financial year?
_____ (RMB)

(4) What is the approximate number of employees in your company?

(5) How many years has your company been in business?

☐ Less than 5 years ☐ Between 5 and 10 years ☐ Between 11 and 15 years

☐ Between 16 and 20 years ☐ Between 21 and 25 years ☐ Over 25 years

(6) What is your current job title? _____

(7) How long have you worked in your current position?

(8) How long have you worked for the company?

(9) How many years of work experience do you have in your field?

(10) Your highest qualification is

☐ High School Level

☐ Bachelor's degree

☐ Masters

☐ PhD

☐ Professional qualifications (please specify)

☐ Other (please specify)

(11) Your gender: ☐ Male ☐ Female

(12) Your age: _____

(13) Are you willing to be interviewed:

☐ No

☐ Yes. Your contact information, please: _____

Appendix 2b

Part II:

1. Strategic management accounting (SMA) techniques

Based on the definitions provided in the glossary at the end of the questionnaire, to what extent does your organisation use the following accounting techniques? Use a scale from '1' [Never] to '7' [Always] to tick the most appropriate box.

SMA Techniques	1	2	3	4	5	6	7
1. Strategic costing (Strategic cost management)	☐	☐	☐	☐	☐	☐	☐
2. Strategic pricing	☐	☐	☐	☐	☐	☐	☐
3. Brand valuation	☐	☐	☐	☐	☐	☐	☐
4. Competitor cost assessment	☐	☐	☐	☐	☐	☐	☐
5. Competitive position monitoring	☐	☐	☐	☐	☐	☐	☐
6. Competitor performance assessment	☐	☐	☐	☐	☐	☐	☐
7. Customer profitability analysis	☐	☐	☐	☐	☐	☐	☐
8. Lifetime customer profitability analysis	☐	☐	☐	☐	☐	☐	☐
9. Valuation customer as assets	☐	☐	☐	☐	☐	☐	☐

2. Business Strategy

Below are descriptions of two hypothetical organisations, A and B. Please read these characteristics and assess which one describes your organisation better. Then place your organisation on the scale provided and tick one of the seven numbers, where (1) represents perfectly the performance of organisation A and (7) represents organisation B.

1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
Company A				Company B		
 Stable products and services  Constant competition				 Diversity of products and services  Dynamic competition		

 Ignore any changes that are not affected by the current business  Continue to do the best work in your current field  Focus on efficiency/cost control	 Responding to market needs  Extensive environmental and market information
---	---

3. Organisational structure

Please indicate on a scale of '1' [strongly disagree] to '7' [strongly agree] how well the following characteristics describe your organisational structure.

	1	2	3	4	5	6	7
1. In our organisation, employees are allowed to make their own decisions without having to ask anyone else	☐	☐	☐	☐	☐	☐	☐
2. My usual experience in our organisation is "play by the rules"	☐	☐	☐	☐	☐	☐	☐
3. Many of the activities in our organisation have no formal procedures	☐	☐	☐	☐	☐	☐	☐
4. In our organisation, even minor matters must be referred to someone higher up for a final answer.	☐	☐	☐	☐	☐	☐	☐
5. Any major decisions made by staff must be approved by senior management	☐	☐	☐	☐	☐	☐	☐
6. Employees who want to make their own decisions are quickly discouraged	☐	☐	☐	☐	☐	☐	☐

4. Technology

Please indicate on the scale below, from '1' [not at all] to '7' [to a large extent], the extent to which the following characteristics describe your organisation's technological environment. Please tick the most appropriate box.

	1	2	3	4	5	6	7
Technology is a core element of the organisation's	☐	☐	☐	☐	☐	☐	☐

operating systems							
Our production/service techniques are technology-based	☐	☐	☐	☐	☐	☐	☐
The accounting information system in our organisation is computer-based	☐	☐	☐	☐	☐	☐	☐
We invest in software packages to assist our accounting and other operational systems	☐	☐	☐	☐	☐	☐	☐

5. External environment

Please indicate on a scale of '1' [strongly disagree] to '7' [strongly agree] how well the following characteristics describe the external environment of your organisation. Please tick the most appropriate box.

	1	2	3	4	5	6	7
1. Competition in our industry is cut-throat	☐	☐	☐	☐	☐	☐	☐
2. Competition for market share in our industry is intense	☐	☐	☐	☐	☐	☐	☐
3. Price competition in our industry is intense	☐	☐	☐	☐	☐	☐	☐
4. There are many "promotional wars" in our industry	☐	☐	☐	☐	☐	☐	☐
5. In our industry, customers' product preferences have changed considerably over time	☐	☐	☐	☐	☐	☐	☐
6. Our customers tend to look for new products all the time	☐	☐	☐	☐	☐	☐	☐
7. We are witnessing demand for our products and services from customers who never bought them before	☐	☐	☐	☐	☐	☐	☐
8. New customers tend to have product-related needs that are different from those of our existing customers	☐	☐	☐	☐	☐	☐	☐
9. We cater to many of the same customers that	☐	☐	☐	☐	☐	☐	☐

we used to in the past

6. Business Performance

Please indicate on the scale below, from '1' [significantly below average] to '7' [significantly above average], how your organisation is performing relative to its competitors on each of the following criteria. Please tick the most appropriate box. To the best of your knowledge (your answer is not expected to be completely accurate)

		1	2	3	4	5	6	7
Financial Measures	Return on Investment	☐	☐	☐	☐	☐	☐	☐
	Sales margin	☐	☐	☐	☐	☐	☐	☐
	Capacity utilisation	☐	☐	☐	☐	☐	☐	☐
	Market share	☐	☐	☐	☐	☐	☐	☐
Non-financial Measures	Customer Satisfaction	☐	☐	☐	☐	☐	☐	☐
	Quality of products/services	☐	☐	☐	☐	☐	☐	☐
	Development of new products/services	☐	☐	☐	☐	☐	☐	☐
	Adaptability to changing environments	☐	☐	☐	☐	☐	☐	☐

Thank you very much for your time and participation in completing the questionnaire.

Appendix 2c

web-based version of the questionnaire with QR code



Appendix 3 - Questionnaire - Chinese Version



战略管理会计的应用与业绩影响

尊敬的财务工作者，

您好！

我是就读于威尔士三一圣大卫大学（UWTSD）的一名博士在读研究生。写这封邮件是想诚意邀请您参与我的研究：中国上市公司的战略管理会计应用及业绩影响。

本研究诚邀贵公司**会计主管/财务总监/总会计师**参与并完成一项问卷调查。如果您能抽出时间完成问卷并在收到问卷后的四个星期内返回，我将不胜感激。

本问卷大概用时 15 分钟。为表达我对您参与并完成问卷的谢意，在本研究完成后其**最终结果将以综合报告的形式与您共享**。同时并保证，**您所提供的任何信息仅用于学术研究，将被严格保密，不被泄露。**

您的意见对此次研究十分重要。本研究的成功在很大程度上取决于您是否参与回答问卷中的所有问题。如果您有任何问题，请随时与我或我的导师 Opute 博士联系。下面提供了我们的详细联系信息。

感谢您花时间阅读这封信。在此提前对您宝贵的时间和合作表示感谢。

姚夏梁

Email:

手机:

导师: Abdullah Promise Opute (PhD)

Email: a.opute@uwtsd.ac.uk

提请知悉

1. 该研究的目的是探索战略管理会计在上市公司中的应用，以及其应用为企业带来的财务业绩和非财务业绩的影响。
2. 请确保您认真阅读并回答所有问题。如果有无法确定答案的问题，请尽您所能估计相关信息。请确保所有的问题都能回答，尽量不要遗漏。
3. 问卷分为两个主要部分。第一部分是关于贵组织和受访者的一般人口统计资料。第二部分分为涉及战略管理会计实践的6个方面的问题。
4. 本研究将严格遵守社会科学研究的行准则，因此，所有的答复都将被严格保密，公司和受访者信息都不会被泄露。
5. 问卷的最后一页提供了战略管理会计相关的术语表，以使您能够了解这些术语及其在研究中的背景。
6. 参与这项研究是自愿的，您可以在任何时候退出。

第一部分：公司及个人基本信息

(1) 贵公司所处行业：

☐制造业

☐信息传输、软件和信息技术服务业

☐建筑业

☐金融业

☐批发与零售业

☐教育

(2) 贵公司的总资产的资产负债表价值大约是多少？_____ (人民币)

(3) 贵公司上一财政年度的总收入是多少？_____ (人民币)

(4) 贵公司中的雇员人数大约是多少？_____

(5) 贵公司已经营了多少年？

☐ 少于 5 年

☐ 5-10 年之间

☐ 11-15 年之间

☐ 16-20 年之间

☐ 21-25 年之间

☐ 超过 25 年

(6) 您目前的工作职位是什么？_____

(7) 您在目前职位工作了多久？_____

(8) 您为该公司工作了多长时间？_____

(9) 您在您的领域共有多少年的工作经验？_____

(10) 您的最高学历是

☐ 专科

☐ 本科

☐ 硕士

☐ 博士

☐ 专业资格（请注明）_____

☐ 其他（请说明）_____

(11) 您的性别：☐ 男 ☐ 女

(12) 您的年龄：_____

第二部分：

一、战略管理会计方法

请根据问卷最后的术语表所提供的定义，贵公司在多大程度上使用了以下战略管理会计方法？请在最合适的方框内打✓。（“1”表示“完全没有”，“7”表示“相当频繁”）。

战略管理会计方法	1	2	3	4	5	6	7
1. 属性成本计算	☐	☐	☐	☐	☐	☐	☐
2. 生命周期成本计算	☐	☐	☐	☐	☐	☐	☐
3. 质量成本计算	☐	☐	☐	☐	☐	☐	☐
4. 目标成本计算	☐	☐	☐	☐	☐	☐	☐
5. 价值链成本计算	☐	☐	☐	☐	☐	☐	☐
6. 标杆管理	☐	☐	☐	☐	☐	☐	☐
7. 综合绩效测量（平衡计分卡）	☐	☐	☐	☐	☐	☐	☐
8. 战略成本核算（战略成本管理）	☐	☐	☐	☐	☐	☐	☐
9. 战略定价	☐	☐	☐	☐	☐	☐	☐
10. 品牌估值	☐	☐	☐	☐	☐	☐	☐
11. 竞争对手成本评估	☐	☐	☐	☐	☐	☐	☐
12. 竞争地位监测	☐	☐	☐	☐	☐	☐	☐
13. 竞争对手业绩评估	☐	☐	☐	☐	☐	☐	☐
14. 顾客盈利能力分析	☐	☐	☐	☐	☐	☐	☐
15. 顾客终身盈利能力分析	☐	☐	☐	☐	☐	☐	☐
16. 顾客资产估价	☐	☐	☐	☐	☐	☐	☐

二、公司战略

在 1-7 的评分量表下方，是对两个假想公司 A 和 B 的战略描述。请阅读 A、B 两组特征，评估哪一个更能描述贵公司的战略方向。并根据量表中 1-7 的提示进行选择。

量表：1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
与 A 完全一致	与 A 很相符	与 A 比较相符	无法判断	与 B 比较相符	与 B 很相符	与 B 完全一致
公司 A				公司 B		
- 提供稳定的产品和服务 - 竞争模式持续不变 - 忽略任何不受当前业务影响的市场信号 - 保持在现有领域提供优秀产品与服务 - 注重效率/成本控制				- 提供多变的产品和服务 - 拥有动态活跃的竞争模式 - 需要积极应对市场需求 - 需要接收广泛的环境和市场信息		

三、组织结构

以下六项是对公司的组织结构的描述。请在 1-7 的量表中标出您在多大程度上赞同这些描述（“1”表示非常不赞同，“7”表示非常赞同）。

	1	2	3	4	5	6	7
1. 在我们的组织中，员工被允许做出自己的决定，而不需要询问其他人	☐	☐	☐	☐	☐	☐	☐
2. 我们公司通常奉行的是“照章办事”的原则。	☐	☐	☐	☐	☐	☐	☐
3. 我们组织中的许多工作都没有正式的程序。	☐	☐	☐	☐	☐	☐	☐
4. 在我们的组织中，即使是小事，也必须提交给更高一级的人，以获得最后的决策。	☐	☐	☐	☐	☐	☐	☐
5. 员工做出的任何重大决定都必须得到高层管理人员的批准。	☐	☐	☐	☐	☐	☐	☐
6. 想自己做决定的员工很快就会被劝阻。	☐	☐	☐	☐	☐	☐	☐

四、技术环境

本部分是对公司技术环境的描述(包括生产运营的硬件技术和行政、财务等方面管理的软件技术)。
请在下面的量表中标出下列陈述在多大程度上描述了贵司的技术环境(“1”表示“完全没有描述
出我司的技术环境”,“7”表示“此描述在很大程度上体现了我司技术环境”)。

	1	2	3	4	5	6	7
硬件/软件技术是我公司运营系统的核心要素	☐	☐	☐	☐	☐	☐	☐
我公司的生产/服务环节是依赖技术的	☐	☐	☐	☐	☐	☐	☐
我公司计信息系统是基于电算化信息的	☐	☐	☐	☐	☐	☐	☐
我公司购买软件包以协助会计和其他业务系统	☐	☐	☐	☐	☐	☐	☐

五、外部环境

本部分是对公司外部环境特征的描述。请在 1-7 的量表中标出您在多大程度上赞同这些描述
(“1”表示非常不赞同,“7”表示非常赞同)。

	1	2	3	4	5	6	7
1. 我们行业的竞争是残酷的;	☐	☐	☐	☐	☐	☐	☐
2. 我们行业的市场份额的竞争是激烈的;	☐	☐	☐	☐	☐	☐	☐
3. 我们行业的价格竞争是激烈的;	☐	☐	☐	☐	☐	☐	☐
4. 我们的行业有许多“促销战”;	☐	☐	☐	☐	☐	☐	☐
5. 在我们的行业中,客户的产品偏好随着时间的推移发生了很大的变化;	☐	☐	☐	☐	☐	☐	☐
6. 我们的客户会不断地寻找新的产品;	☐	☐	☐	☐	☐	☐	☐
7. 我们看到以前从未购买过我们产品和服务的客户对我们的产品和服务有需求;	☐	☐	☐	☐	☐	☐	☐
8. 新客户的产品相关需求往往与我们现有客户的需求不同;	☐	☐	☐	☐	☐	☐	☐
9. 我们提供产品/服务的客户中很多都是“回头客”。	☐	☐	☐	☐	☐	☐	☐

六、业绩表现

以下为您对贵司在各项指标上的综合表现评价。请在下面的量表中指出贵司在下列指标中相对于竞争对手的表现（“1”表示低于同行平均水平，“7”表示高于同行平均水平）。请在最合适的方框内打勾。请尽可能凭自身对公司和行业的了解给出答案（并不期望答案完全准确）。

		1	2	3	4	5	6	7
财务指标	投资回报率	☐	☐	☐	☐	☐	☐	☐
	销售利润率	☐	☐	☐	☐	☐	☐	☐
	产能利用率	☐	☐	☐	☐	☐	☐	☐
	市场份额	☐	☐	☐	☐	☐	☐	☐
非财务指标	客户满意度	☐	☐	☐	☐	☐	☐	☐
	产品/服务质量	☐	☐	☐	☐	☐	☐	☐
	新产品/服务的开发	☐	☐	☐	☐	☐	☐	☐
	对变化的环境的适应性	☐	☐	☐	☐	☐	☐	☐

最后，再次感谢您在填写问卷花费的时间，以及为厘清我国管理会计应用水平做出的贡献！

如果您对此问卷有任何建议，请在下方空白处提出：

（选填）

术语表

1. 属性成本计算

对吸引顾客的特定产品属性进行成本计算。可能被计为成本的属性有：操作性能变量；可靠性及保险规划；供应保障；以及售后服务。

2. 生命周期成本计算

根据产品或服务寿命的阶段长度进行的成本评估。这些阶段可能包括设计、引进、成长、成熟、衰退和最终处置。

3. 质量成本计算

质量成本是那些与缺陷的产生、识别、维修和预防产品缺陷的成本。这些可以分为三类：预防、鉴定、内部和外部故障成本。编制质量成本报告的目的是引导管理层关注质量问题的优先次序。

4. 目标成本计算

在产品和工艺设计过程中使用的一种方法，包括通过从估计的（或基于市场的）价格中减去期望的利润率来估计成本，从而得出期望的生产、工程或营销成本。然后设计产品以满足该成本。

5. 价值链成本计算

一种基于经营活动的成本管理方法，将成本分摊给设计、采购、生产、市场、分销和服务产品或服务所需的活动。

6. 标杆管理

将内部流程与一个理想的标准(或行业龙头)进行比较与评估。

7. 综合绩效测量（平衡计分卡）

一种测量系统，通常侧重于获得基于客户要求的绩效相关信息，其中可能包括非财务指标。这类指标涉及到各部门对那些对确保客户满意度至关重要的因素进行监控。

8. 战略成本核算/战略成本管理

基于企业战略和市场信息来使用成本数据，从而制定能够产生可持续竞争优势的战略。

9. 战略定价

在定价决策过程中对战略因素的分析。

这些因素可能包括：竞争者的价格反应、弹性、市场增长、规模经济和经验。

10. 品牌估值

通过对品牌实力因素（如：领导力、稳定性、市场、国际性、趋势以及相关支持等）的评估，对一个品牌进行财务估值。

11. 竞争者成本评估

定期对竞争者单位成本进行估算。

12. 竞争地位监测

通过评估和监测竞争对手的销售、市场份额、数量、单位成本和销售回报的趋势，来分析竞争对手在行业内的地位。这些信息可以为评估竞争者的市场战略提供依据。

13. 竞争者业绩评估

对竞争者公布的报表进行数据分析，以评估竞争者竞争优势的关键来源。

14. 客户盈利能力分析

计算从某一特定客户的交易中获得利润。该方法的利润计算需要能够追溯到特定客户的成本和销售。该方法有时也被称为“客户账户盈利能力”。

15. 终身客户盈利能力分析

此方法涉及到将客户盈利能力分析的时间范围扩大到未来多年。应用该方法的侧重点在于需要预计关于某一特定客户的所有未来收入流以及服务该客户的成本。

16. 顾客资产估价

该技术指的是计算客户对公司的价值。如，将归属于某个特定客户的所有未来利润流进行折现。

Appendix 4 - SPSS Output

Appendix 4 - SPSS Output: Descriptive Statistics - Frequency Distribution for Demographic Variables

Industry in which your company operates					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	202	58.4	58.4	58.4
	Information transmission, software and information technology services	44	12.7	12.7	71.1
	Financial Services	36	10.4	10.4	81.5
	Construction	31	9.0	9.0	90.5
	Real Estate	21	6.1	6.1	96.5
	Wholesale and retail trade	12	3.5	3.5	100.0
	Total	346	100.0	100.0	

What is the approximate balance sheet value of your company's total assets?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100,000,000	55	15.9	15.9	15.9
	100,000,000-999,999,999	88	25.4	25.4	41.3
	1,000,000,000-9,999,999,999	99	28.6	28.6	69.9
	10,000,000,000-99,999,999,999	56	16.2	16.2	86.1
	Over 100,000,000,000	48	13.9	13.9	100.0
	Total	346	100.0	100.0	

What was your company's total revenue for the last financial year?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100,000,000	63	18.2	18.2	18.2
	100,000,000-999,999,999	107	30.9	30.9	49.1
	1,000,000,000-9,999,999,999	90	26.0	26.0	75.1
	10,000,000,000-99,999,999,999	53	15.3	15.3	90.5
	Over 100,000,000,000	33	9.5	9.5	100.0
	Total	346	100.0	100.0	

Appendix 4 (Continued) - SPSS Output: Descriptive Statistics - Frequency Distribution for Demographic Variables

What is the approximate number of employees in your company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	100-999	141	40.8	40.8	40.8
	1,000-9,999	134	38.7	38.7	79.5
	10,000-99,999	47	13.6	13.6	93.1
	Over 100,000	24	6.9	6.9	100.0
	Total	346	100.0	100.0	

How many years has your company been in business?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	1	.3	.3	.3
	Between 6 and 10 years	48	13.9	13.9	14.2
	Between 11 and 15 years	71	20.5	20.5	34.7
	Between 16 and 20 years	88	25.4	25.4	60.1
	Between 21 and 25 years	62	17.9	17.9	78.0
	Over 25 years	76	22.0	22.0	100.0
	Total	346	100.0	100.0	

How long have you worked in your current position?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	115	33.2	33.2	33.2
	6-10 years	186	53.8	53.8	87.0
	11-15 years	36	10.4	10.4	97.4
	Over 15 years	9	2.6	2.6	100.0
	Total	346	100.0	100.0	

Appendix 4 (Continued) - SPSS Output: Descriptive Statistics - Frequency Distribution for Demographic Variables

How long have you worked for the company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	75	21.7	21.7	21.7
	6-10 years	191	55.2	55.2	76.9
	11-15 years	57	16.5	16.5	93.4
	Over 15 years	23	6.6	6.6	100.0
	Total	346	100.0	100.0	

How many years of work experience do you have in your field?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	44	12.7	12.7	12.7
	6-10 years	175	50.6	50.6	63.3
	11-15 years	82	23.7	23.7	87.0
	Over 15 years	45	13.0	13.0	100.0
	Total	346	100.0	100.0	

Your highest qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School Level	6	1.7	1.7	1.7
	Bachelor's degree	217	62.7	62.7	64.5
	Master's degree	110	31.8	31.8	96.2
	Phd	10	2.9	2.9	99.1
	Other	3	.9	.9	100.0
	Total	346	100.0	100.0	

Your gender:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	160	46.2	46.2	46.2
	Female	186	53.8	53.8	100.0
	Total	346	100.0	100.0	

Appendix 5

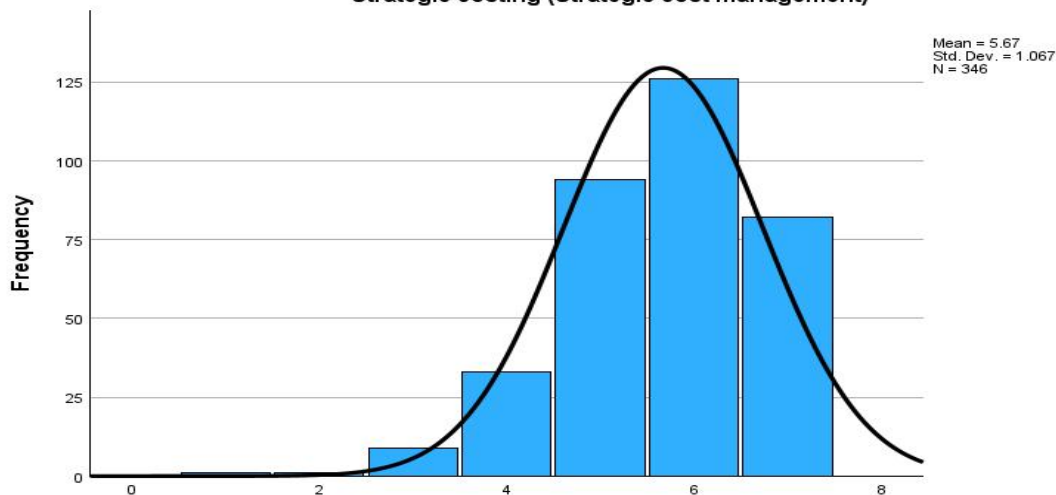
Appendix 5: Descriptive Results (5a to 5j)

Appendix 5a - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 1 (Strategic Decision-making)

Strategic costing (Strategic cost management)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	.3	.3	.3
	Rarely	1	.3	.3	.6
	Occasionally	9	2.6	2.6	3.2
	Sometimes	33	9.5	9.5	12.7
	Moderately	94	27.2	27.2	39.9
	Frequently	126	36.4	36.4	76.3
	Always	82	23.7	23.7	100.0
	Total	346	100.0	100.0	

Strategic costing (Strategic cost management)



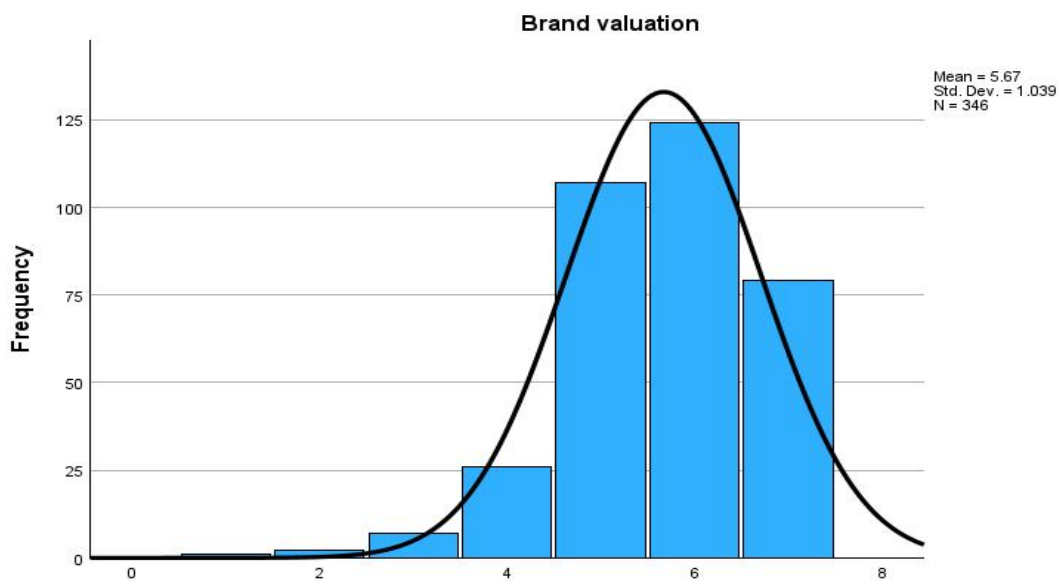
Strategic pricing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely	3	.9	.9	.9
	Occasionally	9	2.6	2.6	3.5
	Sometimes	30	8.7	8.7	12.1
	Moderately	96	27.7	27.7	39.9
	Frequently	134	38.7	38.7	78.6
	Always	74	21.4	21.4	100.0
	Total	346	100.0	100.0	

Appendix 5a (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 1 (Strategic Decision-making)

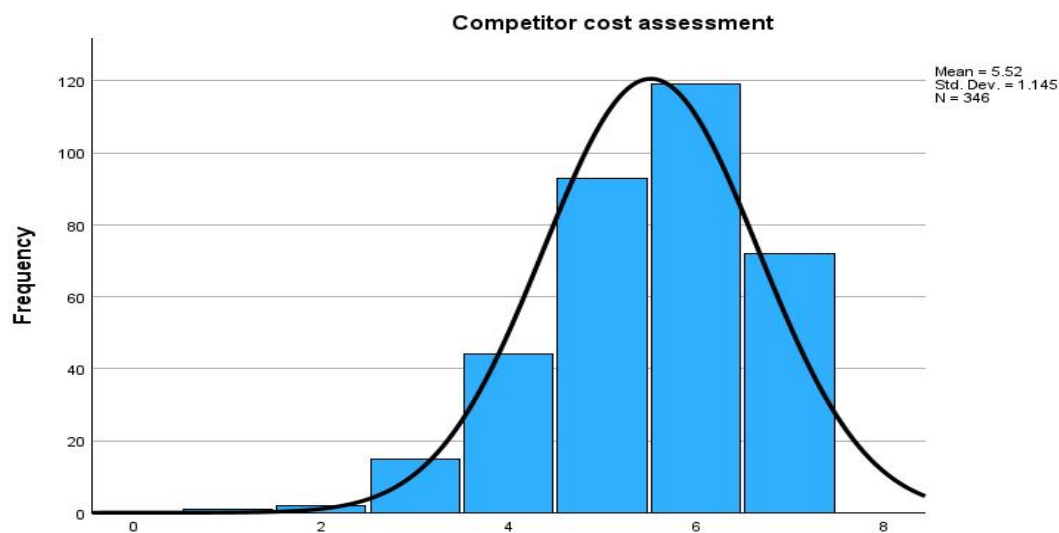


		Brand valuation			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	.3	.3	.3
	Rarely	2	.6	.6	.9
	Occasionally	7	2.0	2.0	2.9
	Sometimes	26	7.5	7.5	10.4
	Moderately	107	30.9	30.9	41.3
	Frequently	124	35.8	35.8	77.2
	Always	79	22.8	22.8	100.0
	Total	346	100.0	100.0	



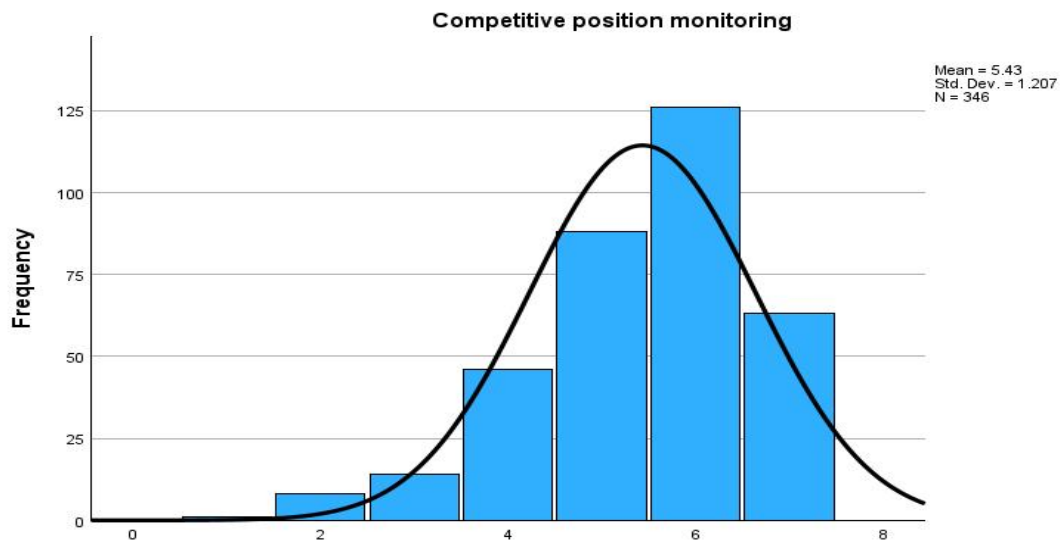
Appendix 5b - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 2 (Competitor Accounting)

		Competitor cost assessment			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	.3	.3	.3
	Rarely	2	.6	.6	.9
	Occasionally	15	4.3	4.3	5.2
	Sometimes	44	12.7	12.7	17.9
	Moderately	93	26.9	26.9	44.8
	Frequently	119	34.4	34.4	79.2
	Always	72	20.8	20.8	100.0
	Total	346	100.0	100.0	



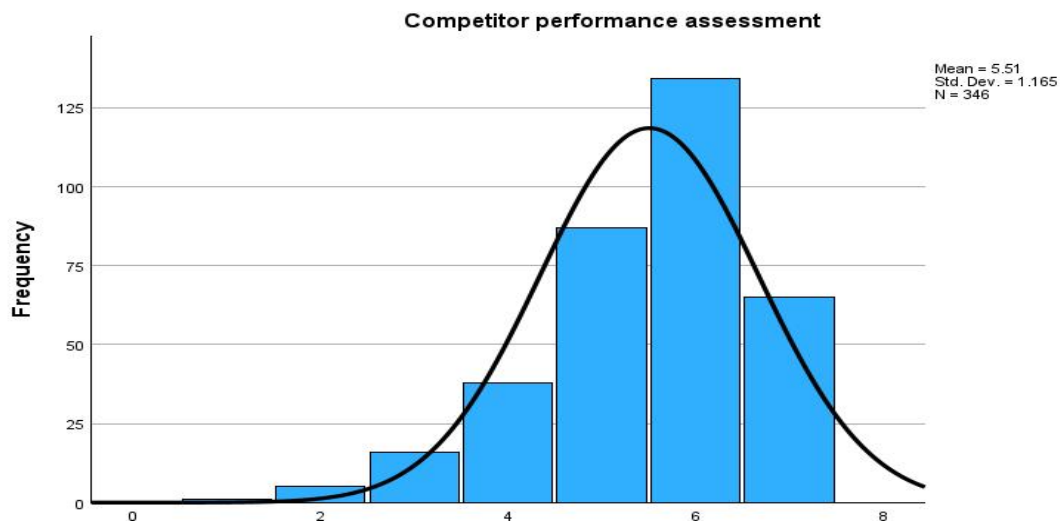
		Competitive position monitoring			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	.3	.3	.3
	Rarely	8	2.3	2.3	2.6
	Occasionally	14	4.0	4.0	6.6
	Sometimes	46	13.3	13.3	19.9
	Moderately	88	25.4	25.4	45.4
	Frequently	126	36.4	36.4	81.8
	Always	63	18.2	18.2	100.0
	Total	346	100.0	100.0	

Appendix 5b (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 2 (Competitor Accounting)



Competitor performance assessment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	.3	.3	.3
	Rarely	5	1.4	1.4	1.7
	Occasionally	16	4.6	4.6	6.4
	Sometimes	38	11.0	11.0	17.3
	Moderately	87	25.1	25.1	42.5
	Frequently	134	38.7	38.7	81.2
	Always	65	18.8	18.8	100.0
	Total	346	100.0	100.0	

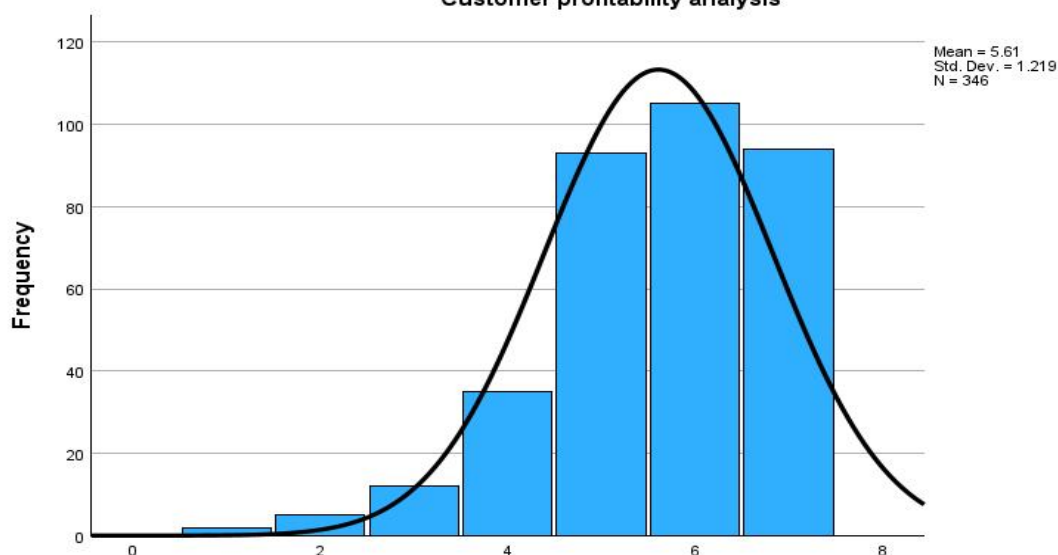


Appendix 5c - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 3 (Customer Accounting)

Customer profitability analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	2	.6	.6	.6
	Rarely	5	1.4	1.4	2.0
	Occasionally	12	3.5	3.5	5.5
	Sometimes	35	10.1	10.1	15.6
	Moderately	93	26.9	26.9	42.5
	Frequently	105	30.3	30.3	72.8
	Always	94	27.2	27.2	100.0
	Total	346	100.0	100.0	

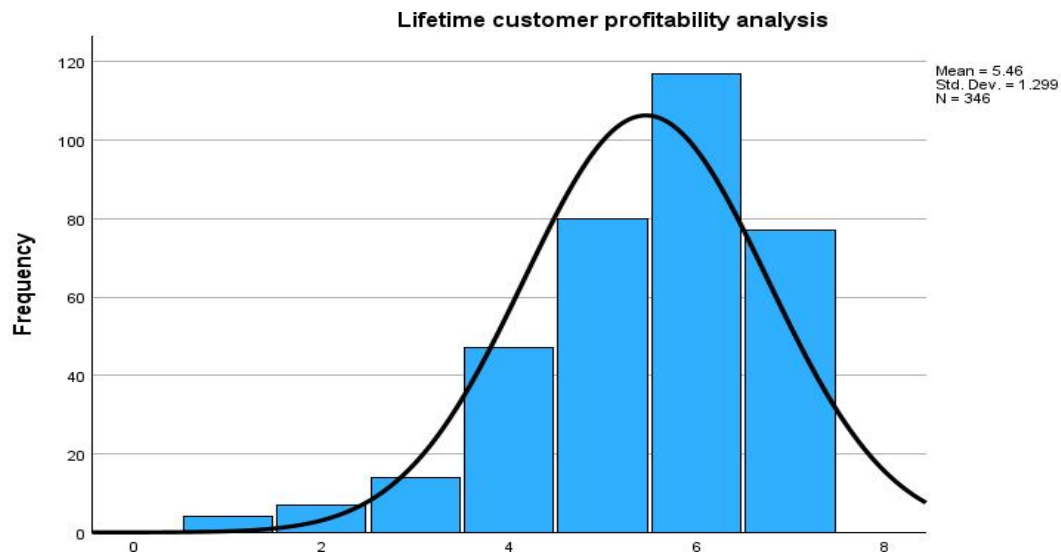
Customer profitability analysis



Lifetime customer profitability analysis

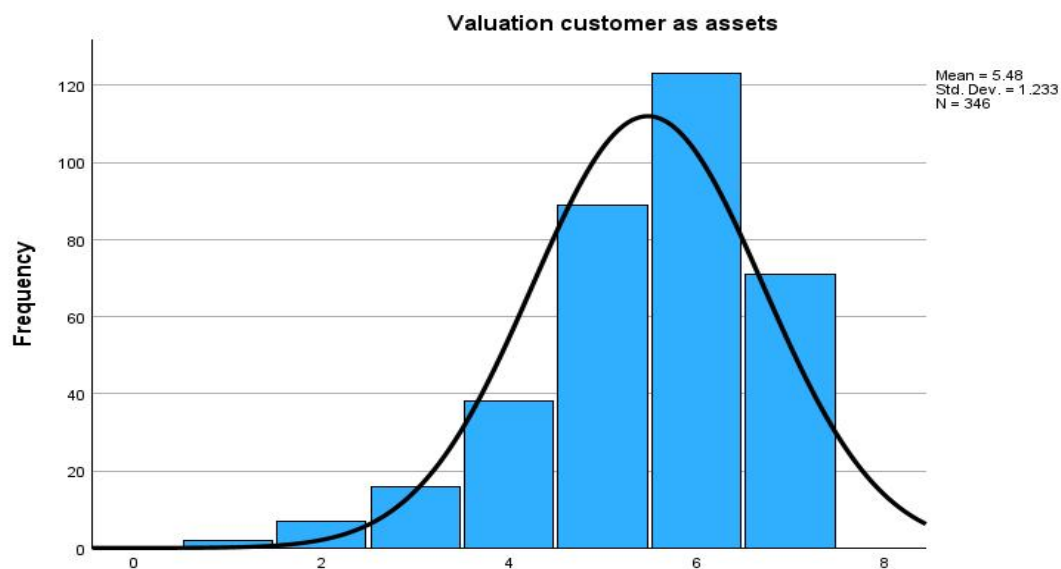
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	4	1.2	1.2	1.2
	Rarely	7	2.0	2.0	3.2
	Occasionally	14	4.0	4.0	7.2
	Sometimes	47	13.6	13.6	20.8
	Moderately	80	23.1	23.1	43.9
	Frequently	117	33.8	33.8	77.7
	Always	77	22.3	22.3	100.0
	Total	346	100.0	100.0	

Appendix 5c (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for SMA Usage 3 (Customer Accounting)



Valuation customer as assets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	2	.6	.6	.6
	Rarely	7	2.0	2.0	2.6
	Occasionally	16	4.6	4.6	7.2
	Sometimes	38	11.0	11.0	18.2
	Moderately	89	25.7	25.7	43.9
	Frequently	123	35.5	35.5	79.5
	Always	71	20.5	20.5	100.0
Total		346	100.0	100.0	

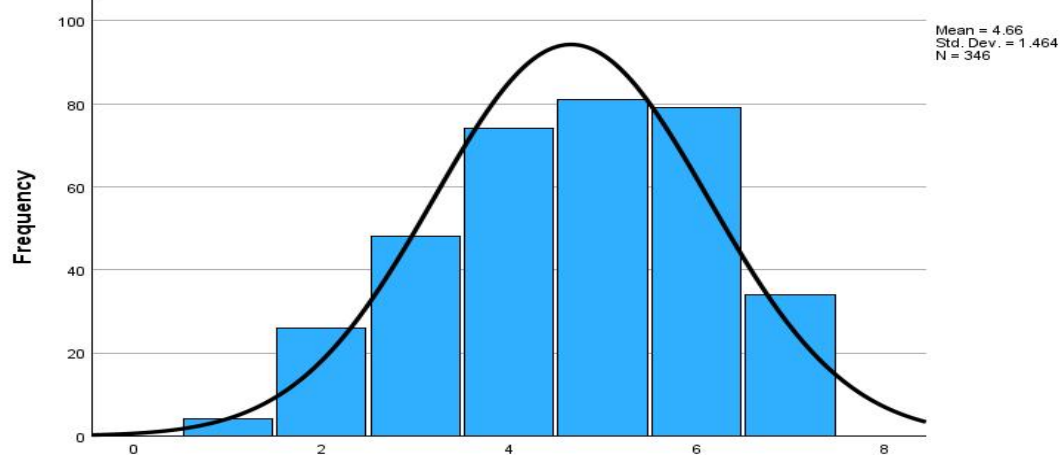


Appendix 5d - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Organisational Structure (Formalistion)

In my organisation, employees are allowed to make their own decisions without having to ask someone else

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	1.2	1.2	1.2
	Disagree	26	7.5	7.5	8.7
	Somewhat disagree	48	13.9	13.9	22.5
	Neither agree nor disagree	74	21.4	21.4	43.9
	Somewhat agree	81	23.4	23.4	67.3
	Agree	79	22.8	22.8	90.2
	Strongly agree	34	9.8	9.8	100.0
	Total	346	100.0	100.0	

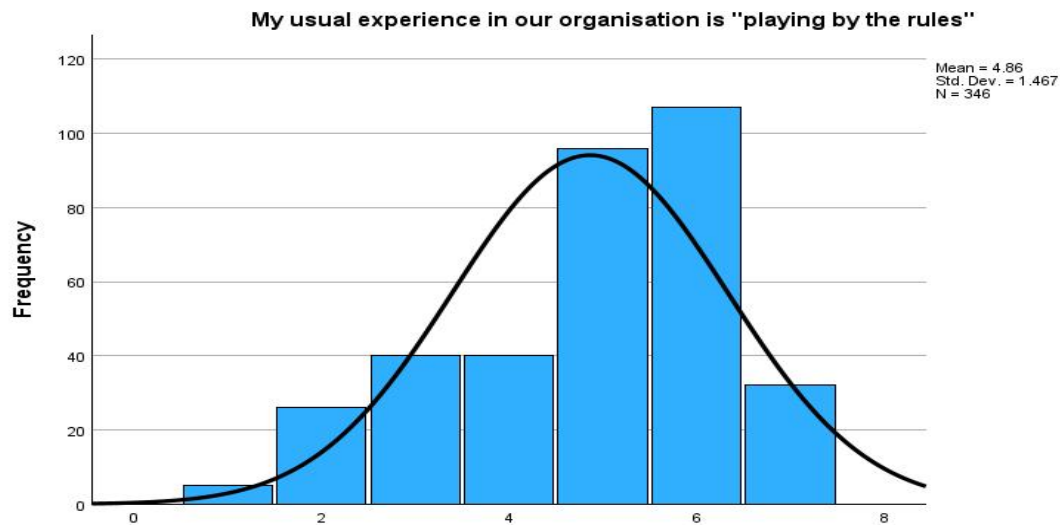
In my organisation, employees are allowed to make their own decisions without having to ask someone else



My usual experience in our organisation is "playing by the rules"

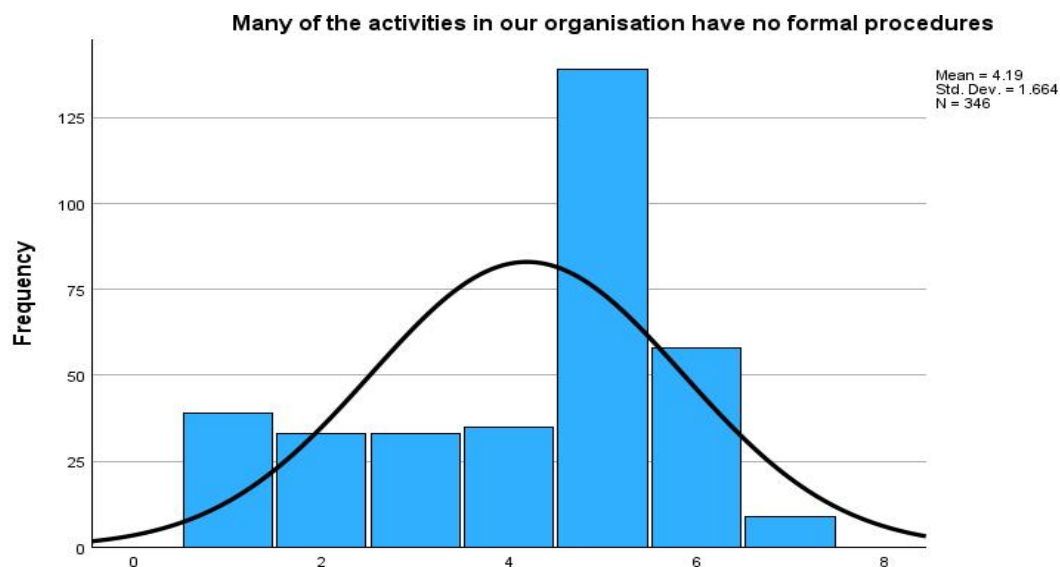
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	1.4	1.4	1.4
	Disagree	26	7.5	7.5	9.0
	Somewhat disagree	40	11.6	11.6	20.5
	Neither agree nor disagree	40	11.6	11.6	32.1
	Somewhat agree	96	27.7	27.7	59.8
	Agree	107	30.9	30.9	90.8
	Strongly agree	32	9.2	9.2	100.0
	Total	346	100.0	100.0	

Appendix 5d (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Organisational Structure (Formalistion)



Many of the activities in our organisation have no formal procedures

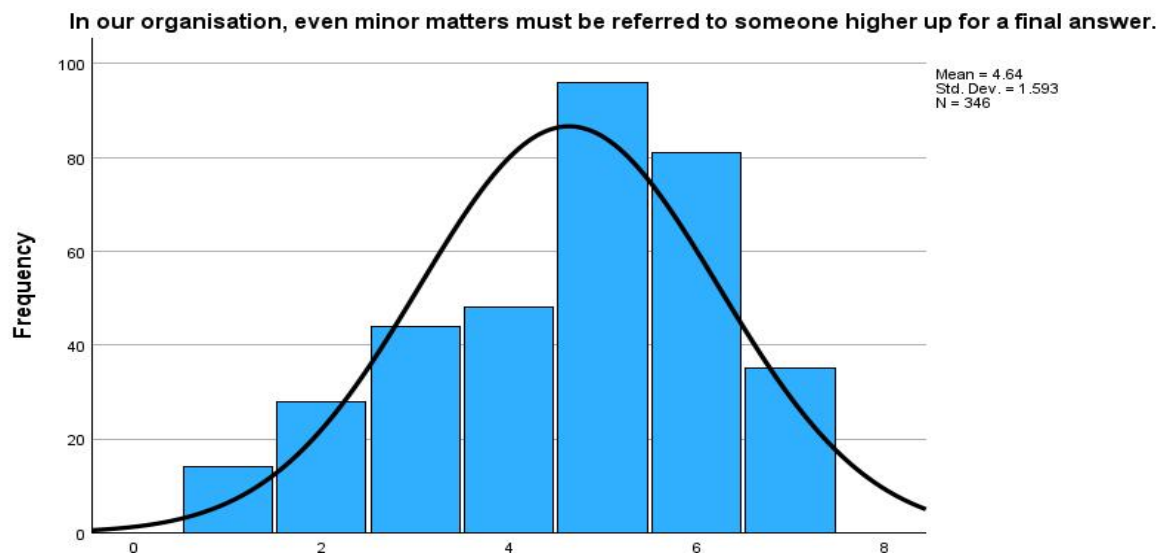
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	39	11.3	11.3	11.3
	Disagree	33	9.5	9.5	20.8
	Somewhat disagree	33	9.5	9.5	30.3
	Neither agree nor disagree	35	10.1	10.1	40.5
	Somewhat agree	139	40.2	40.2	80.6
	Agree	58	16.8	16.8	97.4
	Strongly agree	9	2.6	2.6	100.0
Total		346	100.0	100.0	



Appendix 5e - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Organisational Structure (Decentralisation)

In our organisation, even minor matters must be referred to someone higher up for a final answer.

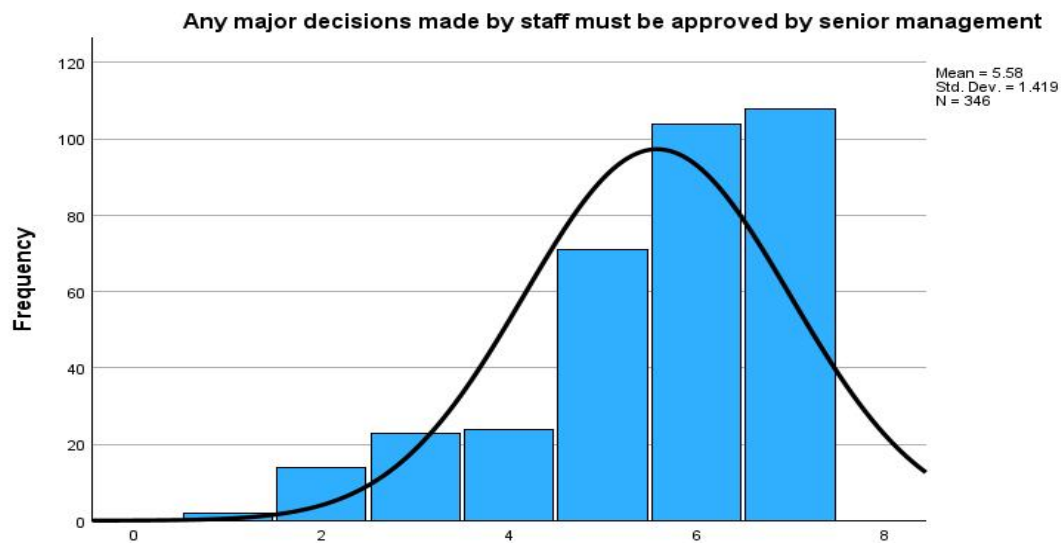
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	4.0	4.0	4.0
	Disagree	28	8.1	8.1	12.1
	Somewhat disagree	44	12.7	12.7	24.9
	Neither agree nor disagree	48	13.9	13.9	38.7
	Somewhat agree	96	27.7	27.7	66.5
	Agree	81	23.4	23.4	89.9
	Strongly agree	35	10.1	10.1	100.0
	Total	346	100.0	100.0	



Any major decisions made by staff must be approved by senior management

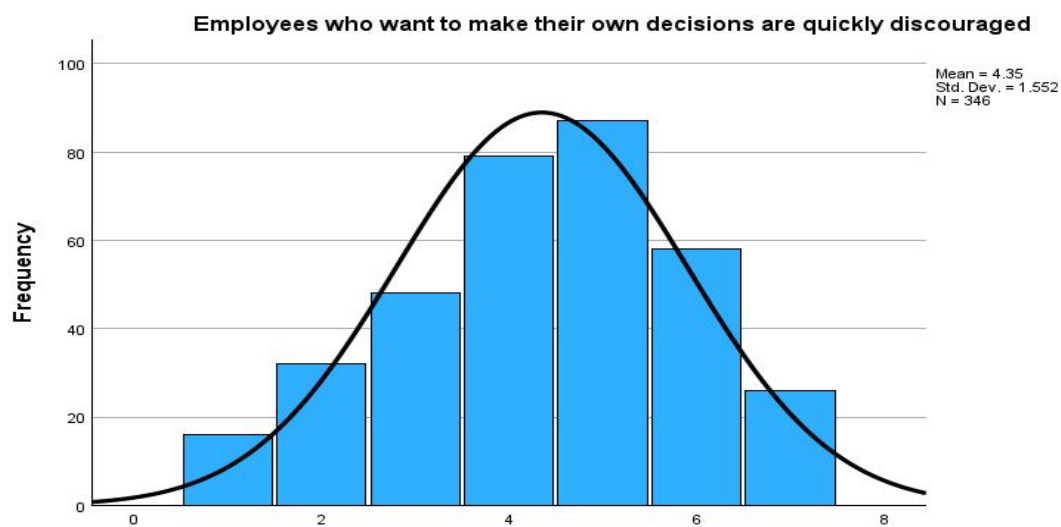
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	.6	.6	.6
	Disagree	14	4.0	4.0	4.6
	Somewhat disagree	23	6.6	6.6	11.3
	Neither agree nor disagree	24	6.9	6.9	18.2
	Somewhat agree	71	20.5	20.5	38.7
	Agree	104	30.1	30.1	68.8
	Strongly agree	108	31.2	31.2	100.0
	Total	346	100.0	100.0	

Appendix 5e (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Organisational Structure (Decentralisation)



Employees who want to make their own decisions are quickly discouraged

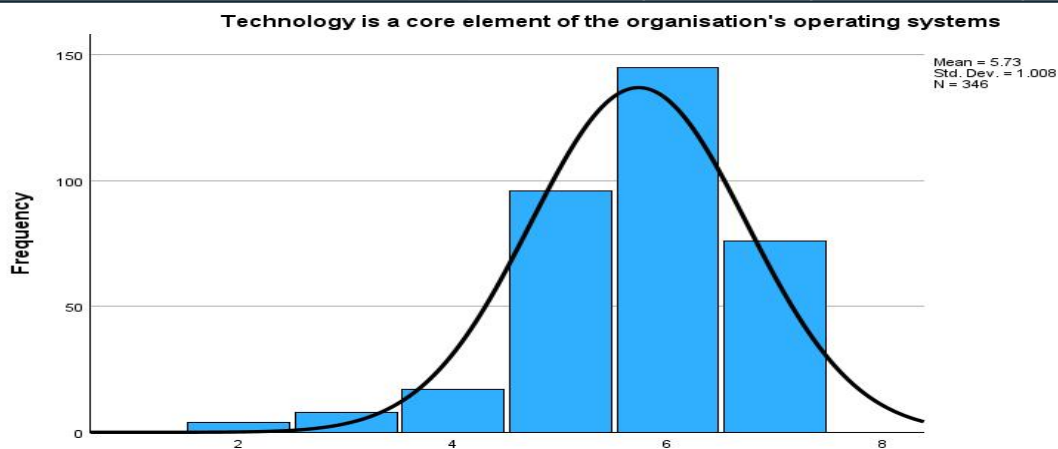
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	16	4.6	4.6	4.6
	Disagree	32	9.2	9.2	13.9
	Somewhat disagree	48	13.9	13.9	27.7
	Neither agree nor disagree	79	22.8	22.8	50.6
	Somewhat agree	87	25.1	25.1	75.7
	Agree	58	16.8	16.8	92.5
	Strongly agree	26	7.5	7.5	100.0
Total		346	100.0	100.0	



Appendix 5f - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Technology

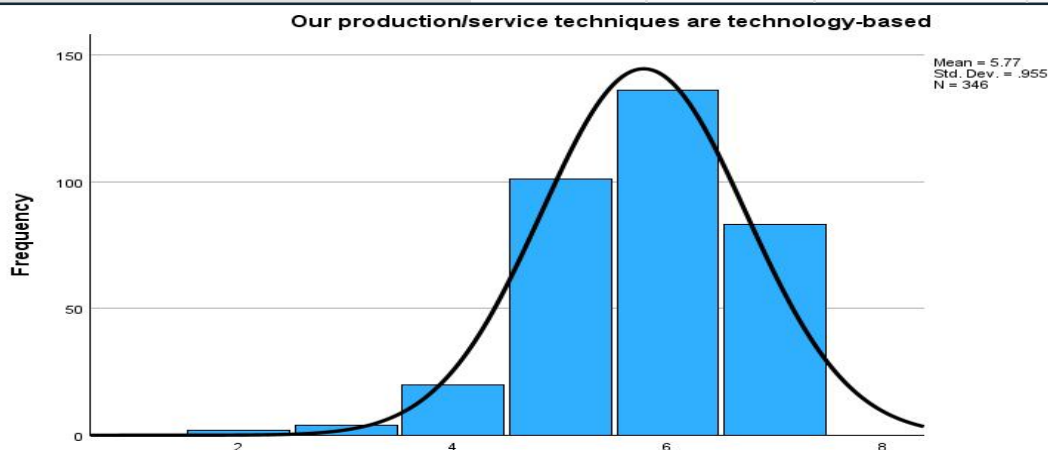
Technology is a core element of the organisation's operating systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To a little extent	4	1.2	1.2	1.2
	Somewhat	8	2.3	2.3	3.5
	Moderately	17	4.9	4.9	8.4
	To a considerable extent	96	27.7	27.7	36.1
	To a significant extent	145	41.9	41.9	78.0
	To a great extent	76	22.0	22.0	100.0
	Total	346	100.0	100.0	



Our production/service techniques are technology-based

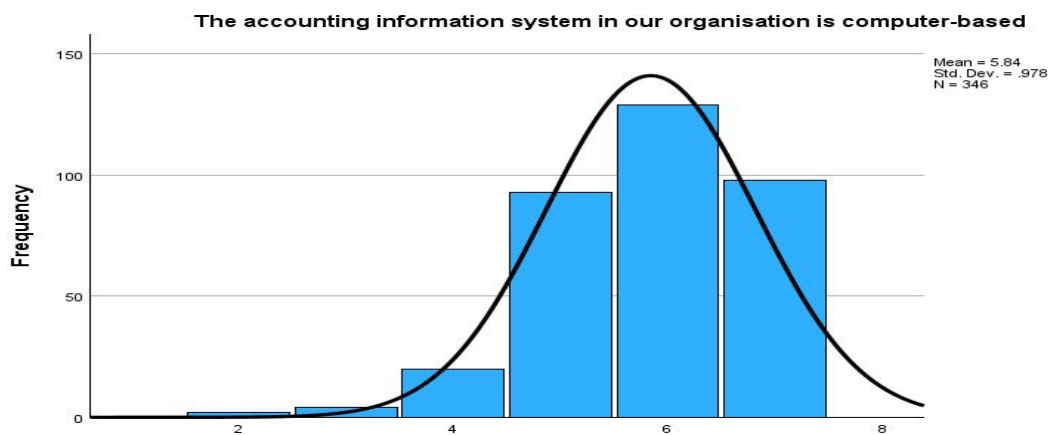
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To a little extent	2	.6	.6	.6
	Somewhat	4	1.2	1.2	1.7
	Moderately	20	5.8	5.8	7.5
	To a considerable extent	101	29.2	29.2	36.7
	To a significant extent	136	39.3	39.3	76.0
	To a great extent	83	24.0	24.0	100.0
	Total	346	100.0	100.0	



Appendix 5f (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Technology

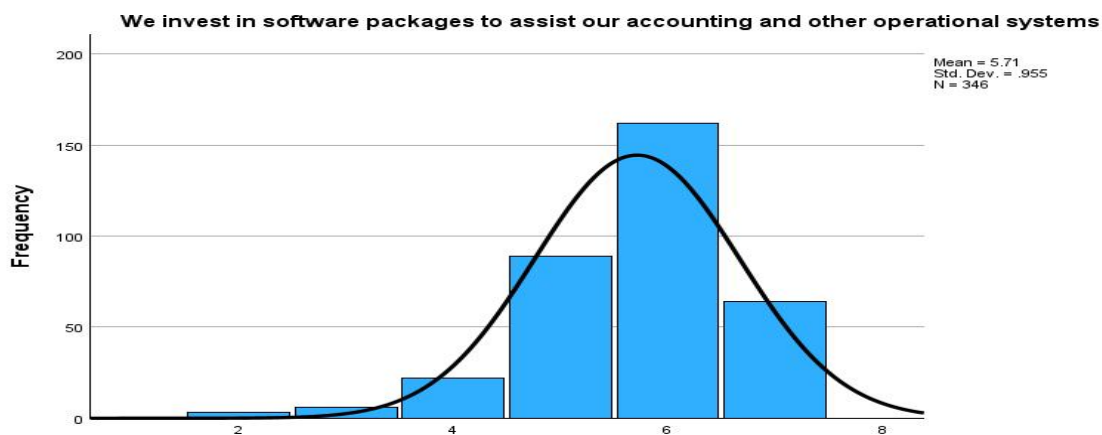
The accounting information system in our organisation is computer-based

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To a little extent	2	.6	.6	.6
	Somewhat	4	1.2	1.2	1.7
	Moderately	20	5.8	5.8	7.5
	To a considerable extent	93	26.9	26.9	34.4
	To a significant extent	129	37.3	37.3	71.7
	To a great extent	98	28.3	28.3	100.0
	Total	346	100.0	100.0	



We invest in software packages to assist our accounting and other operational systems

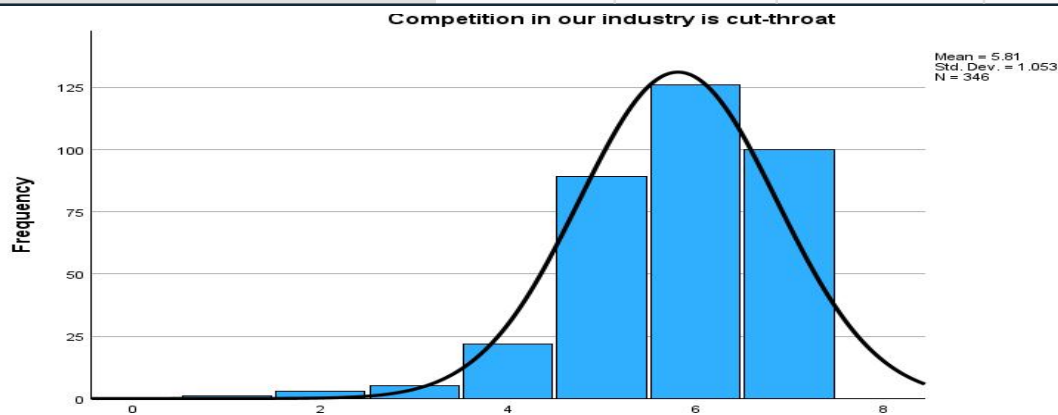
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To a little extent	3	.9	.9	.9
	Somewhat	6	1.7	1.7	2.6
	Moderately	22	6.4	6.4	9.0
	To a considerable extent	89	25.7	25.7	34.7
	To a significant extent	162	46.8	46.8	81.5
	To a great extent	64	18.5	18.5	100.0
	Total	346	100.0	100.0	



Appendix 5g - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Perceived Environmental Uncertainty (Competitive Intensity)

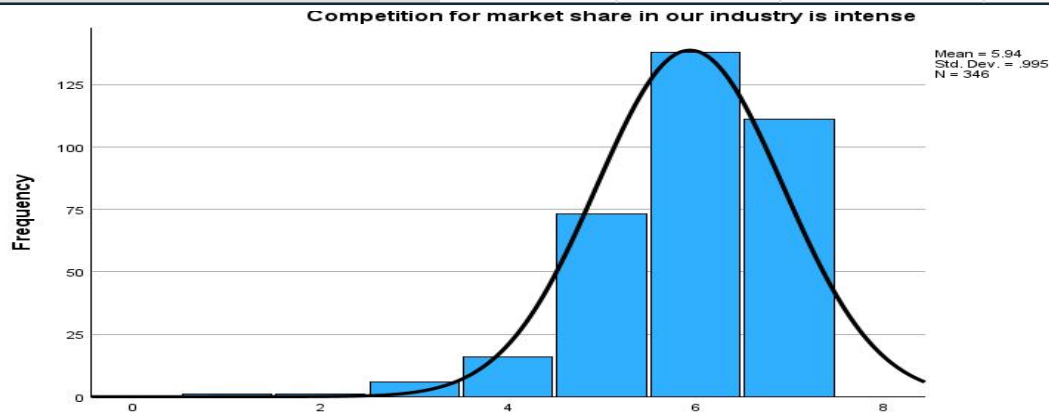
Competition in our industry is cut-throat

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.3	.3	.3
	Disagree	3	.9	.9	1.2
	Somewhat disagree	5	1.4	1.4	2.6
	Neither agree nor disagree	22	6.4	6.4	9.0
	Somewhat agree	89	25.7	25.7	34.7
	Agree	126	36.4	36.4	71.1
	Strongly agree	100	28.9	28.9	100.0
	Total	346	100.0	100.0	



Competition for market share in our industry is intense

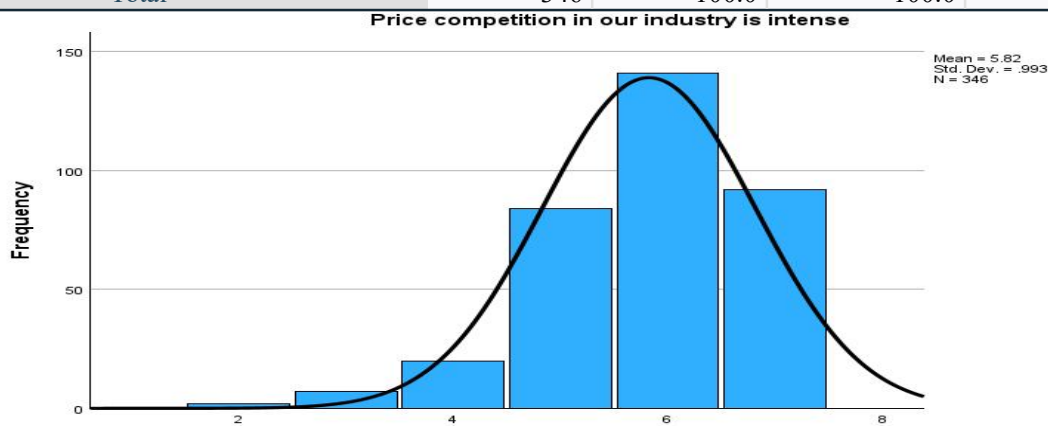
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.3	.3	.3
	Disagree	1	.3	.3	.6
	Somewhat disagree	6	1.7	1.7	2.3
	Neither agree nor disagree	16	4.6	4.6	6.9
	Somewhat agree	73	21.1	21.1	28.0
	Agree	138	39.9	39.9	67.9
	Strongly agree	111	32.1	32.1	100.0
	Total	346	100.0	100.0	



Appendix 5g (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Perceived Environmental Uncertainty (Competitive Intensity)

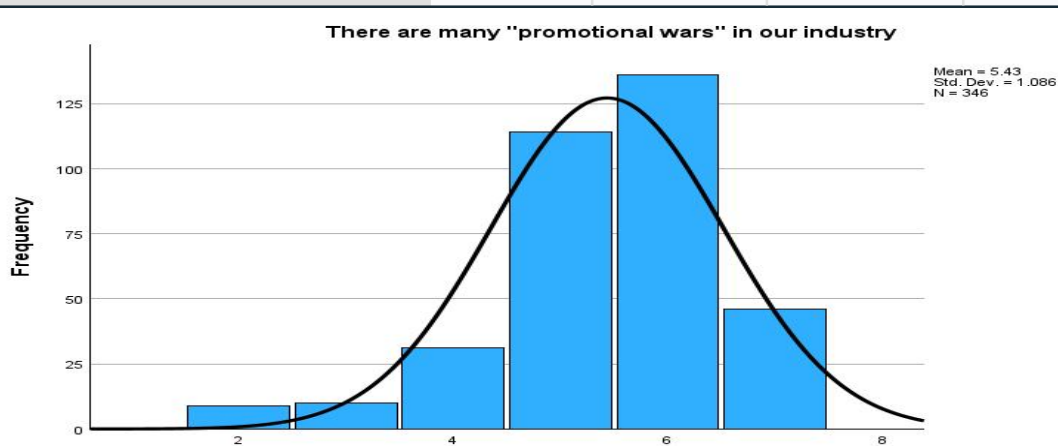
Price competition in our industry is intense

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	.6	.6	.6
	Somewhat disagree	7	2.0	2.0	2.6
	Neither agree nor disagree	20	5.8	5.8	8.4
	Somewhat agree	84	24.3	24.3	32.7
	Agree	141	40.8	40.8	73.4
	Strongly agree	92	26.6	26.6	100.0
	Total	346	100.0	100.0	



There are many "promotional wars" in our industry

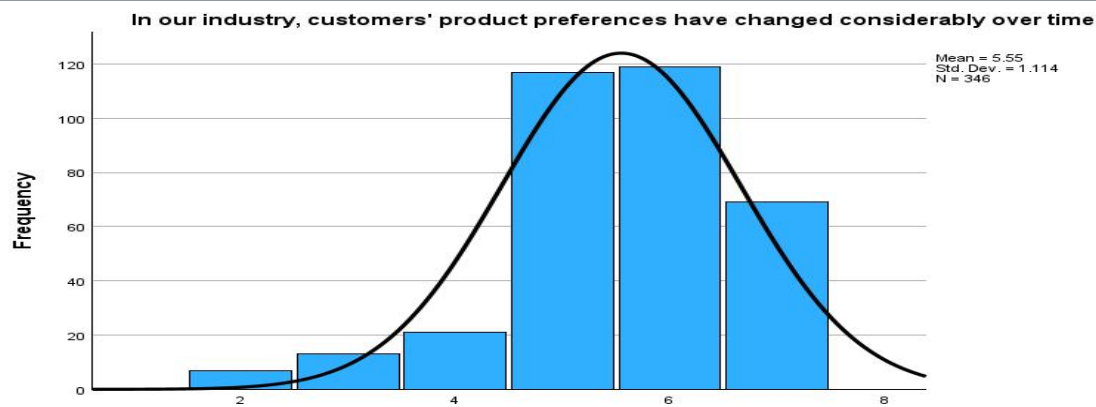
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	2.6	2.6	2.6
	Somewhat disagree	10	2.9	2.9	5.5
	Neither agree nor disagree	31	9.0	9.0	14.5
	Somewhat agree	114	32.9	32.9	47.4
	Agree	136	39.3	39.3	86.7
	Strongly agree	46	13.3	13.3	100.0
	Total	346	100.0	100.0	



Appendix 5h - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Perceived Environmental Uncertainty (Market Turbulence)

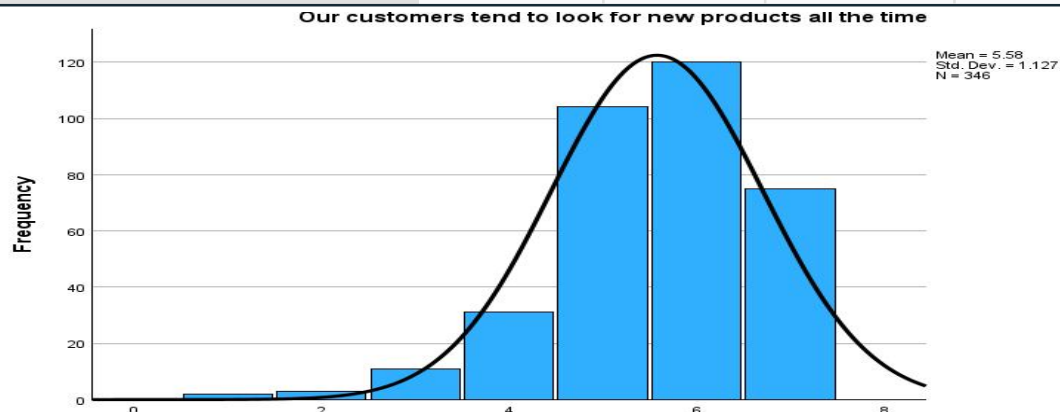
In our industry, customers' product preferences have changed considerably over time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	2.0	2.0	2.0
	Somewhat disagree	13	3.8	3.8	5.8
	Neither agree nor disagree	21	6.1	6.1	11.8
	Somewhat agree	117	33.8	33.8	45.7
	Agree	119	34.4	34.4	80.1
	Strongly agree	69	19.9	19.9	100.0
	Total	346	100.0	100.0	



Our customers tend to look for new products all the time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	.6	.6	.6
	Disagree	3	.9	.9	1.4
	Somewhat disagree	11	3.2	3.2	4.6
	Neither agree nor disagree	31	9.0	9.0	13.6
	Somewhat agree	104	30.1	30.1	43.6
	Agree	120	34.7	34.7	78.3
	Strongly agree	75	21.7	21.7	100.0
	Total	346	100.0	100.0	

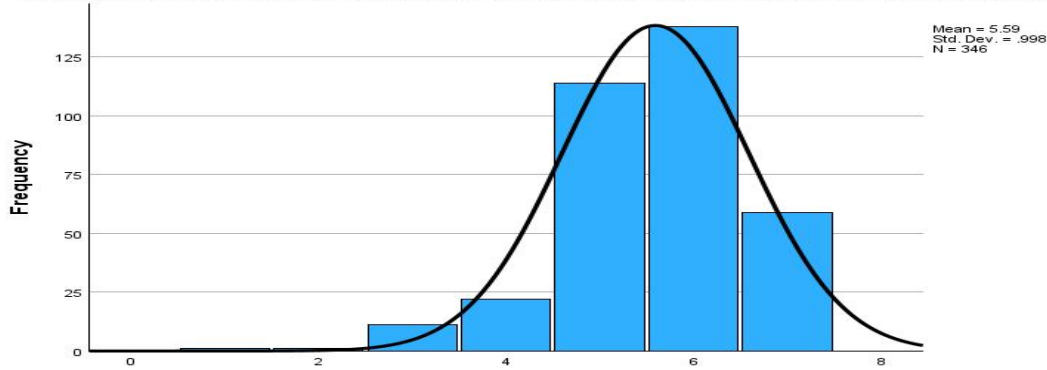


Appendix 5h (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Perceived Environmental Uncertainty (Market Turbulence)

We are witnessing demand for our products and services from customers who never bought them before

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.3	.3	.3
	Disagree	1	.3	.3	.6
	Somewhat disagree	11	3.2	3.2	3.8
	Neither agree nor disagree	22	6.4	6.4	10.1
	Somewhat agree	114	32.9	32.9	43.1
	Agree	138	39.9	39.9	82.9
	Strongly agree	59	17.1	17.1	100.0
	Total	346	100.0	100.0	

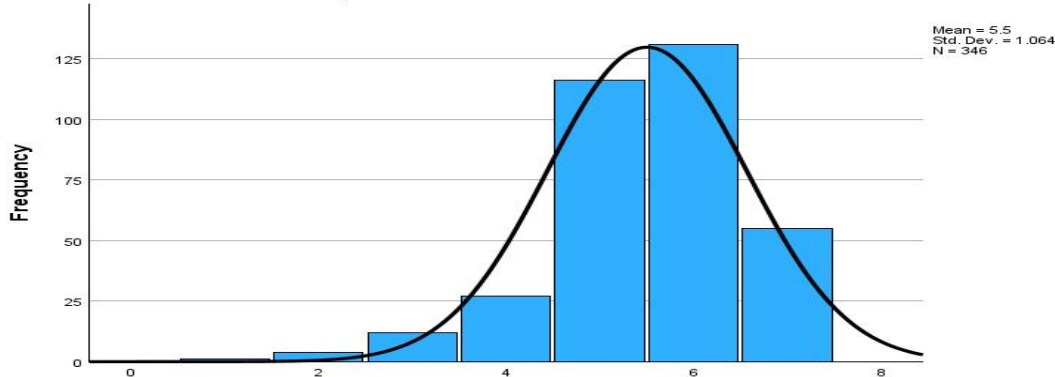
We are witnessing demand for our products and services from customers who never bought them before



New customers tend to have product-related needs that are different from those of our existing customers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.3	.3	.3
	Disagree	4	1.2	1.2	1.4
	Somewhat disagree	12	3.5	3.5	4.9
	Neither agree nor disagree	27	7.8	7.8	12.7
	Somewhat agree	116	33.5	33.5	46.2
	Agree	131	37.9	37.9	84.1
	Strongly agree	55	15.9	15.9	100.0
	Total	346	100.0	100.0	

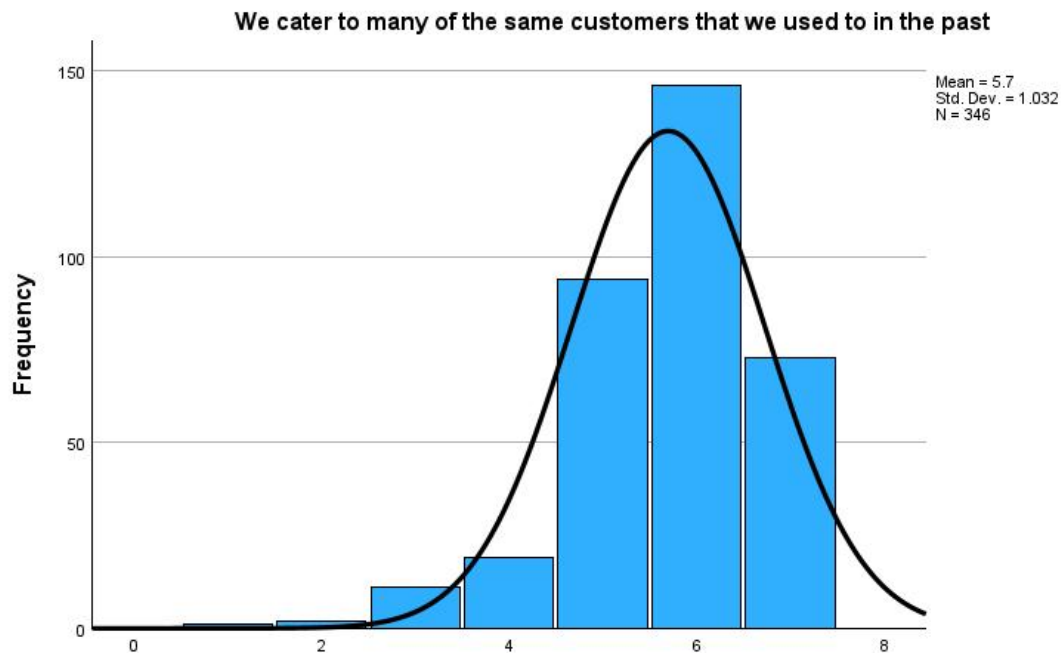
New customers tend to have product-related needs that are different from those of our existing customers



Appendix 5h (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Perceived Environmental Uncertainty (Market Turbulence)

We cater to many of the same customers that we used to in the past

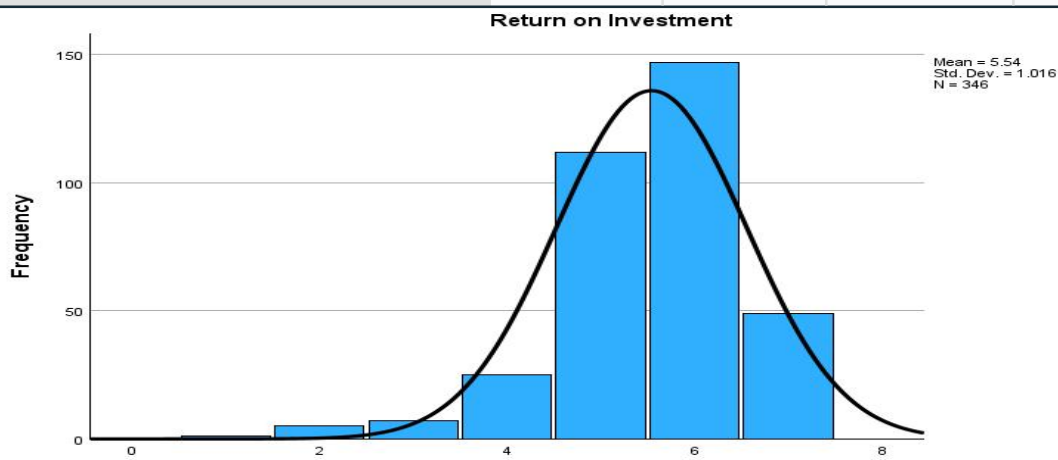
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.3	.3	.3
	Disagree	2	.6	.6	.9
	Somewhat disagree	11	3.2	3.2	4.0
	Neither agree nor disagree	19	5.5	5.5	9.5
	Somewhat agree	94	27.2	27.2	36.7
	Agree	146	42.2	42.2	78.9
	Strongly agree	73	21.1	21.1	100.0
	Total	346	100.0	100.0	



Appendix 5i - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Financial Performance

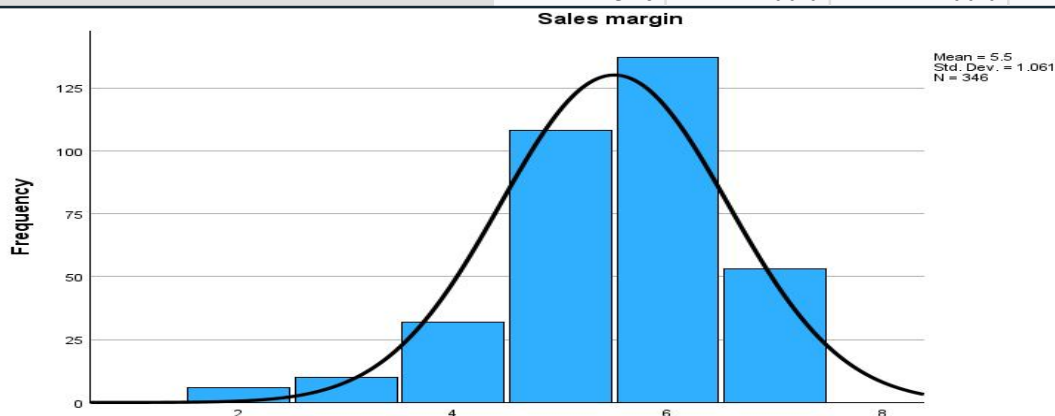
Return on Investment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significantly below average	1	.3	.3	.3
	Below average	5	1.4	1.4	1.7
	Slightly below average	7	2.0	2.0	3.8
	Average	25	7.2	7.2	11.0
	Slightly above average	112	32.4	32.4	43.4
	Above average	147	42.5	42.5	85.8
	Significantly above average	49	14.2	14.2	100.0
	Total	346	100.0	100.0	



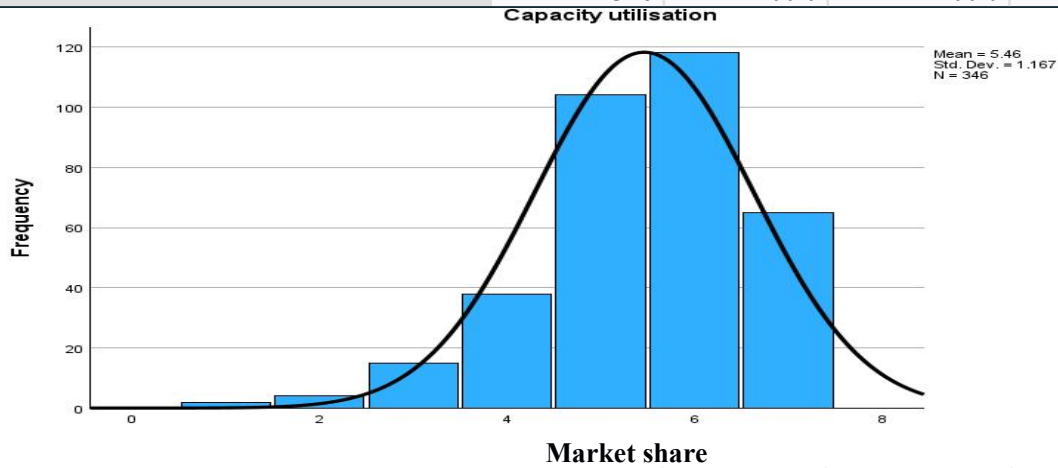
Sales margin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below average	6	1.7	1.7	1.7
	Slightly below average	10	2.9	2.9	4.6
	Average	32	9.2	9.2	13.9
	Slightly above average	108	31.2	31.2	45.1
	Above average	137	39.6	39.6	84.7
	Significantly above average	53	15.3	15.3	100.0
	Total	346	100.0	100.0	

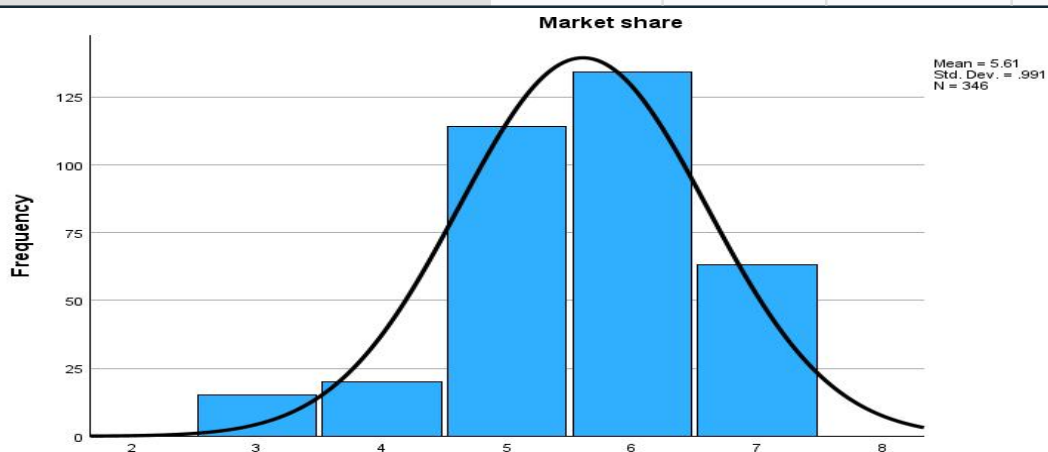


Appendix 5i (Continued) - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Financial Performance

		Capacity utilisation			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significantly below average	2	.6	.6	.6
	Below average	4	1.2	1.2	1.7
	Slightly below average	15	4.3	4.3	6.1
	Average	38	11.0	11.0	17.1
	Slightly above average	104	30.1	30.1	47.1
	Above average	118	34.1	34.1	81.2
	Significantly above average	65	18.8	18.8	100.0
	Total	346	100.0	100.0	



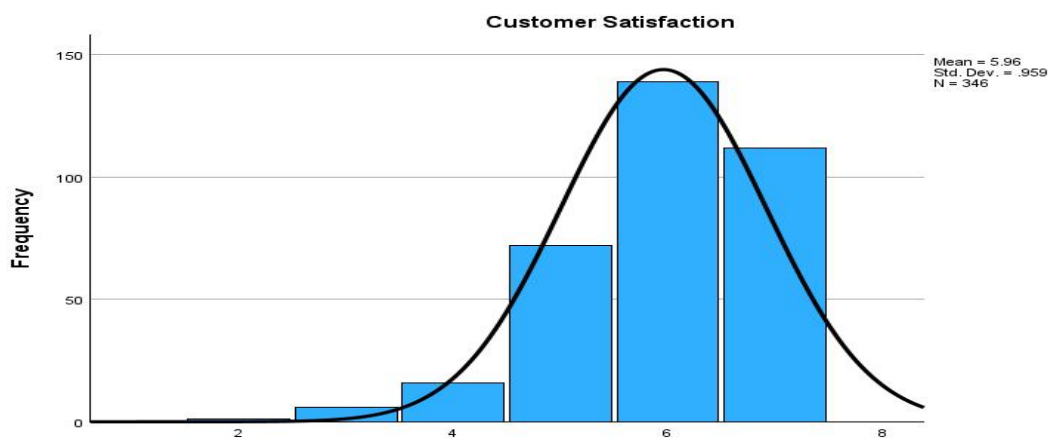
		Market share			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Slightly below average	15	4.3	4.3	4.3
	Average	20	5.8	5.8	10.1
	Slightly above average	114	32.9	32.9	43.1
	Above average	134	38.7	38.7	81.8
	Significantly above average	63	18.2	18.2	100.0
	Total	346	100.0	100.0	



Appendix 5j - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Non-Financial Performance

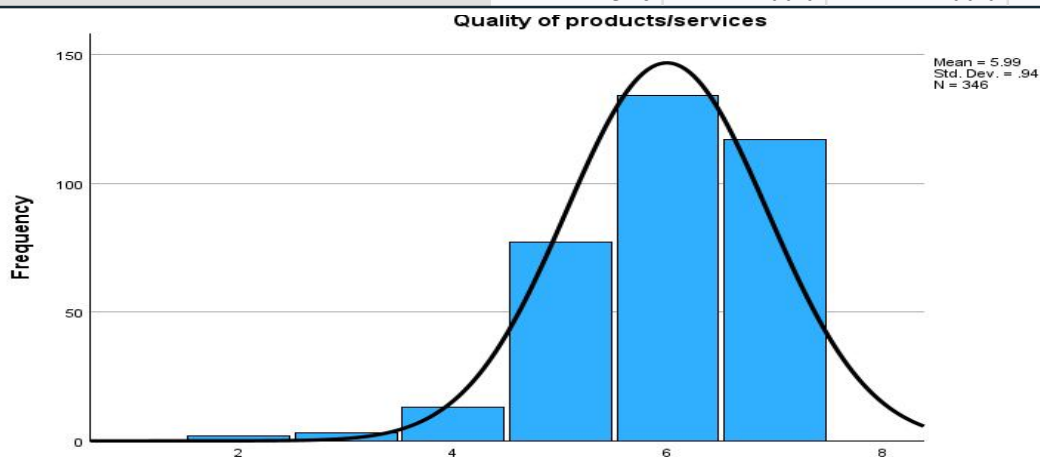
Customer Satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below average	1	.3	.3	.3
	Slightly below average	6	1.7	1.7	2.0
	Average	16	4.6	4.6	6.6
	Slightly above average	72	20.8	20.8	27.5
	Above average	139	40.2	40.2	67.6
	Significantly above average	112	32.4	32.4	100.0
	Total	346	100.0	100.0	



Quality of products/services

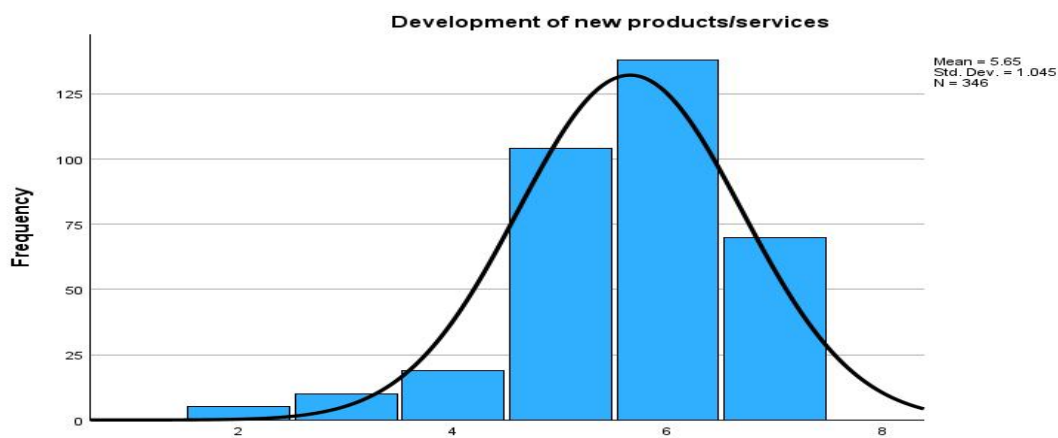
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below average	2	.6	.6	.6
	Slightly below average	3	.9	.9	1.4
	Average	13	3.8	3.8	5.2
	Slightly above average	77	22.3	22.3	27.5
	Above average	134	38.7	38.7	66.2
	Significantly above average	117	33.8	33.8	100.0
	Total	346	100.0	100.0	



Appendix 5j - SPSS Output: Descriptive Statistics (Frequency Distribution and Histogram Plots) for Non-Financial Performance

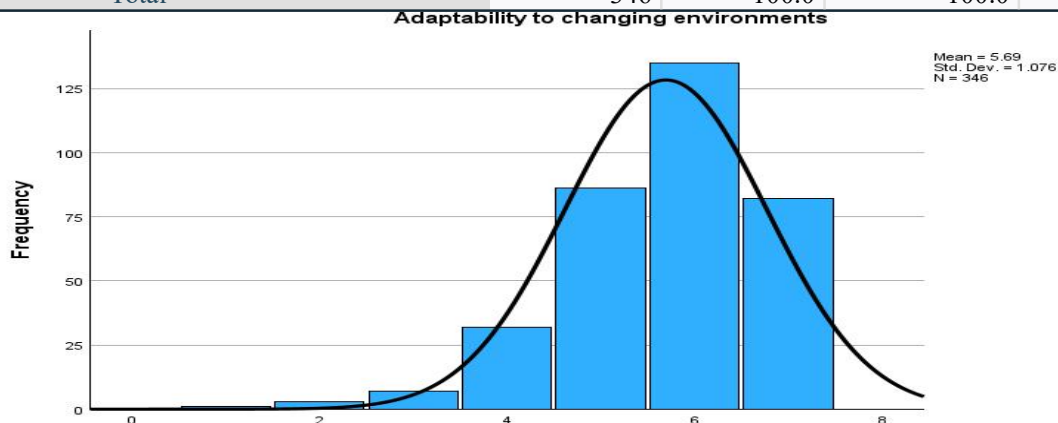
Development of new products/services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below average	5	1.4	1.4	1.4
	Slightly below average	10	2.9	2.9	4.3
	Average	19	5.5	5.5	9.8
	Slightly above average	104	30.1	30.1	39.9
	Above average	138	39.9	39.9	79.8
	Significantly above average	70	20.2	20.2	100.0
	Total	346	100.0	100.0	



Adaptability to changing environments

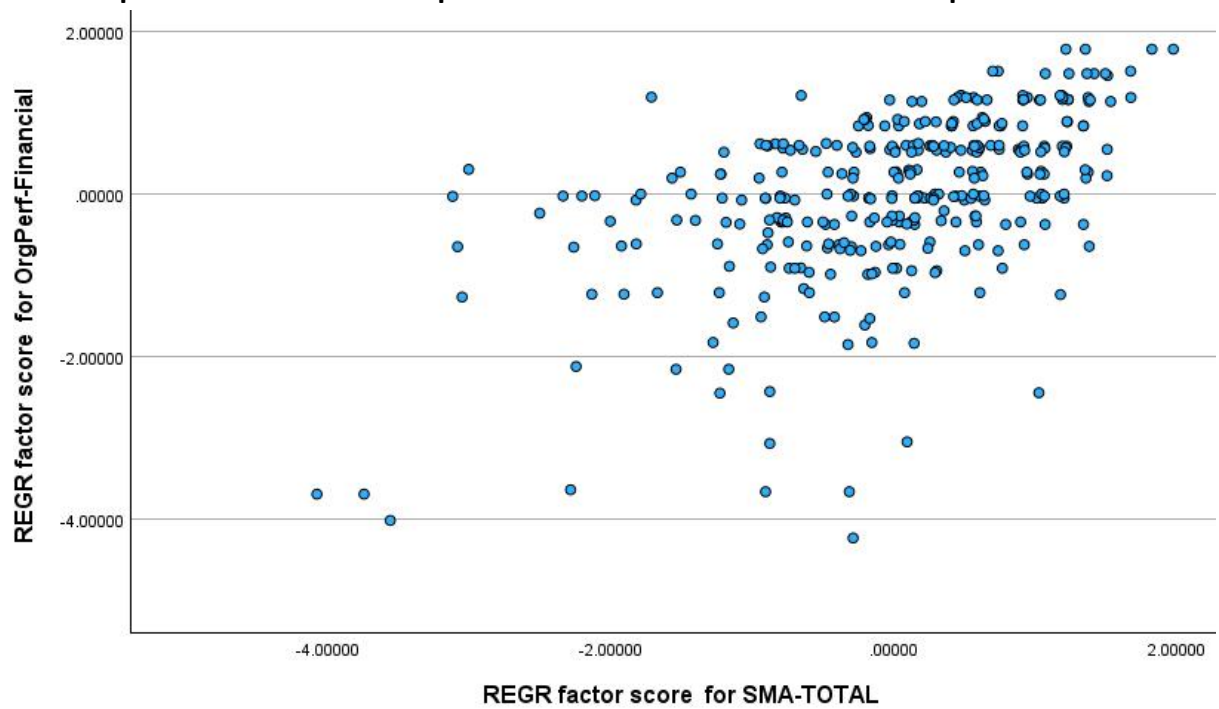
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significantly below average	1	.3	.3	.3
	Below average	3	.9	.9	1.2
	Slightly below average	7	2.0	2.0	3.2
	Average	32	9.2	9.2	12.4
	Slightly above average	86	24.9	24.9	37.3
	Above average	135	39.0	39.0	76.3
	Significantly above average	82	23.7	23.7	100.0
	Total	346	100.0	100.0	



Appendix 6

Examples of graphs in regression analysis

Scatter plots of the relationships between SMA total and financial performance



Examples of Standardized Residual Plots

