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Editors' Note

The *Asian Journal of Business Accounting* (AJBA) is excited to present its first issue of volume 12 for 2019. In this issue, ten articles focussing on business, management and accounting topics are presented. The contributors are from Australia, India, Thailand, Oman, Indonesia and Malaysia. These articles discuss how businesses and countries in the Asian region can sustain themselves in today's turbulent global ecosystem. Globalisation is not a new concept; it has been around for more than two decades. Despite this, globalisation has affected the human community more than ever before. Whilst rising anti-globalisation rhetorics are emerging in the west, world economies are seeking more external markets in support of their sustenance. In a hyper-competitive business environment, the globalisation of production has led to the need for businesses to increase their revenues, and to find new markets to export their large-scale productions. China, for instance, requires access to external markets to reduce its industrial overcapacity, to acquire natural resources, and to access overseas investments. This is despite the country possessing a huge domestic market.

Whilst globalisation appears to offer opportunities; it also creates challenges. As a result of globalisation, and market liberalisation, organisations are exposed to various types of risks including uncertainties, and intense competitions. These risks, if not well managed, can affect organisations in terms of their efficiency, hence impairing growth and sustainability. Given the importance of risk management in a globalised environment, the first paper by Abu Bakar, Abdul Rasid, Mohd Rizal and Baskaran, investigates how risk management mediates the relationship between performance management system, and accountability, within public organisations. The paper seeks to improve the understanding of the effectiveness of risk management practices, and how this effectiveness differs according to the sectors.

Economic integration is a new practice under the globalisation and internationalisation context. However, both aspects of advancement not only affect service delivery, but also human capital. They have caused leadership development of public universities in Malaysia to come under immense scrutiny. In this climate of change, Hussein-Elhakim Al Issa investigates the role of culture in transforming the leadership roles in public universities, and in nurturing values that are in line with the internationalisation initiatives. Based on the data collected from academic leaders who are attached to the public universities in Malaysia, it is suggested that more efforts should be invested in promoting, and transforming the desired organisational culture, in preparation for transformational leadership. The next paper by Sarapaivanich, Trakarnsirinont, Laohavisudhi and Viriyachinkarn, explores how the ASEAN Economic Community (AEC) members, like Thailand, respond to the needs of the International Education Standard (IES). Using the theory of existence, relatedness and growth needs (ERG) theory, they examine the factors affecting the development of accounting professionals' essential skills, as specified by the IES.

The ever-increasing trend of international harmonisation of accounting standards has also influenced Asian organisations into undertaking significant reforms by engaging in the voluntary disclosure of management forecasts, which offer rich information to investors for decision-making purposes. Reflecting on this, Phonsumlissakul, Audsabumrungrat and Durongwatana conduct an experimental research to determine the effect of accounting knowledge and self-serving attribution bias on the voluntary disclosure of management earnings forecast. They find that managers with low accounting knowledge are more likely to withhold information if the cause of the unfavourable performance is caused by internal factors. Similarly, within the Indonesian context, Rokhayati, Nahartyo and Haryono examine the effects of financial information and corporate social responsibility (CSR) disclosure on investment decision. Their findings demonstrate that CSR disclosure, based on regulatory focus can be more effective for investment decision, especially when it has a prevention focus. This suggests that firms need to disclose their CSR activities by taking into consideration the situational aspects. This is based on the prevention focus which emphasises on avoiding social and environmental negative effects.

The deregulation practices caused by the effect of globalisation has also pressured financial institutions to terminate the complacent approach they used to apply, and to look for more strategic tools to help them to succeed, survive and be sustainable. Considering this, the sixth paper by Phornlaphatrachakorn emphasises on the application of strategic management accounting (SMA) as an important tool to provide quality management information. This application can help organisations in Thailand to detect problems posed by globalisation. The practice can enable the management to respond to the challenges in a timely manner. The paper also indicates that transformational leadership, organisational learning and technological innovations have a positive influence on strategic management accounting. The subsequent paper by Panda and Bag examines the impact of ownership structure on the financial and market performance of Indian listed firms, post the US financial crisis of 2008 which was one of the worst financial epidemics ever witnessed by the world. The crisis has had a severe impact on investors' sentiments and corporate performance, especially in the context of emerging Asian countries. They find that the impact of the crisis is particularly significant due to the more globalised and connected world. The study finds that large ownership is related to market performance, with the foreign institutional environment impacting on market performance. There has also been much discussions circulating among policymakers and policy-oriented economists on the impact of globalisation on inflation. Investors are confronted by one pertinent question, that is, whether the returns of their investments will protect them against inflation. In responding to this, Lee and Isa conduct an empirical analysis based on the quarterly data gathered from the period of 1980 to 2016. They find that stocks and government bonds in Malaysia can serve as a complete hedge against inflation in the long-run while real estate shows partial hedging against inflation. Gold and Treasury bills, however, are certainly not appropriate as hedges for inflation.

As a major contributor to globalisation, the tourism sector could bind diverse cultures which exist within and between countries. Intensive globalisation has led to the growing importance of green tourism, and creative industry. To attract international tourists, local communities have found it imperative to assert their identity by using their cultural assets, and exotic natural habitats to generate distinction. These are perceived to be more authentic. In relation to this issue, Lumbanraja, Lubis and Hasibuan investigate the role of creative industry, green tourism marketing and tourism experience in building tourism satisfaction within the context of Lake Toba, Indonesia. Based on the data collected from tourists who visited the destination, tourism experience is found to play a mediating role in the relationship between creative industry, green tourism marketing and tourism satisfaction.

The impact of globalisation is also felt by the manufacturing sector. Although globalisation allows the manufacturing companies to access larger markets, it also increases market competition, thereby resulting in price fluctuations, higher input costs, and disruptive new technologies. With more external parties involved, manufacturing firms are exposed to higher levels of supply chain risks. In relation to this, the final paper, by Perera, Soosay and Sandhu explores how dynamic capabilities can foster a competitive advantage. The strategic and operational agilities of business are suggested as the driving factors enabling manufacturers to respond to market changes, and to remain competitive.

The papers presented in this issue demonstrate the prevalence of globalisation, which is here to stay, with all its challenges and opportunities. This phenomenon contributes to today's dynamic business environment which is affecting and compelling organisations, regardless of sectors and countries, to respond to these changes aptly, and to find strategies to sustain themselves. That said, we believe that the ideas and recommendations presented in the papers will serve as important guides for organisations to address the impact of globalisation and internationalisation. On a final note, we would like to thank the Malaysian Accountancy Research and Education Foundation as well as the Malaysian Ministry of Higher Education, for the financial support extended. We also wish to say thank you to our members of the editorial and advisory boards as well as the reviewers for their time and effort put into AJBA.

Happy reading!

Che Ruhana Isa
Chief Editor

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Deputy Chief Editor

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CONTENTS

Risk Management Practices to Strengthen Public Sector Accountability

Bebe Abu Bakar, Siti Zaleha Abdul Rasid*, Adriana Mohd Rizal and Shathees Baskaran

ABSTRACT

Manuscript type: Research paper
Research aims: Risks can challenge the public sector's service delivery system and growth sustainability. While the notion of modern accountability demands some display of risk management (RM) initiatives, less attention has been given to the impact of RM practices on organisational accountability as well as the effect of performance measurement system (PMS) use on RM practices. Drawing from the resource-based view, this study attempts to investigate the predictive effect of RM practices and (PMS) use on accountability by using a mediation framework.
Design/Methodology/Approach: Cross-sectional survey is applied to collect data from the top management of the Malaysian Federal Statutory Bodies (FSBs). The research framework is tested by analysing the data of 110 Malaysian FSBs through the structural equation modelling technique (PLS-SEM).
Research findings: The result of the study demonstrates that PMS use for monitoring and PMS use for attention-focusing have a significant

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positive effect on RM practices. Additionally, RM practices mediate the relationship between PMS use and accountability.
Theoretical contribution/Originality: This paper is among the few to assess the effect of PMS use on RM practices and to determine the mediation effect of RM practices on the relationship between PMS use and accountability.
Practitioner/Policy implication: These findings provide valuable insights for authorities in the public sector on the ways to enhance public sector governance through new mechanisms of accountability such as RM practices.
Research limitation/Implication: This study uses a non-probability sampling. Considering the difference in design and use of control systems among the different sectors or industries, the results may not be generalised to other populations. However, the outcome of this study suggests that RM practices do strengthen public sector accountability with the appropriate use of the PMS.

Keywords: Risk Management, Performance Measurement System, Accountability, Public Sector
JEL Classification: M41

1. Introduction

Risk management (RM) is an integral component of good management. Primarily, it is concerned with the achievement of strategic objectives (Woods, 2008). Due to the uncertainties and intense competition impacted by globalisation and market liberalisation (Azizan & Lai, 2013), organisations around the world are exposed to various types of risks which need to be managed. RM has been defined by the Malaysian Standard of ISO 31000:2010 as coordinated activities which direct and control organisations with regards to risk. RM which involves the identification and mitigation of risks in accordance to the organisation's capacity is crucial for strategic planning, control and decision making (Mikes, 2009). RM could also lead to better project management, effective use of resources and better service delivery (Collier, Berry, & Burke, 2006).

The Malaysian Federal Statutory Bodies (FSBs) are not excluded from risks which affect the effectiveness and efficiency of their service delivery system. Risks can affect FSBs seriously by challenging their growth sustainability. Instances of the increasing trend of irregularities, non-compliance to regulation and mismanagement of government assets are deteriorating public sector accountability while the existing mechanisms of public sector accountability are being challenged; it is eroding public trust and confidence (Siddiquee, 2006). Audit findings for the past few years have uncovered 102 cases of mismanagement and financial irregularities (National Audit Department, 2011; 2012; 2013; 2014). The latest financial management and internal control of the FSBs have revealed that 77 per cent of the rotationally audited agencies in 2013 had been ranked below excellent level (four stars) in their rankings (National Audit Department, 2013). Even though this showed slight improvement when compared to the 2011 percentage of 89 per cent, prolonged weaknesses have eroded public trust in the public sector agencies. This phenomenon has accelerated the challenges for FSBs to sustain their accountability, particularly in demonstrating excellent results and value-for-money. In this regard, sophisticated tools or strategies are needed to enforce responsible administrative behaviours (Siddiquee, 2006) so as to regain public confidence. Studies (Collier & Woods, 2011; Leung & Isaacs, 2008) have proposed that RM practices could be used to address issues related to the FSB's accountability in delivering better results, value-for-money and also control purposes. To stay abreast with competition among other sectors, there has been increasing initiatives to mitigate risks through RM control. However, less attention has been given to examine how RM practices can vary in different situations. The outcome of such investigations can enable FSBs to strengthen their accountability.

Accountability relates to the provision of visibility and transparency of organisational activities and the promotion of appropriate behaviours which ultimately lead to improved organisational performance (Dubnick, 2005). Poor accountability is attributed to the lack of proper disclosure and transparency (Bakar & Saleh, 2015). Existing accountability literature (Abdali, Hourani, Abuerrub, & Shambour, 2013; Bolton, 2003; Halachmi, 2002; Hoque, 2008; Kloot, 2009; Saliterer & Korac, 2013; Tan, 2014) noted that PMS is an important factor which affects public sector accountability. At the same time, Said, Abidin and Nassir (2014) also argued that mission based management practices are necessary to demonstrate high levels of accountability. The fundamental risks faced by public sector agencies is the reason triggering the various recommended measures or mechanisms for monitoring accountability. Nonetheless, these mechanisms also need to be based on good governance principles (Witthoft, 2003). To deal with this, the RM process has to be established within an institution so as to dilute the excessive concentration of power that is in the hands of the management. Undeniably, RM practices are the integral part of the mission-based management system. Previous works (Arena, Arnaboldi, & Azzone, 2010) have observed that RM practices were rationalised either by organisational compliance or performance. Nevertheless, insistent demands from the public for a more transparent and accountable gov-ernment have pressured many countries to reform their public sector agencies. Taking Malaysia as a country with the intention to regain public confidence and trust, it appears that the current Malaysian government is imitating other developed countries or advanced nations in its effort to enhance its accountability (Bakar, Saleh, & Mohamad, 2011). The public's call for better governance requires serious government concerns even though it may be claimed that the delivery of public services has been progressively improved through good organisational practices such as the open and transparent procurement activities (Rahman, Ab Rahman, Azhar, Omar, & Said, 2015). While the notion of modern accountability in the public sector demands some manifestations of the RM initiatives (Nyland & Petterson, 2015), previous studies (Baldry, 1998; Azizan & Lai, 2013) have totally ignored accountability as one of the rationality of RM in the public sector. Therefore, a study on how the emphasis for RM practices can affect organisational accountability is necessary.

Studies investigating factors related to the usage and design of RM are many but their determinants are clustered around accounting ratios, corporate governance structure and company characteristics which seem more suitable for private sector organisations. These studies (Azizan & Lai, 2013; Collier & Woods, 2011; Woods, 2009) seemed to ignore the context and the institutional setting in which different organisations operate. Alternatively, an organisation's objectives are assessed by defining performance measures which are associated with each objective. These measures helped management to focus on what they are trying to control. Since RM is also about achieving objectives, the measurable performance measures provide input and become targets for RM success (Chapman, 2006; Loosemore, Raftery, & Reilly, 2006). However, less attention has been given to the variation of RM practices due to the effects of its proposed driver, the performance measurement system (PMS) used. Specifically, both the strategic information produced by the PMS and the RM system are considered as resources (intangible assets) under the resource-based view (RBV). They could contribute to superior performance and a competitive advantage (Barney, 1991).

The variation in RM practices include different emphasis placed within the RM processes which consists of risk identification and risk assessment. Therefore, based on the RBV, this research will fill the theoretical gap by investigating the effect of the different drivers (PMS use for monitoring and PMS use for attention-focusing) on RM practices and the impact of RM practices on accountability. The purpose of this study is to investigate the predictive effects of the PMS use and RM practices on accountability. The mediation framework is applied in the context of FSBs of Malaysia. However, the population of the study excludes other public sectors including the federal ministries, state government and local authorities as well as government-linked companies and government subsidiaries which are incorporated under the Companies Act 1965 that has a small number in population and do not have a RM framework or is still planning to have one.

This study contributes to the literature by addressing the importance of RM practices for FSBs in Malaysia, highlighting the significance of risks tolerance in strategic decision making for sustainability. The findings are aimed at improving the RM practices and accountability of the public sector by expanding their knowledge of RM practices, thereby offering solutions. The outcome generated could influence policy in a particular area, which might otherwise remain ignored despite its significance. At present, the debate on the contribution and variance of RM practices are focussed on the private sector, hence more attention needs to be focussed on the public sector. It is hoped that this study will contribute to raising the awareness and the understanding of the potentials of RM by highlighting their relevance to risk related problems and issues in the public sector.

The remainder of this paper is organised as follows: Section 2 reviews the literature on accountability, RM practices and RM practices in the public sector and PMS use. Section 3 discusses the research hypotheses derived from the proposed conceptual framework and the underpinning theories. The section also highlights the need to examine various variables within a mediation framework of accountability. Section 4 describes the research methodology while Section 5 discusses the statistical results. Finally, Section 6 concludes the study by providing the research implications.

2. Literature Review

2.1 Accountability

There are various meanings attached to accountability but it basically means the need to give reasons for certain actions taken to those who deserve clarification (Parker & Gould, 1999). Previous studies (Broadbent, Dietrich, & Laughlin, 1996; Sinclair, 1995; Gray & Jenkins, 1993) stated that accountability is the delegation of power by stakeholders (principal) to managers (agents). Traditional accountability begins with Stewart's (1984) ladder of accountability which varies from probity and legal accountability to programme, performance, process and policy accountability. Subsequently, Sinclair (1995) revealed five distinct dimensions of accountability which include managerial, public, fiduciary, political and personal accountability. Under public accountability, the public administrators and agencies are required to respond to public interest. This accountability can be classified into two components: accountability for good administration and administrative accountability (Stewart, 1984). In the public sector, accountability mechanisms are considered in the context of governance (Almquist, Grossi, van Helden, & Reichard, 2013) which include organisational structure and tools. In the present study, accountability refers to "governance arrangements and practices" which are outlined to furnish visibility of results and compliance with rules and regulations to stakeholders.

To ensure public sector accountability, managers need to equip themselves with the ability to identify and manage risks and opportunities (Queensland Treasury, 2011). However, very few studies have ventured into examining the impact of RM practices on organisational accountability. Nonetheless, the notion of modern accountability in the public sector also known as result-based accountability, demands some demonstration of risk management initiatives (Nyland & Petterson, 2015; Spira & Page, 2003). There was even a call for more frontier research in governance and accountability so as to consider RM as a mechanism for accountability (Brennan & Solomon, 2008). This study aims to fill the theoretical gap by empirically examining the impact of RM practices on organisational accountability; it also aims to explain the impact from the RBV perspective (Wang, Barney, & Reuer, 2003; Andersen, 2008).

2.2 Risk Management Practices

Risk issues have received critical attention as they are economically costly. Considerable attention was given to risk issues after various global man-made disasters. Risks are uncertain future events which can impinge on an organisation's effort towards the achievement of objectives (Sobel & Reding, 2004). Risks can result in negative or positive consequences (Burtonshaw-Gunn, 2009; Drew, Kelly, &

Kendrick, 2006; Tang, 2006). Initially, risk was denoted with negative effects and described as a threat of potential losses. The aim was to minimise potential losses and to avoid risky actions which would lead to instability for the organisation (Collier, 2009). Subsequently, risk was also referred to with positive effects. It was retained so as to take advantage of the risk that would lead to the organisation's benefit (Collier, 2009). Most recently, risk was also defined as the "effect of uncertainty on objectives" (MS ISO 31000:2010).

Different types of industries design different control systems to accommodate their needs and this causes systematic variations in the type of RM framework and stages of RM practised (Mikes, 2009). Some organisations invest in sophisticated RM system, some have developed a complete RM framework while others practise RM through a partial framework (Paape & Speklé, 2012). Despite the increasing investigations done on RM adoption and usage, very few studies (Mikes & Kaplan, 2014; Al-Tamimi & Al-Mazrooei, 2007) examine or compare the different processes of the RM practices. Therefore, it is worth examining the different processes of RM practices in order to examine the variations of RM practices within the FSBs. With reference to the MS ISO 31000:2010, this study examines the three main processes of RM which include risk identification, risk assessment and risk monitoring. The first dimension of RM practices – risk identification, is concerned with recognising risk sources and their causes as well as future consequences (MS ISO 31000:2010). The purpose is to generate a comprehensive list of risk that could distort the achievement of objectives. This process is critical for ensuring that all risks are included in further analysis. Events identified from this process are differentiated between positive (opportunities) and negative (risks) impacts. Normally, the tools and techniques employed for risk identification suits the organisation's objectives (MS ISO 31000:2010). The techniques include interactive methods such as face-to-face interviews and workshops or self-assessment techniques including reviewing historical data and personal experiences (Mikes & Kaplan, 2014). The risk identification techniques are applied with varying frequencies (COSO, 2004), depending on the velocity of risk evolution (Mikes & Kaplan, 2014).

The next dimension is risk assessment which includes risk analysis and risk evaluation. Basically, risk analysis envisions risk by determining the organisation's risk levels (MS ISO 31000:2010). Risk analysis considers the causes and sources of risk as well as the likelihood of occurrences and the impact of risk on the achievement of objectives.

The consequences and likelihood are combined to determine the level of risk. In addition, risk is regarded as quantifiable (Loosemore et al., 2006) where statistical data could be available for evaluation (Merna & Al-Thani, 2005). Risk assessment techniques can be qualitative or quantitative or both (Mikes, 2009; Subramaniam, Collier, Phang, & Burke, 2011). More sophisticated risk assessment methods include stochastic modelling (Subramaniam et al., 2011). As part of risk assessment, the risks will be evaluated to determine its significance for it to be acceptable or tolerable. It compares the organisation's risk level with the risk criteria established. The comparison exercise leads to decisions about: (1) risk treatment plan, (2) further analysis, or (3) maintaining existing controls (MS ISO 31000:2010). The following dimension is risk monitoring which actually monitors and reviews the RM process. This process involves continual observations of any variance – from the target to regular checking and surveillance (MS ISO 31000:2010). In this study, the risk monitoring and reviewing process (Al-Tamimi & Al-Mazrooei, 2007) looks at all aspects of RM for the purpose of: (1) assuring the effectiveness of RM control, (2) evaluating the effectiveness of risk assessment, (3) monitoring changes in risk criteria, and (4) revising risk treatment or priorities (MS ISO 31000:2010).

Literature on RM revealed that researchers have intensively investigated the determinants and drivers of RM in different parts of the world. For example, in the United States, factors including chief risk officer (CRO), board composition and independence, financial distress and leverage, institutional ownership, firm size, industry affiliation, risk type, environmental uncertainty, firm complexity and industry competition were found to have effect on the stage of RM adoption. This phenomenon was also prevalent in different industries (Beasley, Clune, & Hermanson, 2005; Colquitt, Hoyt, & Lee, 1999; Gordon, Loeb, & Tseng, 2009; Liebenberg & Hoyt, 2003; Mikes & Kaplan, 2014; Pagach & Warr, 2011). In the context of Malaysia, among the factors which influenced RM practices were CRO (Saeidi, Sofian, Rasid, & Saeid, 2012; Daud & Yazid, 2009; Daud, Yazid, & Hussin, 2010), board of directors composition, pressure from regulations and corporate governance (Hudin & Hamid, 2014; Manab, Kassim, & Hussin, 2010), financial leverage and external auditor (Golshan & Rasid, 2012); technology advancement, good business practice and decision making (Manab et al., 2010) and organisational trust (Saeidi et al., 2012). However, previous literature tends to focus on the usage and design of risk management and the factors affecting them. Very little attention is given to the effect of PMS use as the driver influencing the initiation of different processes of RM practices.

A considerable number of studies (Andersen, 2008; 2009; Baxter, Bedard, Hoitash, & Yezegel, 2013; Beasley, Pagach, & Warr, 2008; Gordon et al., 2009; Ellul & Yerramilli, 2013; Hoyt & Liebenberg, 2011; McShane, Nair, & Rustambekov, 2011; Pagach & Warr, 2010) have examined the consequences of RM with regards to organisational performance and value. Other studies (Paape & Speklé, 2012; Subramaniam et al., 2011) focused on RM effectiveness and organisational outcomes as consequences by applying constructs such as RM design choices, reporting style and RM documentation. Palermo (2014) has demonstrated that RM disclosure influences public sector performance by minimising the costs of borrowing and insurance premiums. Nevertheless, all these studies reported a combination of mixed findings on the consequences of RM. The present study aims to investigate the effect of RM practices on accountability.

2.3 Risk Management Practices in the Public Sector

RM studies in the public sector are aimed at enhancing governance, specifically to respond to stakeholders' demand for better control of public resources and to focus on exploring risks existing in government's contractual relationship. The sources of risk could emerge either in information technology outsourcing projects (Ahlan, Arshad, & Ibrahim, 2012; Khalfan, 2004), government capital project management (Baldry, 1998) including private financing initiatives (PFI) by third parties (Nisar, 2007; Shaoul, Stafford, & Stapleton, 2012) or other forms of project management (Monetti, Rosa, & Rocha, 2006). Through a study conducted in Federal Ministries, Azizan and Lai (2013) revealed that RM can enhance performance and corporate governance for the Malaysian public sector. They further suggested that aligning RM initiatives to business objectives and corporate strategy can lead to better decision-making and encourage reporting to regulators. The public sector perceives RM as a good governance mechanism which aims to achieve organisational objectives (Woods, 2009). For instance, Guidelines to Enhance Public Sector Governance 2007 and the Prime Minister's Order No. 1, 2009 – Establishment of Committee for Integrity and Governance were issued to promote accountability for the public sector, with emphasis on RM. In the meantime, the Ministry of Science, Technology and Innovation, particularly the Department of Standards, published the Risk Management Principles and Guidelines (MS ISO 31000:2010) as a comprehensive guide for the public sector to adhere to the RM principles, framework and process. Given that the objective of the FSBs is to deliver quality services to the public, the similarity of RM practices across the FSBs is expected to comply with the principles and standards of RM as proposed by the ERM integrated framework (COSO, 2004) or the MS ISO 31000:2010.

Notably, stakeholders expect public officials to put controls into place when dealing with risks, for example, strategy, operation, compliance with laws and financial reporting (COSO, 2004). Strategic decisions usually involve uncertain outcomes because they are essential to organisational survival in the long run (Mintzberg, Raisinghani, & Theoret, 1976). Strategists are aware that corporate disasters can occur if risks are handled improperly, hence they need to know which information is available or not available so that they know how to deal with risk needs (Baird & Thomas, 1985). Therefore, public sector managers need to equip themselves with the ability to identify and manage risks and opportunities so as to ensure accountability (Queensland Treasury, 2011). Besides being well trained in RM, managers also require the skills to negotiate and manage contracts as well as out-sourced programmes. In fact, literature on RM, whether internationally or locally, has not addressed the issue of RM in the public sector adequately (Baldry, 1998). Therefore, this study aims to contribute to the aspiration of the Malaysian government in enhancing governance by examining the role of RM practices in promoting accountability.

FSBs are the operating arms of the federal government; their role is to implement all programmes that are related to the public sector's reform initiatives. This study selected the FSBs as samples because they are the major consumers of governmental operations and capital grants. The alignment of the FSB's strategic mission with the government's aspirations has led FSBs to pursue new performance measures and more challenging targets. However, unexpected implications on the public sector's reform initiatives could erode the control efforts and impact their accountability (Nyland & Petterson, 2015). Furthermore, the transformation of the public sector in terms of restructuring and operations through hybrid formations such as public-private collaborations and private financing initiatives, are exposing the public sector to greater risks. This further challenges its control structure and accountability (Nyland & Petterson, 2015). Therefore, the risk management practices (RM) of the Malaysian FSBs need to be further substantiated.

2.4 *Performance Measurement System Use*

To derive the dimensions of the PMS used in this study, Henri's (2006b) work which classifies management and accounting information systems was referred. This is because these dimensions have been empirically tested and are relevant to the performance measurement and decision-making environment of the public sector. The first of Henri's (2006b) dimension is monitoring which refers to performance measures used for providing feedback of performance and for communication. Monitoring involves tracking the progress towards goals and comparing outcomes to expectations. The PMS is used as a diagnostic control (Simons, 1990) that relates to performance measures and reporting (Atkinson, Waterhouse, & Wells, 1997). It acts as an answering machine (Burchell, Clubb, Hopwood, Hughes, & Nahapiet, 1980). For instance, the rationale behind the PMS's role in successful transformation is the use of the balanced scorecard (BSC) measures in monitoring the rate of change during the change process and the monitoring of performance after the completion of change (MacBryde, Paton, Bayliss, & Grant, 2014). The second dimension is attention-focusing which refers to performance measures used by top managers to send signals across the organisation. Attention-focusing provides common focus of the critical success factors, goal targets (key performance indicators or KPIs) and critical uncertainty sent by the top managers throughout the organisation. The PMS is used as an ammunition machine (Burchell et al., 1980) and for interactive control (Simons, 1990). It is meant to encourage employees to focus on organisational goals (Atkinson et al., 1997; Vandenbosch, 1999). The clarity of the performance measures served highlight areas of poor performance which needs attention (MacBryde et al., 2014).

Several studies (Abdali et al., 2013; Bakar et al., 2011; Bolton, 2003; Cunningham & Harris, 2005; Kloot, 2009; Saliterer & Korac, 2013; Tan, 2014) have demonstrated the PMS as an important tool for discharging accountability in the public sector. However, Woods (2008) suggested that further research is needed to observe the relationship between strategic control and risk management. The amount of studies examining the PMS as a driver of RM practices, however, has been few. PMS use in risk management studies states that agreed performance measures help the management team to focus on exactly what they are trying to control (Loosemore et al., 2006). Andrews (2014) also pointed out that performance management has a positive impact on outcomes for service users. Performance management manifests the improvement of the public services' effectiveness. As RM practices assure the achievement of objectives, RM success is measured based on the achievement of pre-set key performance indicators or performance measures (Loosemore et al., 2006). In considering the dimensions of the PMS used by Henri (2006b), this study also includes PMS use for monitoring and PMS use for attention-focusing.

Meanwhile, Mohamad and Ismail (2014) mentioned that there is a considerable range for PMS development and operationalisation since its 'usage' has not been well-defined. The existing theoretical link between PMS use and accountability is further developed by investigating the circumstances that would make PMS use predictive of accountability. Two studies were conducted in Malaysia to investigate the mediating effect of RM on the relationship between internal audit and organisational performance (Roslan & Dahan, 2013a) and the relationship between risk culture and organisational performance (Roslan & Dahan, 2013b). These studies show that RM mediates the relationships. Although previous studies have shown that organisational control system and its components mediate organisational performance (Chenhall, 2003), there are limited studies investigating the role of the different processes of RM as a mediator.

In line with its quest for public sector reforms, the Government of Malaysia also released Circular 2/2005 (Government of Malaysia, 2005) to present the performance measures (KPI) the government expected of the public sector. A new cabinet position was also created to support this implementation (Mucciarone & Neilson, 2012). The government aimed to measure the performance of the public sector with a special focus on the National Key Result Areas. Hence, the PMS has become the gist of the public sector reform for promoting accountability. The performance measures or the key performance indicator (KPI) has a significant influence on RM practices. Organisational objectives are usually identified through consultations with stakeholders and they are measured by defining the KPIs associated with each objective. Only after having a clear list of objectives and KPIs are manager allowed to identify the risk and opportunities associated with a decision (Loosemore et al., 2006). Agreed KPIs help the management team to focus their mind on what exactly they are trying to control. Since RM is about achieving objectives, these measurable criteria thus becomes the target against which RM success is measured and judged (Loosemore et al., 2006). The performance measures used for monitoring the progress towards the achievement of goals can send an early signal to the RM department to identify and mitigate all risks that could cause a variance from the target (Arena & Arnaboldi, 2014). Therefore, the present study aims to investigate the role of PMS use as the internal driver of RM practices in the public sector.

3. Hypotheses Development

The conceptual model predicts the relationship among the exogenous variables, PMS use for monitoring and PMS use for attention-focusing, the endogenous variable, accountability and the mediating variable and RM practices.

3.1 Relationship between PMS Use for Monitoring and RM Practices

The relationship between PMS use and a variety of measures was previously studied by Henri (2006b). He related various measures to the financial and non-financial metric of balanced scorecards and found that a monitoring use of PMS is related to a higher variety of measures. Commonly, organisations use PMS to monitor progress towards strategic goals. RM could then be used to identify the factors that affect the achievement of these goals (Beasley, Chen, Nunez, & Wright, 2006). Notably, performance measures provide managers with the targeted performance data. These become the input for risk identification activities based on the sources of risk and their potential causes (Arena & Arnaboldi, 2014). Since RM focuses on the potential events and is intended to identify and manage future unpredictable events that may adversely affect organisations (Mikes & Kaplan, 2014), PMS use can define targeted goals which need to be protected against risk. The use of the PMS for increasing the monitoring to a higher extent by top management would lead to more frequent executions of risk identification activities. Therefore, PMS use for monitoring will have an effect on RM practices. Based on this, the hypothesis is formulated as:

H_1: There is a positive relationship between PMS use for monitoring and RM practices within the organisation.

3.2 Relationship between PMS Use for Attention-Focusing and RM Practices

The use of performance measures for exploratory purpose could enhance performance, depending on the use and clarity of goals and the ability to select performance metrics (Speklé & Verbeeten, 2014). Henri

(2006b) found that the attention-focusing use of PMS is linked to a higher variety of measures (financial and non-financial). Managers who use performance measures or KPIs for attention focusing will relate critical success factors with information on the potential causes of deviation from the RM activities at the planning stage itself (Arena & Arnaboldi, 2014). The critical success factors narrow the result area to be focused for risk identification activities. In addition, the timely identification of the causes of risks help managers to send early signals across the organisation so as to assure a common focus on objectives. The use of PMS for attention-focusing, to a higher extent, would lead to more frequent executions of risk identification activities. Therefore, PMS use for attention-focusing will influence RM practices. Based on this, the hypothesis is formulated as:

H_2: There is a positive relationship between PMS use for attention-focusing and RM practices within the organisation.

3.3 Relationship between RM Practices and Accountability

Accountability is a theoretical cornerstone for understanding how management controls change or hybridise (Nyland & Petterson, 2015). Different management controls may facilitate different forms of accountability in organisations. Previous studies (Said et al., 2014) had found that mission based management practices act as factors that influenced accountability in non-profit organisations. As RM practices are associated with organisational mission accomplishments, it can thus be classified as mission based management. Halachmi (2003) had recommended that accountability and RM be connected in a RM system design. Furthermore, in meeting the accountability goals of the educational system (no child left behind policy), schools in Texas also used RM techniques to analyse standard test scores data so as to make decisions that would minimise risks for schools such as excluding low scoring students (student at-risk) (Heilig, Young, & Williams, 2012). Although there was a lack of empirical evidence showing the effect of RM practices on organisational accountability, as a control mechanism, RM has the potential to promote public sector accountability. This argument led to the prediction that RM practices will promote accountability in terms of risk-based control and decision. Thus, the hypothesis is formulated as:

H_3: RM practices are positively related with accountability.

3.4 Mediating Effect of RM Practices on Accountability

The positive relationship between PMS and accountability has been illustrated in many studies (e.g. Arena & Arnaboldi, 2014; Rasid, Golshan, Ismail, & Ahmad, 2012; Söderholm & Norrbin, 2013; Woods, 2008). In fact, PMS is inseparable from RM. There were notions (Heilig et al., 2012; Halachmi, 2003) which suggest the potential relation between RM and public sector accountability. There were even calls to enhance risk disclosure in the UK companies as a measure to help stakeholders to have more knowledge of companies' risk profiles (Linsley & Lawrence, 2007). Considering the positive relation between PMS on RM practices (Loosemore et al., 2006; Chapman, 2006), it is presumed that systematically practised RM would promote accountability.

The RBV supports this notion, where organisations could employ different strategies to outperform each other and to achieve a competitive advantage, using different resources. To relate this with the present study, the RM system, as a resource of the RBV (based on the information gathered from the PMS), produces FSBs with risk position information as a means to improve accountability. Hence, organisations with RM practices and the growing public sector reputation (resource of RBV) could lead the FSBs to gain more competitive advantages. Therefore, by sustaining these resources, FSBs could attract future investments (Wang et al., 2003).

The organisation's control system and its components have been proven to act as a mediator on organisational performance (Chenhall, 2003). However, literature addressing the mediating role of RM practices has been insufficient except for Roslan and Dahan (2013a; 2013b). Since it is hypothesised that PMS use for various purposes are related to RM practices and that RM practices are related to accountability, it can be hypothesised that RM practices play a mediating role in the relationship between PMS use and accountability. Hence, the hypotheses are formulated as:

H_4: RM practices mediate the relationship between PMS use for monitoring and accountability.

H_5: RM practices mediate the relationship between PMS use for attention-focusing and accountability.

3.5 Research Framework Development

The RBV model views scarce internal resources as the key to superior performance that enables the organisation to gain a competitive advantage (Barney, 1991). The competitive advantage of Malaysian FSBs depends on their internal resources including the PMS information and the RM system and their ability to exploit these resources rather than the external environment (Wernerfelt, 1984). Hence, the first part of the conceptual framework theorised the relationship between PMS use (as a resource of RBV) and RM practices (as a resource of RBV) from the perspective of the resource-based view (RBV). This prediction extends on Henri's (2006a) work which examined MCS use and RBV capabilities. In that regard, this study examines two dimensions of PMS use: monitoring and attention-focusing.

Notably, PMS use and RM practices are key resources to superior performance which leads to better accountability in terms of risk-based decision and control. Therefore, these resources need to be sustained. In addition, future investment can be attracted through reputation earned from an enhanced accountability. Hence, the second part of the conceptual framework theorised the relationship between RM practices and accountability by using the RBV. This prediction extends on Andersen (2008) and Wang et al.'s (2003) work which demonstrated that RM (an RBV resource) could lead to superior performance and a competitive advantage. Based on the MS ISO 31000:2010, this study examines the three main processes of RM practices including risk identification, risk assessment and risk monitoring. Thus, it can be summarised that FSBs treasure RM as best practice and the tool of accountability. When exploited, these could lead to a competitive advantage for growth sustainability, in terms of better organisational reputation and investment.

According to the foregoing discussions, the following research framework is proposed.

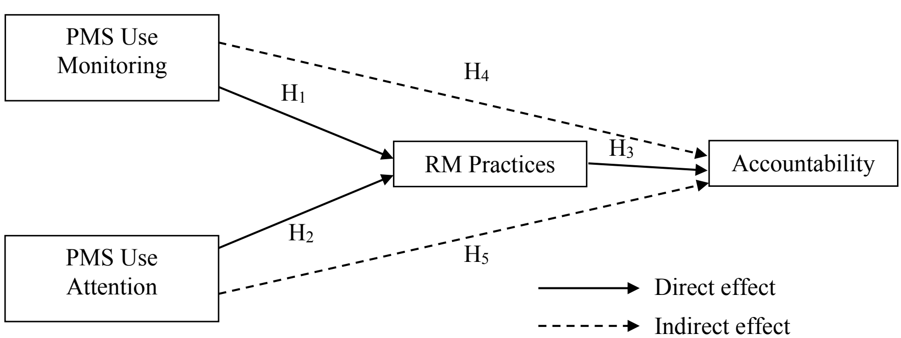

Figure 1: Research Framework

4. Methodology

4.1 Research Design

This study aims to investigate the predictive effects of PMS use and RM practices on accountability by using the mediation framework. Since RM practices in the Federal Statutory Bodies (FSBs) of Malaysia are the focus of this study, it is assumed that the FSBs have adopted RM. The population of the study consisted of 112 FSBs across 22 ministries and 400 main branch offices. The Auditor General's Reports for the year 2010 and 2011 were reviewed to obtain findings on RM practices and FSBs which have implemented a comprehensive RM framework. The review revealed that only 217 of them have adopted and practised RM. Therefore, 217 self-administered questionnaires were disseminated to the respondents via their personal emails. As the respondents of this study, these FSBs were noted to have a complete organisation structure with more than 100 employees. This criteria ensures that a formal performance measurement system (Henri, 2006a) and RM are being practised. The respondents were chief executive officers, CROs and chief finance officers. Following this, their personal assistants were contacted to remind them about the survey, to explain the purpose of the survey and to ensure that the survey had been assigned to the person in charge of RM. In some cases, an alternate email address was also obtained from the FSBs to redirect the survey to the right respondents. Since the unit of analysis of this study is the organisation (FSBs), only one respondent from each sample was chosen to represent their organisations. Therefore, the key informants of this study include the CROs, management accountants, strategic planning managers and internal auditors.

Measures for the RM practices and accountability were adapted from Al-Tamimi and Al-Mazrooei (2007) and Geer, Maher and Cole (2008), respectively while measures for the PMS use were adapted from Henri (2006b). The original scales of the questionnaire were revised to suit the need of the present study and to reduce method bias due to same scale format (MacKenzie, Lee, & Podsakoff, 2003). Several steps were also taken to ensure the instrument's quality and validity. This include the initial development, expert's recommendation, pre-test and pilot test. Initially, indicators of the questionnaire were decided based on an extensive review of the literature on RM, MCS and public sector accountability. Next, the academics' and practitioners' comments were obtained where the academics represent the subject and methodology experts. These academics comprised qualified professors who specialised in management accounting practices, RM and research methodology and business statistics.

The questionnaire was later run through a pre-test to ensure suitability for the current research population so that quality data are retrievable for each variable. A pre-test was conducted among twenty respondents from several FSBs, including Universiti Teknologi Malaysia (Johor Bahru) and Bank Rakyat, Taman Universiti (Johor Bahru). The pre-test led to some modifications of the questionnaire items, structure and scale as well as clarity of words. Several original items related to RM practices and credit risk analysis specified for the banking environment, were eliminated to suit the public sector environment. The remaining indicators used to measure RM practices include: (1) risk identification (organisations carries out a systematic risk identification and develops opportunity identification procedures or changes in risk), (2) risk assessment (organisation assesses likelihood of risk, assesses risk using qualitative method, analysis opportunities, analysis cost benefit) and (3) risk monitoring (organisation monitors RM effectiveness, risk control is appropriate and organisation's reporting supports RM). The respondents were asked to indicate their level of agreement on the RM practices in their own organisation. For accountability, the indicators measured the organisation's exercise so as to evaluate service efficiency and to respond to complaints, the organisation determines a clear mission or goal and established conflict of interest policy. The respondents were asked to indicate the organisation's emphasis on accountability. As for the PMS use, the respondents were asked to indicate the extent to which top management used the PMS for monitoring and attention-focusing.

The questionnaire items were then used to run a pilot test among thirty respondents. The participating organisations include Universiti Teknologi Malaysia (6), Bank Rakyat (M) Berhad (6), Kumpulan Wang Persaraan Diperbadankan (6), Lembaga Tabung Haji (2) and Kumpulan Wang Simpanan Pekerja (10). These participants were from FSBs that deliver vast services including banking, finance, retirement funds and education.

The internal consistency test of the constructs extracted from the pilot test revealed that Cronbach's alpha values ranged between 0.841 and 0.968 (Nunnally, 1978). Therefore, all the measures were reliable. The questions were confirmed to be valid for further data collection. There were no major alterations or corrections made to the questionnaire after the pilot test. The Cronbach's alpha value is shown in Table 1.

Table 1: Cronbach's Alpha Value of Constructs

Dimensions	Cronbach's Alpha
PMS Use for Monitoring	0.911
PMS Use for Attention-focusing	0.939
RM Practices	0.968
Accountability	0.841

Data collection lasted for a period of three months where 130 organisations responded to the survey, indicating a response rate of 60 per cent. However, the final usable sample was only 110. According to Israel (1992), for a population of 500 at 10 per cent precision level, the sample size required is 83. Therefore, the remaining samples of 110 were sufficient to represent the population (Israel, 1992). Table 2 represents the demographic information of the respondents.

Table 2: Respondent's Demographic Information

Demographic	Frequency (n=110)	Percentage (%)
Duration of Establishment		
Less than 10 years	25	23
Between 11-49 years	53	48
> 50 years	32	29
Government Grant		
Receive grant	63	57
Do not receive grant	47	43
Stage of RM Adoption		
Complete RM framework in place	50	45
Partial RM framework in place	60	55
Designation of Respondents		
Chief Executive Officer	2	2
Chief Risk Officer	4	4
Chief Finance Officer/Accountant	24	21
Finance Manager	9	8
Strategic Manager	2	2
Internal Auditor	14	13
Senior Manager	55	50

5. Results and Discussion

5.1 Descriptive Statistics of Constructs

Table 3 depicts the mean score and standard deviation by items for all constructs including PMS use, RM practices and accountability constructs. The mean for the items of the constructs ranged from a lower bound of 3.68 to an upper bound of 4.30, whereas their standard deviation ranged between 0.638 and 0.967.

In the survey, managers were requested to indicate the usage of PMS information in the FSBs for each of its dimension. The overall mean of 4.24 for PMS use monitoring, explains that PMS information was

Table 3: Descriptive Statistics of Constructs

Constructs	Items	Mean	Standard Deviation	Overall Mean
PMS Use Monitoring	Track progress	4.25	0.638	4.24
	Review KPI	4.25	0.670	
	Compare outcomes	4.18	0.666	
	Monitor results	4.30	0.643	
PMS Use Attention	Focus common issues	3.99	0.684	4.06
	Focus CSF	4.14	0.673	
	Enable discussion	4.06	0.770	
	Debate action plan	4.05	0.740	
Risk Identification	Carries out systematic risk identification	3.94	0.838	3.91
	Changes in risk recognised	3.95	0.776	
	Develop risk identification procedure	3.85	0.811	
Risk Assessment	Assesses risk likelihood	3.96	0.765	3.98
	Assesses using qualitative method	4.05	0.850	
	Analyse opportunities	3.97	0.760	
	Analyse cost benefit	3.95	0.776	
Accountability	Evaluate efficiency frequently	4.07	0.738	4.10
	Respond to complaints	4.25	0.732	
	Clear mission/goals	4.15	0.788	
	Conflict of interest policy	3.91	0.811	

used for monitoring to the greatest extent, particularly for monitoring the results (mean 4.30), tracking progress towards goals (mean 4.25) and reviewing KPI (mean 4.25). The overall mean of above 4.00 for the dimension of PMS use attention indicates that PMS information has been used extensively in the FSBs. The moderate use of PMS information was recorded for focusing on a common issue (mean 3.99). Thus, it can be assumed that the high usage of PMS for various purposes might encourage RM practices within the FSBs.

Respondents indicated their agreement on RM practices which include detailed activities involved in the process of risk identification, assessment and monitoring. The overall mean indicated that RM was moderately practised in the FSBs, with higher emphasis on risk assessment (mean 3.98) and risk identification (mean 3.91), followed by risk monitoring (mean 3.81). In the risk identification phase, top management rated that changes in risks were recognised, with organisation's roles and responsibilities (mean 3.95) rated as highly performed activities. Developed procedures for systematic identification of risk and opportunities were least performed as an activity (mean 3.85). In the risk assessment phase, top management strongly agreed on the use of qualitative method to assess the identified risks (mean 4.05) in FSBs. The least emphasis was given to the analysing of cost benefits (mean 3.95). In the risk monitoring phase, top management gave the highest score for the organisation's reporting processes which support the effective management of risks (mean 3.88). The lowest score was given for monitoring the effectiveness of RM as an integral part of the routine management reporting (mean 3.68). Therefore, these results support the assumption that RM is being practised moderately in FSBs although it is a sophisticated and expensive control system, which is more likely to be employed by commercial sectors which are profit oriented.

Respondents were requested to indicate their perception on organisational accountability. Compared to the overall mean value of 4.10, two items were noted to be above the average mean value and they were highly emphasised in the FSBs. These encompass responses to service related complaints (mean 4.25) and clear mission and goal (mean 4.15). It was noted that the least emphasis was on establishing a written conflict-of-interest policy for the board of directors (BOD) and staff (mean 3.91). Therefore, organisational accountability is an important feature in the public sector which is often sought by stakeholders for investments and are given high emphasis.

5.2 Measurement Model Assessment

The final usable samples included for analysis comprise 110 respondents which is adequate to run the PLS-SEM (Cohen, 1992). The reflective measurement model was chosen to model the relationship between measures and first-order latent construct, after fulfilling the specified criteria (Jarvis, MacKenzie, & Podsakoff, 2003; Hair, Hult, Ringle, & Sarstedt, 2014). The constructs used for this study was tested for convergent validity, based on the factor loadings, composite reliability (CR) and average variance extracted (AVE) (Hair et al., 2014). Table 4 presents the composite reliability for PMS use monitoring (0.941), PMS use attention (0.876), risk management practices (0.938) and accountability (0.890). The recorded CR values of between 0.8–0.9 indicated that there was an internal consistency among the items and the constructs they represented. As a result, the items used in the study were deemed reliable measures. The factor loadings for all items ranged between 0.792 and 0.939, exceeding the threshold value of 0.708 (Hair et al., 2014). Hence, the indicator reliability of all items were at satisfactory level. The assessment of the average variance extracted (AVE) for each construct exhibited the AVE value of more than the threshold value of 0.5. Therefore, the measurement model of this study has established an adequate convergent validity and all items of the three constructs were valid measures.

The discriminant validity of the measurement model was assessed based on two techniques: (1) Fornell-Larcker criterion and (2) cross loadings. Table 5 exhibits the results of the computed square roots of the AVE and off-diagonal values which exhibited the inter-correlation value between constructs. The results indicated that the square roots of the AVE (bold) of all constructs exceeded their correlations with other constructs (off-diagonal values), thus, the Fornell-Larcker criterion was fulfilled. Simultaneously, the cross loading results indicated that all measurement indicators loaded higher on their own construct when compared to other constructs. Based on the results of both techniques, the measurement model has established its discriminant validity. To summarise, the outer measurement model is reliable and valid, thus the measurement model can be used to estimate the parameters in the inner structural model.

5.3 Structural Model

The structural model evaluation validates the collinearity among constructs, the coefficient of determination (R^2), effect sizes (f^2), predictive

Table 4: Validity and Reliability for Constructs

Construct	Items	Description	Loadings	AVE	CR
PMS Use Monitoring	Moni_1	To track progress towards goals	0.896	0.801	0.702
	Moni_2	To review key performance measures	0.876		
	Moni_3	To compare outcomes to expectations	0.917		
	Moni_4	To monitor results	0.890		
PMS Use Attention	Atten_1	To focus on your critical success factors	0.792	0.941	0.876
	Atten_2	To enable discussion in meetings	0.841		
	Atten_3	To debate underlying results, assumptions and	0.879		
Risk Management Practices (As Mediator)	Risk_1	Systematic identification of risks	0.912	0.835	0.938
	Risk_2	Changes in risk are recognised with roles	0.925		
	Risk_3	Procedures for identification of risk and opportunities	0.905		
	Risk_4	Assesses the likelihood of risk	0.897		
	Risk_5	Assesses risk using qualitative analysis methods	0.874		
	Risk_6	Analyses and evaluates opportunities	0.908		
	Risk_7	Assesses the cost and benefits of addressing risk	0.874		
	Risk_8	Monitors the effectiveness of RM	0.916		
	Risk_9	Level of control of risk is appropriate	0.939		
	Risk_10	Reporting processes support RM	0.920		
Accountability	Acco_1	Evaluates the efficiency and effectiveness of its service	0.858	0.670	0.890
	Acco_2	Responses to complaints	0.796		
	Acco_3	Revises mission and goals frequently	0.826		
	Acco_4	Written conflict-of-interest policy	0.793		

Table 5: Inter-correlation Matrix (Fornell-Larker Criterion)

	Accountancy	PMS Use Attention	PMS Use Monitoring	RM Practices
Accountability	**0.818**			
PMS Use Attention	0.544	**0.838**		
PMS Use Monitoring	0.580	0.673	**0.895**	
RM Practices	0.663	0.536	0.571	**0.914**

Note: Values in the diagonal (bold) represent the square root of the AVE and the off-diagonal values exhibit the correlations.

relevance (Q^2) and path coefficient (β) (Hair et al., 2014). First, the collinearity among the predictor constructs was tested. Results showed that collinearity was not an issue as the variance inflation factor (VIF) was below 5. Hence, the structural model was fit for further evaluation. Second, the coefficient of determination (R^2 value) was assessed. Figure 2 indicates that the R^2 value for RM practices is 0.385 and the R^2 value for accountability is 0.446, both were significant at the 0.01 probability level. The R^2 value indicates that PMS use monitoring, PMS use attention and RM practices explained 44 per cent of the variance in accountability (endogenous variable), whereas 38 per cent variance in RM practices

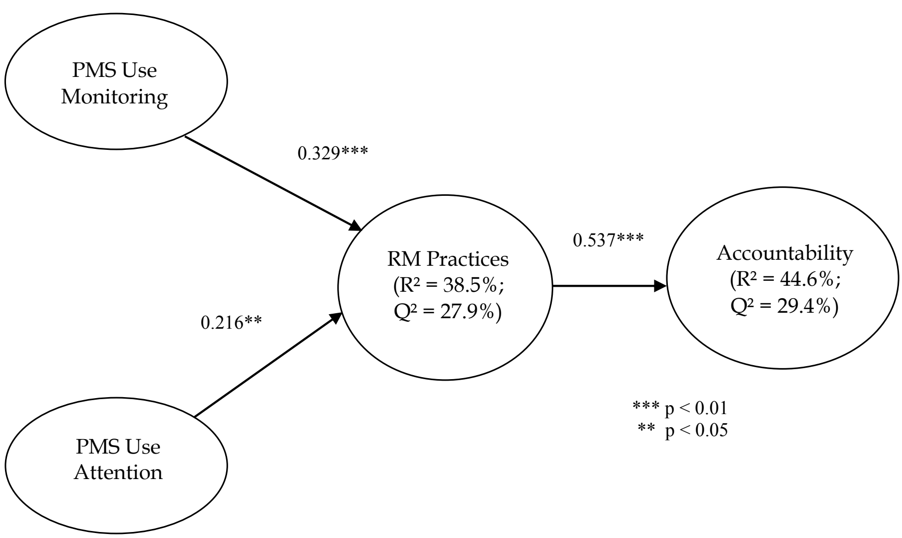

Figure 2: Structural Model

was explained by PMS use monitoring and PMS use attention. Based on Cohen (1988), the R^2 value for the endogenous latent variables above 0.26 is considered large. Conversely, the use of R^2 value for understanding the model's predictive accuracy will result in an inherent bias. This is due to the fact that even a non-significant exogenous construct will increase the R^2 value. Therefore, the R^2 adjusted value needs to be considered when comparing models (Hair et al., 2014). The R^2 adjusted value recorded for RM practices was 0.368 and for accountability, it was 0.430, both of which were still considered large (Cohen, 1988).

Further, in the exogenous constructs, RM practices have f^2 effect sizes of 0.132, for explaining accountability (Table 6). On the other hand, the exogenous constructs, PMS use monitoring and PMS use attention, have f^2 effect sizes of 0.087 and 0.037, respectively. This signifies that PMS use monitoring is more important than PMS use attention for explaining the variance in RM practices. Overall, the exogenous constructs have small effect sizes in explaining the endogenous variables (Cohen, 1988).

Third, the cross validated redundancy results as in Figure 2 indicates that the Q^2 value for both accountability (0.279) and RM practices (0.294) were more than zero. This indicates that the model has predictive relevance.

Fourth, after assessing the R^2 values and the Q^2 values, the path coefficient was evaluated to further validate the structural model and the proposed hypotheses. According to Hair, Ringle and Sarstedt (2011), the path coefficient value which gives impact to the structural model must be at least 0.1. Table 7 shows the results of the structural model estimation detailing the path coefficients, standard error and t-statistics, for all hypothesised paths. It is noted that path coefficient value (β) ranges from 0.216 to 0.537, with positive signs and are significant.

Table 6: Summary of Results

	Accountability		RM Practices	
	Path coefficient	f^2 effect size	Path coefficient	f^2 effect size
RM Practices	0.537	0.132	–	–
PMS Use Monitoring	–	–	0.329	0.087
PMS Use Attention	–	–	0.216	0.037

Table 7: Structural Estimates for Hypotheses Testing

Paths	Path Coefficient β	Standard Error	t-statistics
PMS Use Monitoring → RM Practices	0.329	0.103	3.194***
PMS Use Attention → RM Practices	0.216	0.099	2.172**
RM Practices → Accountability	0.537	0.142	3.787***

Note: Critical t-values: ***2.57 (probability <0.01); **1.96 (probability <0.05).

Based on the analysis, RM practices were affected directly by PMS use monitoring ($\beta = 0.329$, $t = 3.194$, $p < 0.01$). Thus, H_1 is supported. RM practices were also affected directly by PMS use attention ($\beta = 0.216$, $t = 2.172$, $p < 0.05$). Hence, H_2 is supported. On the other hand, accountability is affected directly by RM practices ($\beta = 0.537$, $t = 3.787$, $p < 0.01$). This suggests that RM practices were positively related to accountability and were statistically significant. As a result, H_3 is also supported.

Fifth, the structural model was examined for mediating effect. This study had proposed the mediating effect of RM practices on accountability through hypotheses H_4 and H_5. Since PMS use for monitoring and PMS use for attention-focusing were directly related to RM practices and at the same time, RM practices were directly related to accountability, the mediating effect of RM practices can be assessed (Preacher & Hayes 2008). Therefore, the bootstrapped for indirect effect was computed. This approach exhibited a higher level of statistical power when compared with the Sobel Test (Preacher & Hayes, 2008). The bootstrapping results, as shown in Table 8, revealed that there was a positive indirect effect of PMS use monitoring on accountability ($\beta = 0.177$, $t = 2.223$, $p < 0.05$). There was also a positive indirect effect of PMS

Table 8: Indirect Effect

Paths	Path Coefficient β	Confidence Interval Lower	Confidence Interval Upper
PMS Use Monitoring → Accountability	0.177	0.038	0.347
PMS Use Attention → Accountability	0.116	0.016	0.239

Note: RM as mediating variable.

use attention-focusing on accountability ($\beta = 0.116$, $t = 2.055$, $p < 0.05$). Therefore, hypotheses H_4 and H_5 are supported. Simultaneously, the 95 per cent bootstrapped confidence interval level for the indirect effect of PMS use monitoring and PMS use attention on accountability, did not straddle a zero between the upper and lower level limit. This confirms that RM practices mediate the relation between PMS use monitoring and accountability as well as between PMS use attention-focusing and accountability.

This study had attempted to investigate the predictive effects of the different dimensions of the performance measurement system (PMS) use and risk management (RM) practices on accountability through mediators. The results of the test signified a positive relationship between PMS use for monitoring and RM practices. This finding suggests that the use of PMS for monitoring at a greater extent in the FSBs would trigger more RM activities. PMS use for monitoring in the FSBs involves monitoring results, tracking progress toward goals, reviewing KPIs and comparing outcomes to expectations. Thus, the PMS provide accurate strategic information and key result areas which need to be focused in achieving organisational objectives. However, potential risk and uncertainties in the environment could hinder the achievement of such objectives. Therefore, the use of PMS for monitoring the achievement of organisational strategic objectives could trigger risk identification for determing risks and their causes (COSO, 2004). This could hinder the achievement of goals.

The findings of this study are consistent with the outcome of Henri (2006b) who argued that monitoring use of PMS is a conventional type of control system which represents the basic management activities performed in an organisation. The finding of this study also supports RBV, which considers the PMS information as a resource (Hooley, Broderick, & Moller, 1998) which can be used to monitor the achievement of organisational objectives and for sending signals of key success factors across the organisation. This key resource to superior performance could lead to better accountability of the public sector because disclosing performance information including the organisation's efficiency, effectiveness and other non-financial information to the stakeholders would enhance public trust and organisational reputation (resource). Subsequently, this attracts future investments. Therefore, information produced from the PMS are key resources for superior performance that needs to be sustained in order to gain a competitive advantage (Barney, 1991).

Another remarkable finding of this study suggests that the use of the PMS for attention-focusing in the FSBs influences systematic risk identification. PMS use for attention-focusing in the FSBs involved focusing on critical success factors and sending signals on critical success factors and goal targets across the same organisation. However, the critical success factors may fail due to unrecognised potential risks and uncertainty. Eventually, the source of identified risks need to be assessed so as to decide on the risks treatment plan. Furthermore, organisations' objectives are measured by defining KPIs or performance measures associated with each objective. KPIs allow managers to identify risks and opportunities associated with a decision (Loosemore et al., 2006). In addition, PMS use for attention-focusing points out the nature of the RM programmes, the areas to identify sources of risk and to provide accurate information to be communicated across the organisation. Therefore, it can be concluded that Malaysian FSBs that use PMS for attention-focusing, were more likely to identify risks associated with its critical success factors and goals. It is also suggested that the FSBs continue to improve their communication networks so as to foster the PMS information flow and to ensure that information is being transmitted across organisations as a means of ensuring a common focus on objectives and benefits are identified from the risk identification phase.

The significant results of this study emphasises the positive relationship between RM practices and accountability. This finding suggests that systematic risk identification is important for promoting accountability among FSBs in Malaysia. Although not all FSBs have developed the necessary procedure for risk identification, they have all been systematically identifying risks. A comprehensive list of risks derived by managers from different departments have provided the risk information for stakeholders to make better decision making. Unlike traditional accountability which has focused primarily on financial data and on the legitimacy of spending (Schillemans, Van Twist, & Vanhommerig, 2013), the FSBs transformation drive the demand for a risk management system to improve its decision-making and accountability. Therefore, it can be concluded that risk identification leads to better accountability of the Malaysian FSBs.

The finding of this study is consistent with Hayne and Free (2014) who posited that RM reduces uncertainty, insecurity, ambiguity and imperfection, thereby enhancing the image of innovation (reputation) in organisations. These outcomes of RM practices promote better accountability. The current finding also supports Halachmi's (2003) recommendation to connect accountability and risk management in the risk management system so that public sector governance can be fortified (Greiling & Halachmi, 2013). An effectively implemented RM can improve organisational performance (Beasley et al., 2006). Specifically, it develops more interactive techniques of event identification that lead to better organisational performance (Mikes & Kaplan, 2014).

Drawing from the perspective of the RBV, it can be deduced that RM capability is a key resource that could improve the performance, decision-making and control of the public sector towards enhancing its accountability. Besides RM practices, the spillover effect of reputation emerging from effective RM practices is also considered a RBV resource (Hooley et al., 1998) that could lead to a competitive advantage for the FSBs, in terms of firm-specific investments (Wang et al., 2003). Therefore, these resources need to be sustained. The current study supports the RBV which posits that through investment in resources such as the RM system which is organised to align with the achievement of organisational objectives, superior performance in terms of accountability can be achieved. Systematic risk identification enhances the reputation of the public sector among stakeholders (Andersen, 2008). This, in turn, produces a competitive advantage for the public sector through future fundings, deposits, investments and contracts.

This study found that Malaysian FSBs which use PMS information for various purposes place a greater emphasis on RM practices to enhance accountability. The results generated were consistent with the resource-based view which posits the need to sustain valuable resources (PMS information, RM system and reputation) for a competitive advantage. In Malaysian FSBs, the greater use of PMS for monitoring and attention-focusing could improve accountability by implementing RM. The result of this study contributes to the existing theory by emphasising on the effects of RM practices on accountability. This can be accomplished with the influence of the right drivers.

The empirical result also supports the significant role of RM practices as a mediator in the relationship between PMS use for monitoring, PMS use for attention-focusing and accountability. Both PMS use (monitoring and attention-focusing) predict accountability directly and indirectly through RM practices but the PMS use for monitoring has a stronger effect on accountability. This result, therefore implies that the role of RM practices in promoting accountability in FSBs is crucial. FSBs with increased use of PMS for monitoring would demand more RM practices so as to have a complete picture of the organisation's risk profile as a means of achieving its targeted goals. Therefore, RM practices with high levels of PMS use for monitoring could help FSBs to enhance accountability. This finding is consistent with previous studies which also found the mediating effect of RM on organisational performance (Roslan & Dahan, 2013a; 2013b) in Malaysian companies.

6. Conclusion

This study suggests that organisational accountability can be improved by practising RM which is driven by PMS uses, as an ultimate aim to achieve organisational objectives. There are several contributions derived from this study. First, this study suggests that RM practices can contribute in improving public sector accountability (new consequence) by investigating the relationship between RM practices and accountability. Second, this study contributes to the body of knowledge by suggesting that among the new drivers that affect the different processes of RM, the construct of PMS use for monitoring and PMS use for attention-focusing should be included. Third, this study focusses on the indirect effect of the RM practices on accountability. The findings of this study suggest that with the appropriate use of the PMS, the practices of RM can contribute to better public sector accountability. This study incorporates variables taken from previous studies such as management control system (i.e. PMS), accountability and risk management. Although there are numerous contingencies or other theoretical framework of RM, to date, there has been no framework for studying the mediating effect of RM practices using RBV with different drivers of RM practices and accountability as the consequence. Therefore, this study contributes significantly to the literature on the mediating role of RM practices.

Despite the useful insights gained in the relationship between PMS use, RM practices and accountability, there are also some limitations that should be considered. First, the quantitative research limits the research inquiry process due to some degree of its inadequacy to gain an understanding of the respondents' feelings, impressions and viewpoints. Therefore, critical realism should be the focus of attention in future RM research. Future research should take the viewpoint that risk management is complex and may require multiple investigations in understanding its realities. Second, this study used a cross-sectional design where data were collected from the FSBs and their branch offices, at a single point in time. A key weakness of cross-sectional studies is that it does not allow one to draw firm conclusions regarding the causal direction of the relationships between the exogenous and endogenous variables. Given the limitation of the data for causality testing, future research should examine the causal processes underlying the relationship between PMS use, RM practices and accountability. Future research should also consider a longitudinal research design to examine the continuity of the responses and to track changes over time. This study can be extended by examining other moderators such as organisational culture and performance measure properties within the same relationship. A field based study on this topic would also provide an in-depth perspective into the variations in RM practices for organisations and the impact of RM practices on accountability.

This study provides employers of the public sector with new ways to improve accountability in their organisation. In particular, this study offers some practical implications to the literature by providing guidance for professionals, decision makers, managers, CROs and auditors on the appropriate RM processes for different uses of the PMS. The findings revealed that PMS use for monitoring and attention-focusing was more related to risk identification. This study further suggests that more sophisticated risk assessment method is demanded in the public sector to cater to strategic decision making based on pre-set performance measures or KPIs. FSBs should invest more on risk identification activities to identify all their potential risks and opportunities that are related to the FSBs' objectives since this process can promote accountability. As a matter of act, the findings of this study could provide guidance to the Auditor General of Malaysia to improve the existing indicators of the Financial Management Accountability Index which are used for ranking FSBs in terms of their financial management and control.

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Organisational Culture in Public Universities: Empirical Evidence

Hussein-Elhakim Al Issa

ABSTRACT

Manuscript type: Research paper
Research aims: This study aims to investigate organisational culture (OC) of public universities from the perspective of academic leadership. It examines the impact of organisational culture on transformational leadership.
Design/Methodology/Approach: The Organisational Culture Assessment Instrument (OCAI) and The Multifactor Leadership Questionnaire (MLQ5x) are used as proxies for the variables tested. Data are collected from academic leaders attached to 18 public universities in Malaysia. Analysis is done using structural equation modelling (SEM).
Research findings: The results suggest that academic leaders view the clan culture as the dominant workplace culture type. The clan culture is also the most prominent across the OC dimensions except for the dominant characteristics dimension, where the market culture is more distinct. The results also reveal that the effect of organisational culture on transformational leadership is significant.
Theoretical contributions: This study fills the void in literature by showing how organisational culture is impacting transformational leadership within the education setting of developing countries. Since it is likely that different kinds of leadership behaviours are associated with different organisational cultures, it is also likely that the same may affect the Malaysian educational setting.
Practitioner/Policy implications: The findings of this study are expected to facilitate the educational administrators in fine-tuning leadership behaviours through organisational culture. A match between

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these two dimensions should make the organisations more effective, thereby enabling administrators to improve the selection process of leaders and their future developments.

Keywords: Organisational Culture, Malaysia, Leadership, Public Universities
JEL Classification: M14

1. Introduction

Malaysia's aspiration to become a highly-developed nation, and in particular, as the education hub for international education, has led to the growing interest of research examining leadership roles within the Malaysian Higher Education (MHE) institutions. Unlike previously, universities today are expected to produce highly skilled graduates and high quality research, in their effort to address the demands of the 'knowledge economy', created by the recent and rapid technological advances (Deem, Hillyard, & Reed, 2007; Thorp & Goldstein, 2013). With the increase in student enrolment, marketisation, internalisation, higher tuition fees and of late, limited research funding, leadership development within universities has been under a lot of scrutiny. In this climate of change, the MHE institutions have had to consider ways to develop their leaders, and also the appropriate measures to apply in order to adopt the most suitable leadership behaviour for the respective institutions. Under the 2015-2025 Educational Plan, leadership development has been emphasised as a career pathway for academics; it is seen as a strategy to develop the country's academic leadership talents (Ministry of Higher Education, 2015). This situation has encouraged the leaders in MHE institutions to examine how they can lead their organisations better, and to find the best approaches which fit into the context of their organisations. The success seen in today's business environment could not have been achieved without the roles played by effective leadership for without great leaders, organisations would not have been able to accomplish their organisational goals. Despite this being so, scholars in the field of leadership management have noted that this process is not straightforward because there is no clear consensus on what great leadership practices involve (Northouse, 2012).

Within the literature of leadership management, the concept of transformational leadership (TL) in higher education, has received much attention (Cameron & Ulrich, 1986; Black, 2015; Eckel & Kezar, 2003; Hattie, 2015). Various studies (e.g., Ghasabeh, Soosay, & Reaiche, 2015) have highlighted that transformational leadership can enhance organisation performance since it facilitates in empowering human resources and in enabling change. Transformational leadership is a type of leadership which instils major changes at the organisational level; it facilitates organisational innovation and learning (MacKenzie, Podsakoff, & Rich 2001; Rowold & Rohmann, 2009; Hartnell, Kinicki, Lambert, Fugate, & Doyle Corner, 2016). While there are some cumulative evidence relating transformational leadership with individual and organisational performance, research on this area has not been fully exploited. Some scholars (Berglund, 2014; Gharibvand, 2012) argued that the dynamics of leadership, as an important source of insight to understand organisational culture, has not been explored. It was asserted that organisational culture includes the values and the assumptions of the members on what is right, good and important; it was also emphasised that all of these have a powerful effect on the leadership style. The importance of organisational culture for leaders had been highlighted by Foster (2000), who explored servant leadership. It was found that effective servant leaders need to be supported by an organisational culture. Other studies (Kennedy & Mansor, 2000; Zagorsek, Jaklic, & Stough 2004) have uncovered the positive relationship between cross-culture and leadership. In a much earlier study, Schein (1993) highlighted that leaders were unable to function effectively because of their inability to analyse and evaluate the organisation culture appropriately. On a broader level, scholars such as Hofstede (1980) reported that there were marked differences in organisational culture between countries and continents. Given these arguments, it is therefore imperative to investigate the impact of organisational culture on transformational leadership, particularly among the higher educational institutions in Malaysia. Moreover, the evolution of transformational leadership as a means to drive the performance of organisations has also sparked interests within the Ministry of Higher Education, Malaysia. This is not surprising, as there is an immense acknowledgement of transformational leadership as the means for inspiring followers to transcend beyond self-interest, thereby converting them into leaders (Northouse, 2012). Based on this, it would seem that if academic leadership and its cultural context are not attended to adequately, the university's role to serve the society, community and industry would be very much questioned. In line with this, the current study aims to explore how organisational culture (OC) in public universities affect transformational academic leadership. For this purpose, the framework of Cameron and Quinn (1999) is applied.

This paper comprises six sections. Section 2 highlights the literature reviewed and discusses the hypotheses development. Section 3 explains the methodologies employed. Section 4 presents and discusses the research findings and Section 5 concludes the study by discussing the implications and limitations of this study.

2. Literature Review and Hypotheses Development

2.1 Transformational Leadership

Transformational leadership is described as a type of leadership style that widens and enhances employees' goals, helping them to gain confidence and to function beyond their expectations (Dvir, Eden, Avolio, & Shamir, 2002). As illustrated by Bass (1985), transformational leaders hold good visions, good rhetorical skills and impressive management skills, all of which can be used to develop strong bonds with subordinates. Considering that subordinates' activities are influenced by their leaders who direct, evaluate and provide the resources, it is important for leaders to exert this type of leadership as a channel to meet organisational goals and strategies (Gupta & Singh, 2014). Since transformational leaders are viewed as people who intend to develop their employees' full potential and to provide them with the motivation and needs, it can be deduced that transformational leaders also influence the employees' trust and satisfaction. Therefore, employees who worked under transformational leaders may be motivated to work harder, looking beyond their self-interests to achieve organisational goals.

In the literature, transformational leadership has been observed to be potentially effective across a variety of organisations and contextual settings (Ahmad, Abbas, Latif, & Rasheed, 2014; Eisenbeiss, van Knippenberg, & Boerner, 2008; Gong, Huang, & Farh, 2009; Nemanich & Keller, 2007; Wang & Howell, 2010). For example, Alén, Banerjee and Gupta (2017) found that in India, salespersons' creative performance and intrinsic motivation were influenced by transformational leadership. It was noted that a trustworthy relationship that is built through having a supportive manager is necessary in order to encourage the flow of championing old ideas and innovating new ideas, within an organisation. In another study, Engelen, Gupta, Strenger and Brettel (2015) found that regardless of the national settings, transformational behaviours were displayed through four characters, namely: articulating a vision, providing an appropriate model, having high performance expectations, and showing supportive leader behaviour. These four characters have a moderating role between the entrepreneurial orientation and firm performance, thereby strengthening relationships. This was endorsed by Ghasabeh et al. (2015) who noted that transformational leadership has emerged as an effective form of leadership which is capable of implementing changes at the organisational level. It was deduced that in the era of the globalised market, such type of leadership is indeed needed to motivate employees into stimulating new knowledge and ideas, which are then transformed into a novel approach.

While there are various literatures discussing leadership issues, it appears that the interest on transformational leadership is growing more rapidly due to its potential and its applicability in various contextual settings (Goleman, Boyatzis, & McKee, 2013; Schein, 2004; Valentine & Prater, 2011). Nonetheless, despite many empirical evidences demonstrating the impact of transformational leadership on individual growth and organisational performance, little has been done to examine the underlying factors that provoked transformational leadership (MacKenzie et al. 2001; McColl-Kennedy & Anderson, 2002; Rowold & Rohmann, 2009; Wang, Law, Hackett, Wang, & Chen, 2005). This study aims to examine how organisational culture can be the driving impetus for transformational leadership.

2.2 *Organisational Culture (OC)*

Literature has emphasised that one important source of insight that can depict the dynamics of any type of leadership is organisational culture (OC) (Berglund, 2014; Goleman et al., 2013; Dorfman & House, 2004; Schein, 2004). The term, organisational culture, has been considered as the 'glue' that holds the organisation together; it is also the source of an organisation's identity and distinctive competence (Masood, Dani, Burns, & Backhouse, 2006). Organisational culture is described as a learned pattern of behaviour which is shared from one generation to the next generation, such that values and assumptions are shared among the members within an organisation. An early well-known definition of organisational culture was provided by Pettigrew (1979, p. 576) who defined it as "the system of publicly and collectively accepted meanings, operating for a given group, at a given time. This system of terms, forms, categories and images interpret a peoples' own situation to themselves". Some researchers (Schein, 2004; Sergiovanni, 1986) have also maintained that leadership and organisational culture are integral concepts; studying one without studying the other cannot be done but the main definition of organisational culture was given by Cameron and Quinn (2011). They defined organisational culture as the values, dominant leadership styles, language and symbols, procedures and routines, and definitions of success that make an organisation unique.

Leadership and organisational culture (OC) have been studied within organisations. Tierney (2008), for instance, analysed culture within and outside the organisation, by looking at beliefs, norms, rules and understanding. According to Tierney (2008), culture determines how new employees find their roles in the organisation and what they must accomplish in order to succeed, socialise and survive within the organisation. Other essentials to examine within the organisational culture are the expectations of formal and informal leaders and the understanding of who makes decisions, such as who distributes the rewards and sanctions involved in making those decisions. Tierney (2008) stressed that the elements of OC occur differently in different settings. However, how they occur, the shape they take and their importance differ among organisations. Similarly, Chhokar, Brodbeck and House (2013) stressed that different continents may have different OC. In their study, it was observed that the Southern Asia Group had scored higher on 'being humane' and 'being collectivist' as their leadership style whereas other groups scored higher on 'charismatic' and 'team-oriented' leadership style. One of the apparent characteristics of the Southern Asia Group was the integration of other cultures happening within the organisation. It was, thus deduced that the result of this integration of cultures caused people to have different beliefs. In other words, the understanding of regional culture can help in the appreciation of relationships, thereby developing cultural strength for the organisation's leadership.

Taking the concept of culture in mind, this study thus applied the competing values framework (CVF) proposed by Cameron and Quinn (1999) to identify the characteristics of organisational culture. This model is one of the most influential and most extensively used model in the research on organisational culture (Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016). In this framework, Cameron and Quinn (2011) had categorised organisational culture into four types: adhocracy, clan, market and hierarchy. These four types of organisational cultures were derived from two different dimensions – flexibility and discretion versus stability and control, and external focus versus internal focus and integration. Figure 1 illustrates.

According to the framework, an organisation that is dominated by the hierarchy culture will demonstrate a controlling leadership style. Here, the leader acts as a coordinator who monitors and organises the tasks. This type of culture is represented by a clear organisational structure, standardised rules and procedures, strict control and well-defined responsibilities. The hierarchy culture offers stability, which is maintained through a fixed and tight rule. The criteria of success for the hierarchy culture are based on how far the employees can perform, depending on the procedure provided. Under the hierarchy culture,

Flexibility and Discretion

Internal Focus and Integration ← → **External Focus and Differentiation**

Culture Type: **CLAN** **Orientation**: COLLABORATIVE **Leader Type**: Facilitator, Mentor, Team builder **Value Drivers**: Commitment, Communication, Development **Theory of Effectiveness**: Human development and participation produce effectiveness.	**Culture Type**: **ADHOCRACY** **Orientation**: CREATIVE **Leader Type**: Innovator, Entrepreneur, Visionary **Value Drivers**: Innovative outputs, Transformation, Agility **Theory of Effectiveness**: Innovativeness, vision, and new resources produce effectiveness.
Culture Type: **HIERARCHY** **Orientation**: CONTROLLING **Leader Type**: Coordinator, Monitor, Organiser **Value Drivers**: Efficiency, Timeliness, Consistency and uniformity **Theory of Effectiveness**: Control and efficiency with capable processes produce effectiveness.	**Culture Type**: **MARKET** **Orientation**: COMPETING **Leader Type**: Hard driver, Competitor, Producer **Value Drivers**: Market share, Goal achievement, Profitability **Theory of Effectiveness**: Aggresively competing and customer focus produce effectiveness.

Stability and Control

Figure 1: Competing Values and Organisational Theory (OCAI/CVF)
Source: Cameron & Quinn, 2011.

transformational leaders may influence employees' creativity and innovation by defining and shaping the work contexts, within which employees interact to define goals, problems and solutions (Jung, Chow, & Wu, 2003). By articulating a vision that is based on the hierarchy culture, transformational leaders can direct employees' individual and joint efforts towards innovative work processes and outcomes that are more stable, predictable and efficient. This will help to hold the organisation together. Based on these arguments, the hypothesis is formulated as:

H_1: The hierarchy culture is positively related to transformational leadership.

The second type is the market culture, which refers to a result-oriented organisation that is more concerned about getting the job done. An organisation that practices the market culture values profitability, strength in market niches, competitiveness and productivity (Hartnell, Ou, & Kinicki, 2011). Under the market culture, the leaders are hard-driven and they have high-performance expectations. Leaders who work under this culture emphasises on winning, and the achievement of measurable goals and targets (Tuan, 2010). This is also the characteristic displayed by the transformational leaders. Based on these arguments, the hypothesis is formulated as:

H_2: The market culture is positively related to transformational leadership.

The clan culture is one that resembles the family-type organisation, where companies are like extended families rather than economic entities. Different from the market culture that emphasises on profits, and the hierarchy culture that values rules and procedures, the clan-type organisation typically stresses on teamwork, employee involvement programmes and corporate commitment (Kim, 2014). Under the clan culture, employees are encouraged to voice their recommendations or suggestions as well as to participate in major tasks. The clan-type organisation culture requires leaders to act as mentors who motivate the employees into stimulating new knowledge and ideas (Hartnell et al., 2011). These are then transformed into the organisation's novelty. Based on these arguments, the hypothesis is formulated as:

H_3: The clan culture is positively related to transformational leadership.

The fourth type of organisation culture is the adhocracy culture. It is characterised by a dynamic, entrepreneurial and creative workplace. Organisations that practice the adhocracy culture emphasise on the need to be at the leading edge of new knowledge, products and/ or services (Masood et al., 2006). This type of organisational culture expects the employees to be ready for change. They also need to be open for experimentation and innovation. While the clan culture uses collaboration, the adhocracy culture adopts individual creativity. In order to succeed, leaders in the adhocracy-type organisational culture is expected to be visionary, innovative and risk oriented, where success means producing unique and authentic products and services. Based on these arguments, the hypothesis is formulated as:

H_4: The adhocracy culture is positively related to transformational leadership.

Cameron and Quinn (2011) stated that leaders tend to be more successful when their strengths are congruent with the culture of the organisations they lead. This is evidenced in a study of the Malaysian higher education institutions (Maheran, Isa, Norezam, & Abdul, 2009) which confirmed the link between OC and leadership style and decision-making quality. It was found that the hierarchy culture favoured transactional leaders who, in turn, opted for hierarchical decision-making styles. This insight, henceforth emphasises on the importance of matching leadership with culture. Another study (Ramachandran, Chong, & Ismail, 2011) found that public higher education institutions (HEIs) in Malaysia had the highest mean in the clan culture, followed by the hierarchy culture. It was revealed that the HEIs in Malaysia have moderate organisational culture and this finding was also consistent with Cameron's (1986) optimum culture for successful institutions. In the current study, the term organisational culture (OC) is used as a reference to mean the culture which reflects an enduring and an implicit set of values, beliefs and assumptions that characterise the organisation and its members.

3. Methodology

The current study is focussed on positivism, a paradigm practised in social sciences (Neuman, 2011). Positivism supports value-free science, seeks precise quantitative measures, tests causal theories with statistics, and believes in the importance of replicating studies. Positivism employs the deductive inquiry approach (Tashakkori & Teddlie, 1998) to draw generalisable conclusions which are based on empirical evidence and theories that can be revised (Bryman & Bell, 2007; Deshpande, 1983).

The target population for this study is academic leaders in the Malaysian public universities. This study utilises proportionate stratified random sampling. This approach was used as an attempt to avoid cases where members of the population are significantly under or over represented. Once the population has been stratified into university groups, a sample of the members from each stratum/university was drawn, using simple random sampling. A sampling list was then used to obtain staff profiles which were available on the universities' websites. The estimated population in September 2015 at the time of this study, was 2,076 academic leaders who were represented by Deans, Deputy Deans, department heads, managers and directors. This study employs Krejcie and Morgan (1970) sampling formula to determine the sample size. Yet, to lessen the sampling error and to take care of any chances of potential low response rates the sample was doubled to 650, as recommended by Hair, Money, Samouel and Page (2007). To calculate the sample size from each stratum, the proportionate number was calculated by dividing the total sample size required (325) with the population size (2,076) and then multiplying that number by the population of the academic leaders in each university, so as to arrive at the sample size for each university. Following this, the sample was then randomly chosen from each university's respective proportionate sample count that was identified earlier. Prior to data collection, permission to conduct the study was requested from the management of all universities. The self-administered questionnaires were then distributed to the respondents who were given a reasonable time (one week) to complete the questionnaires before a follow up was made (Sekaran & Bougie, 2016). Following the circulation of the questionnaires, and in about one week a follow-up via telephone call was made to schedule visits with the academic leaders to obtain the completed questionnaire. Of the 650 questionnaires distributed, only a total of 333 usable questionnaires were retrieved, indicating a response rate of 51.2 per cent (Table 1).

The instrument used for the survey was adopted from the Multifactor Leadership Questionnaire (MLQ-5X Short) (Avolio, Bass, & Jung, 1999) which measured transformational leadership, and the Organisational Culture Assessment Instrument (OCAI) by Cameron and Quinn (2011), which measured organisational culture. These measures

Table 1: Demographic Profile

Demographic Variable	Frequency	Percent
Education		
Doctorate	282	84.7
Masters and others	51	15.3
Gender		
Female	126	37.8
Male	207	62.2
Age Group		
Under 40	104	31.2
Over 40	229	68.8
Ethnicity		
Malay	304	91.3
Chinese	11	3.3
Indian	13	3.9
Other	5	1.5
Position		
Dean	30	9.0
Deputy Dean	46	13.8
Head of Department	241	72.4
Director	10	3.0
Assistant Director	6	1.8

have been widely recommended by many theorists (Cameron & Quinn, 2011; Fralinger & Olson, 2007; Hair et al., 2007; Hartnell et al., 2011; Kalliath, Bluedorn, & Gillespie, 1999; Obenchain, Johnson, & Dion, 2004; Schein, 2004; Quinn & Spreitzer, 1991) due to their flexibility, practicality with large samples and good reliability. The instrument used for this study utilised a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The number of points awarded to a specific culture type would indicate the strength where a higher score would indicate a stronger culture type. This is ultimately taken to determine the strength of the organisational culture (Cameron & Quinn, 2011). Within each organisational culture (OC) type, there are six content dimensions that would reflect the cultural values and assumptions about the way an organisation functions:

1. The dominant characteristics of what the overall organisation is like,

2. The leadership style and approach that pervades the organisation,
3. The management of employees or how they are treated and the conditions of the work environment,
4. The organisational glue that binds the organisation together,
5. The strategic emphases that define areas of importance to drive strategy,
6. The criteria of success to decide on victory and what deserves celebration and reward.

The Organisational Culture Assessment Instrument (OCAI) is a validated and extensively used measure for organisational culture (Cameron & Quinn, 2011; Fralinger & Olson, 2007; Hartnell et al., 2011; Kalliath et al., 1999; Obenchain et al., 2004; Schein, 2004). Surveying 334 HEIs so as to identify their decision-making culture and their structure and strategy for decision making, Cameron, Freeman and Mishra (1991) asserted that the instrument was valid and the findings were consistent with the values and attributes that were distinctive of each culture type noted in the OCAI (Cameron & Quinn, 2011). In another study, Quinn and Spreitzer (1991) surveyed 796 executives by using the OCAI. Their results also showed that the Cronbach alpha outcomes were above 0.70 for all four culture types. The OCAI instrument had been cited for its reliability based on the consistent patterns it produced. Studies such as those by Muenjohn and Armstrong (2008) produced a Cronbach's alpha of 0.86. In another study, Abbott and Bordens (2011) utilised the MLQ measures and found that all the items were reliable and valid.

In this study, transformational leadership (TL) focusses on intrinsic motivation and follower development. It involves an exceptional form of influence that moves followers to accomplish more than what is usually expected of them (Bass & Riggio, 2006). The instrument used in the current study to measure leadership is the MLQ5x which was developed by Bass and Avolio (2000) and the questionnaire which consists of 45 questions is anticipated to take about 15 minutes to complete. Only 20 transformational leadership items were adopted for the present study to explore beliefs and perceptions about transformational leadership. The other 25 items pertaining to transactional and non-transactional leadership qualities were excluded. All the 20 items used were scored using a 5-point Likert scale that ranged from 1 (not at all) to 5 (frequently, if not always). This measure is made up of 4 dimensions: i) idealised influence (a. behavioral and b. attributed), ii) inspirational motivation, iii) intellectual stimulation, and iv) individualised consideration.

4. Results

4.1 Descriptive Analysis

This study performs a descriptive analysis to analyse the mean and standard deviation of the constructs used. As indicated in Table 2, the clan culture appears to be the most common organisational culture portrayed in the Malaysian higher education institutions whilst the adhocracy culture seemed to be the least practised.

Table 2: Descriptive Analysis

OC type	Mean	SD
Clan culture	3.78	1.06
Adhocracy culture	3.48	0.99
Market culture	3.55	1.03
Hierarchy culture	3.65	1.00
Transformational leadership	4.06	0.45

The phenomenon highlighting the clan culture can be inferred as one where academic leaders in Malaysian HEIs worked cooperatively; they collaborate with each other to complete their administration, consultation and research tasks. This situation is expected, given that the ministry has emphasised on collaboration practices for performing scholarly activities. In the Ministry's website, for example, the expertise of all the professors and academic staff were displayed as a means of encouraging researchers in the same field to cooperatively work with each other on projects funded by either the government agencies or external parties. This result is inline with the findings of previous empirical works (Ramachandran et al., 2011).

Although the current study has found that the market and adhocracy culture are least practised, there is evidence to show that they are quite commonly noted in private university setting (Ramachandran et al., 2011). Yet, of late, public HEIs in Malaysia are in competition with each other to attract the best students to their institutions. Many of these public HEIs are aggressively participating in education fairs and advertising programmes in the media. This situation could have been triggered by the need to raise their respective incomes since the funding allocated by the government has been slashed in recent years. In observing the adhocracy culture, the findings of this study seemed justified. The ministry is increasing the initiative to develop students and academics to become entrepreneurs where inventions are encouraged for commercialisation. In observing the clan culture as the most dominant culture, the findings of this study seemed justified. On the one hand, the ministry is increasing the initiative to develop students and academics to become entrepreneurs, where inventions are encouraged for commercialisation. In the same way, public HEIs as a clan culture are flexible and discrete to draw on their internal strength and integrate their resources to develop their students and have them participate in entrepreneurial activities to produce effectiveness.

4.2 Measurement Model and Structural Model Analyses

This study employs structural equation modelling to evaluate the measurement model and the structural model. In line with Anderson and Gerbing (1988), this study performs a confirmatory factor analysis (CFA) first to assess the measurement model through examining the convergent validity and discriminant validity. The purpose is to validate the psychometric properties of the measurements. Since the constructs for transformational leadership consists of reflective measurements, we first evaluate the idealised influence (attribute), idealised influence (behaviour), inspirational motivation, intellectual simulation and individualised consideration as the first order construct for transformational leadership before assessing it as the second order construct (Hulland, 1999; Hair, Hult, Ringle, & Sarstedt, 2016). As indicated in Table 3, except for IIA1, IS1 and IC2, all the items tested have loaded significantly in the range of 0.52 to 0.87. The three items (IIA1, IS1 and IC2) are then dropped from further analysis since their factor loadings are below 0.4 (Hair et al., 2016). This process resulted in 17 transformational leadership items being available for further analysis. The results also show that the composite reliability and average variance extracted (AVE) for all the first order constructs, are above 0.7 and 0.5, respectively. This indicates that they are valid and reliable. These items are then tested for the second order construct, and all are found to meet the threshold values (factor loadings >0.4; AVE >0.5; composite reliability >0.5). These results also indicate that all the measures used for transformational leadership have satisfied the convergent validity.

Further to this, another round of confirmatory factor analysis is run for organisational culture (Table 4). The results indicate that all the items have loaded significantly, with a value of above 0.4 and all carried

Table 3: Measurement Model Results of Transformational Leadership

Constructs	Items	Standardised Loadings	AVE	Composite Reliability	Cronbach's Alpha
First-order Construct					
Idealised Influence (attribute) (IIA)	IIA2	.72	.52	.76	.53
	IIA3	.72			
	IIA4	.72			
Idealised Influence (behaviour) (IIB)	IIB1	.56	.51	.81	.68
	IIB2	.81			
	IIB3	.70			
	IIB4	.76			
Inspirational Motivation (IM)	IM1	.66	.58	.85	.76
	IM2	.80			
	IM3	.80			
	IM4	.77			
Intellectual Stimulation (IS)	IS2	.67	.60	.81	.66
	IS3	.81			
	IS4	.83			
Individualised Consideration (IC)	IC1	.52	.52	.76	.52
	IC3	.72			
	IC4	.87			
Second-order Construct					
Transformational Leadership	IIA	.72	.65	.91	.89
	IIB	.85			
	IM	.89			
	IS	.81			
	IC	.79			

Note: IIA1, IS2 and IC2 factors' loadings which are not shown are below 0.4, and they are not included in further analysis.

the composite reliability values of 0.87 to 0.9 and the AVE values are above 0.53. These results also indicate that all the measures used for organisational culture satisfied the convergent validity. Apart from the convergent validity, these measures are also tested for discriminant validity, following the heterotrait-monotrait ratio (HTMT). As indicated in Table 5, the HTMT values for all the constructs appeared are below 0.9, indicating adequate discriminant validity (Henseler, Ringle, & Sarstedt, 2015).

Table 4: Measurement Model Results of Organizational Culture

Constructs	Items	Standardised Loadings	AVE	Composite Reliability	Cronbach's Alpha
Clan	DC1	.40	.61	.90	.86
	ME1	.86			
	OG1	.82			
	OL1	.81			
	SC1	.84			
	SE1	.86			
Adhocracy	DC2	.59	.56	.88	.84
	ME2	.69			
	OG2	.76			
	OL2	.80			
	SC2	.77			
	SE2	.81			
Market	DC3	.62	.53	.87	.82
	ME3	.82			
	OG3	.78			
	OL3	.58			
	SC3	.73			
	SE3	.82			
Hierarchy	DC4	.56	.57	.89	.84
	ME4	.77			
	OG4	.74			
	OL4	.78			
	SC4	.80			
	SE4	.84			

Table 5: HTMT OC Dimensions Results

	CLAN	ADHOC.	MKT.	HIERA.	TL
CLAN					
ADHOC.	0.73				
MKT.	0.86	0.74			
HIERA.	0.71	0.89	0.87		
TL	0.31	0.27	0.28	0.32	

Assuming that all the constructs used are valid and reliable, a structural model is then constructed to test the hypotheses. The structural model is evaluated by investigating the path coefficients (β) and coefficient of determination (r squared) and effect sizes f and Q squared. The hypotheses testing is then carried out using the bootstrapping technique to measure the t values and p values so as to examine the construct relationships.

The predictive relevance of a model is its ability to accurately predict the items' data of the dependent variables (Hair et al., 2016). In this study, the SmartPLS's blindfolding process is used to estimate the Q^2 effect size. With the current model, the Q^2 value is noted to be at 0.21. The positive Q^2 value shows that the model has predictive validity. A value of above 0.15 further indicates that the exogenous construct has a medium, predictive relevance for the endogenous construct (Hair et al., 2016). In the next step, we assess the path coefficients' significance through bootstrapping computations. The bootstrapping process is used to determine the significance of path coefficients by calculating the empirical t values, which, if larger than the critical value (t distribution values), then the coefficient is considered significant, with a certain probability of error. The most commonly employed critical values for single tailed tests are noted as 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%) (Hair et al., 2016). Table 6 further illustrates.

Table 6: Results of Hypothesis Testing

Hypotheses	Relationships	Path Coefficients(β)	t Values	Results
H_1	Clan culture → transformational leadership	.37	6.64***	Supported
H_2	Adhocracy culture → transformational leadership	.35	5.90***	Supported
H_3	Market culture → transformational leadership	.32	6.32***	Supported
H_4	Hierarchy culture → transformational leadership	.69	21.35***	Supported

Note: ***Significant at 0.01 (1-tailed), **significant at 0.05 (1-tailed), *significant at 0.10 (1-tailed).

The R^2 of this model is 0.39, indicating that the variables contributed about 39 per cent of the variance in transformational leadership. As indicated in Table 6, clan culture (β = 0.37, t = 6.64, $p<0.01$), adhocracy culture (β = 0.35, t = 5.90, $p<0.01$), market culture (β = 0.32, t = 6.32, $p<0.01$), and hierarchy culture (β = 0.69, t = 21.35, $p<0.01$), are all significantly related to transformational leadership. Hence, H_1, H_2, H_3, and H_4 are supported.

5. Discussion

This study contributes to existing literature by demonstrating the type of organisational culture that is prevalent in the context of Malaysian HEIs. This shows how the different organisational culture can impact on transformational leadership behaviours. The findings of this study also support the findings of previous empirical works such as those conducted by Ramachandran et al. (2011) where it was noted that the clan culture served as the dominant organisational culture type. As a developing country, Malaysia is also characterised by the collectivistic norm of behaviour, where people do not want to be isolated from the societal group, with many preferring to follow the opinion of others. As a result of this culture, it was thus not surprising that the clan culture predominated as the organisational culture type in public Malaysian HEIs. This finding thus indicates that employees in public Malaysian HEIs viewed the universities as a friendly working place, like an extended family working together towards achieving organisational goals. There is a high possibility that the same individuals would not perform a particular action if others do not agree with it. In this regard, it is also important to note that the clan culture also promotes a higher level of loyalty, morale, commitment, tradition, collaboration, teamwork and participation. Consequently, the clan culture would also lead to long-term benefits for the development of human resource. The current findings are consistent with the study of Berrio (2003) and Ferreira and Hill (2008). Their studies had noted that two-thirds of the American colleges and universities also practised the clan culture. Herein, it is also important to mention that although the clan culture appeared to be the most dominant in Malaysian HEIs, other types of culture had also been detected within the university settings, but these were only moderately prevalent. Overall, it can be deduced that the Malaysian public universities are in a good position to face change in management initiatives, in response to the dynamic changes happening within the turbulent global environment. The practice of the moderate culture will help universities to maintain the creativity and innovativeness of their employees whilst also sustaining some form of structure (Cameron & Quinn, 2011). The practice of the moderate culture will also make employees more receptive to the different ideas generated and others' innovative ways of thinking. This study had also found that the adhocracy culture and the market culture were being gradually developed for the local university settings. Considering that all the universities are facing challenges in meeting the country's aspiration of being the educational hub for international education, the limited funding allocated by the government and the aspiration to be ranked well above other universities in the world, academic leaders throughout all the public universities are also trying to promote these two types of cultures. The reason is because implementing them into the university setting would help the universities concerned to attract more external funding and to find innovative ways of generating their own income so as to sustain their ranking and competitiveness.

In discussing the impact of these four types of organisational culture on transformational leadership, this study has also found that universities displaying the characteristics reminiscent of the four cultures proposed above, also seemed to have a positive relationship with transformational leadership. This result, therefore suggests that transformational leadership is equally affected by these four types of culture. Based on this, it can be inferred that transformational leaders prefer to create a working environment that are characterised by formal rules and procedures, long-term goals and targets, collaborations and also innovativeness. In comparing the impact of the four types of culture on transformational leadership, it seemed evident that even though the clan culture is most dominant in Malaysian HEIs, its impact on transformational leadership appeared to be lesser than the hierarchy culture (Table 7). This raises the question of why the hierarchy culture had the most impact on leadership. The answer is traced to the fact that the hierarchy culture carries more concerns for stability and control; the hierarchy culture leaders are rule reinforcers who like to control. In contrast, the clan culture is characterised by flexibility and discretion and the clan culture leaders are warm and supportive, hence they would emphasise on collaborations. This phenomenon possibly occurred because as educational institutions, the Malaysian HEIs are bounded by structures and procedures imposed by formal rules and policies. As a result, there is a need for the academic leaders to maintain a consistent

Table 7: Culture Impact and Dominance Comparison

OC Type	Dominant Culture Type	Impact on TL
Clan Culture	1	2
Adhocracy Culture	4	4
Market Culture	3	3
Hierarchy Culture	2	1

standard that is parallel to the requirement imposed by the Malaysian Qualifications Framework (MQF). In this regard, the MQF served as the basis for measuring the quality assurance of higher education. The MQF, thus acts as the document containing the criteria and standards that measure the national qualifications of the HEIs. These are then used to generate graduates of eminence. Thus, although transformational leaders acted as the inspirational figures who motivated their subordinates through idea-generating and idea-promoting behaviours, all these factors, need to be aligned with the standards and procedures of quality assurance in Malaysia. A comparison showing the similarities of the hierarchy culture and the clan cultures explains why the hierarchy culture has the most impact on leadership. Clan and hierarchy are internally focussed, that is, all the universities' main value orientations are intended towards the individuals who work within the limits of the organisation. The other two cultures (adhocracy and market), in contrast, are externally focussed. These two cultures value connections with external actors. With the transformational leadership's primary focus being the well-being of followers and their emotions, it is thus more perceivable why the hierarchy culture would have a larger impact on transformational leadership. There are scholars such as Masood et al. (2006) who suggested that transformational leaders are more willing to work in an adhocratic or clan type culture rather than the hierarchical or market type culture. Nonetheless, the situation in the Malaysian universities is different.

The implications of the current study are realised in its empirical contributions. The results of this study are anticipated to contribute to the body of knowledge by supplementing previous findings. The results demonstrate how the relationships between the variables might be different in the context of university settings in a developing country. The outcome generated by the present study challenges earlier conclusions which stated that government organisations under-emphasise market cultures (Ferreira & Hill, 2008; Parker & Bradley, 2000; Wilkinson & Yussof, 2005). The importance of the market culture, as demonstrated in this study, is not avoidable since all the public universities are aggressively competing with each other to attract the best resources, students and faculty. This occurrence has forced the university leadership to adopt a more active and entrepreneurial approach, focussing more on innovation and growth. The higher mean score for the clan culture as shown in this study, hereby also validated prior studies (Berrio, 2003; Smart & Hamm, 1993; Smart & St. John, 1996; Ramachandran et al., 2011) which had highlighted the role of collaboration occurring between academics in research and other scholarly activities. Despite the belief that transformational leaders are more willing to work in an adhocracy culture or the clan culture, as compared to the hierarchy culture or market culture, this study indicates quite clearly that it is not applicable to all industries.

The outcome generated by this study carries implications for universities that are in the process of developing transformational leadership. Here, the empirical results indicate that organisational culture can affect transformational leaders but in order to create more transformational leaders, universities should be aware of the impact of the different types of organisational culture on leadership. In this regard, more efforts should be invested in promoting and transforming the desired organisational culture which is geared for transformational leadership. Since transformational leaders are viewed as people who can develop the employees' full potentials while also motivating them towards greater positive changes that would benefit the organisation, it cannot be denied that transformational leaders are important.

6. Conclusions, Implications and Suggestions for Future Research

The current study explains some important elements of organisational culture which are related to leadership in public universities. The outcome generated from this study can help managers and consultants to incorporate more organisational culture and leadership into their framework as predictors in their succession and selection processes as well as for improving leadership and organisational effectiveness. Many believe in the elusive and hereditary nature of leadership, but what if we can single out what can be learned and bring closer those very valuable leadership skills? The end goal would be the added knowledge of how mutual leadership is impacted by culture. This will then show others what needs to be done to develop leaders who are critical for influencing their teams and individuals into achieving higher goals and achieving excellent organisation performance.

Even though the current study has a reasonably large number of respondents (n = 333), it is also constrained by the background of the respondents who are from the academic background with only 18 public universities. This number is considered small since there are 672 higher education institutions in Malaysia. In other words, the outcome may not be applicable to other professions. In addition, this study is conducted over a period of five months and it is also cross-sectional in nature due to the limited resources and time. This implies that there could be an oversight in the in-depth observation of the variables. Had there been an extended period of time, a more profound understanding of the cause and effect of the complex relationships could have been generated.

There are some suggestions for future research based on the findings of the current study. Organisational culture is found to have a positive and significant relationship with transformational leadership. Studying OC and other antecedents to servant leadership is suggested since research shows that servant leadership is more predominant and effective in the Southeast Asian culture (Zhang, Lin, & Fong Foo, 2012). This is traced to the study done by Zhang et al. (2012) who had revealed that Singaporeans tend to draw leaders to the back of the group, unlike their US counterparts who tend to draw them to the front of the group. This practice of the Singaporeans suggests a prototype leader who gathers the group's opinions and then unifies them from the back. The current research model is able to explain about 39 per cent of the total variance in leadership. Other latent variables are able to explain the remaining variance inclusive of personality, emotional expression and sensitivity. Also, the inclusion of team or firm performance, leadership effectiveness and emergence variables as well as control variables, such as ability and personality, would give future research more rigour, depth and breadth, especially if it includes a comparison of leaders, administrative personnel and faculty members of both the private and public HEIs in Malaysia. Future research could also examine the organisational culture types with related leadership behaviour among different generational groups. This can encompass baby boomers, generation X and generation Y subjects. This is because the younger age groups have been known to display different values, work ethics and technological inclinations, as a result of varying societal exposure to extremely different and changing circumstances, in the past seventy years or so. As suggested by Hair et al. (2007), longitudinal studies are a better way to understand the cause and effect relationship among variables at different periods. Thus, future research may consider studying the outcomes of OC types on organisations and gauging their effectiveness by bearing in mind current theoretical findings and the practical needs in various sectors. Finally, future studies can examine organisational culture and leadership by using the qualitative research approach as a strategy to understand the complexity of leaders' understanding. This can be done by conducting a deep analysis of the variables and contexts. The reason is because it is an alternative way of conducting research as another means to understand the academic leaders' unique environment.

The benefits of measuring organisational culture are numerous. For one, people become aware of the current and the preferred culture in public universities. These questions can generate momentum for change. Further, the OCAI assessment is just the first intervention used to initiate change. Practical implications of the current findings can be made from an increased understanding of the OC types as predictors of leadership. This can be combined by HR consultants with the skills approach for developing a comprehensive leadership development programme that pools work experiences with classroom training efforts. Through work experience and training programmes, leaders can acquire improved problem-solving techniques and in that regard, become more effective at influencing others in the attainment of goals. Therefore, when the results of the current study are pooled in the skills approach, they would offer a structure that can frame the content of leadership education and development programmes.

Overall, the current study has noted the positive and significant predictive relationship between organisational culture and culture types, with transformational leadership. It is noted that leaders in public universities in Malaysia perceive the current organisational culture as the clan type, followed by the hierarchy type, as is reminiscent of past studies. Firstly, this study has also developed the research conceptual framework which was based on the literature reviewed. Its main contribution is in verifying previous findings related to leadership and culture by uniquely using valuable and well-known instruments (OCAI and MLQ5x) on a representative population. Specifically, the study has identified that few empirical studies had examined the interaction of culture and leadership. To complete this, the current study also used the viewpoints of the leaders rather than the followers. This had not been done before in previous studies. Secondly, this study has also improved our understanding of the social system's theory by refining the theoretical rationale for existing linkages and for specifying aspects of culture that impact on leadership and vice versa (Ladik & Stewart, 2008; Summers, 2001). Thirdly, this study has also applied remedies to the common method variance by applying the anonymity of respondents for reducing the evaluation apprehension. This study has also used a large sample size than most studies. The instrument used has also obtained a relatively higher construct reliability and it also uses several institutions instead of only a handful. Finally, the findings of this study show that leaders' behaviour are felt throughout the organisation when they impacted the norms that either sanctioned or discouraged member behaviours and decision making. Moreover, their patterns of behaviour and interaction among members are also noted (Giberson et al., 2009). The implications of this is that the decision-makers' optimal planning for culture and their leadership are in harmony with the strategic organisational effectiveness. It acts as guidelines for formulating plans for the attainment of organisational goals and vision. It also helps practitioners to improve the selection and development of leaders. Another important implication gained from the current study is the improved understanding of culture and leadership. This means that organisations can use the OCAI and MLQ5x periodically to greatly improve their understanding of culture and leadership. Based on this, they can then opt for the leadership styles and cultures that support the achievement of the sought after organisational effectiveness.

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Factors Affecting the Need to have Accounting Technical Competence, Professional Skills and Professional Values, Ethics, and Attitudes – The Case of Thailand

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ABSTRACT

Manuscript type: Research paper
Research aims: This study aims to examine the factors affecting accounting professionals' essential skills as specified by the International Education Standards (IESs).
Design/Methodology/Approach: The antecedent factors are drawn from Aldefer's (1969) theory of existence, relatedness and growth needs (ERG). A mixed method approach involving auditors, standard setters and faculty members is employed in this study.
Research findings: The results suggest that accounting professional skills are motivated by the growth and relatedness needs. The findings further reveal that the length of accounting training experience and the students' intention to work in accounting fields,

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after graduation, are key factors which enhance their accounting technical competence.
Theoretical contributions/Originality: This study contributes to the emergent interest in this field by focussing on how the ASEAN Economic Community (AEC) members like Thailand, responds to the needs of the IES. The ERG theory could be adapted in understanding the factors affecting the development of accounting technical competence, professional skills and professional values, ethics and attitudes.
Practitioner/Policy implications: The ERG theory assists managers in recognising that if growth opportunities are not furnished to employees, they may regress to relatedness needs. The findings thus suggest that in order to develop students' accounting technical skills (IES2), the academic institutions should encourage students to participate in accounting training programmes as a part of the course curriculum. The results further indicate that accounting professional skills (IES3) can be enhanced if they get acceptance from their superiors and co-workers.
Research limitations: The samples of this paper comprise accounting students from northern Thailand. Only three International Education Standards (IESs) which are implemented in Thailand are examined.

Keywords: Accounting Technical Competence, Professional Skills, Professional Values, Ethics and Attitudes
JEL Classification: M41, M48

1. Introduction

The accounting profession plays an important role in government development as well as private sector growth. The profession enables the country to achieve its financial performance, governance, transparency and to increase investor confidence. The accounting profession has emerged to be one of the eight professions in Thailand to face crucial competition, after Thailand joined the ASEAN Economic Community (AEC) in 2015. The establishment of the AEC has allowed professional accountants from a member country to be registered as an ASEAN Chartered Professional Accountant and to be able to practise in other member countries. The free flow of such skilled labour has accelerated the demand for such accountants to be equipped with a certain standard of quality and competency. These accountants need to be able to learn how things operate in different markets; they also need to know how to use new accounting tools and advanced IT systems, in order to be able to function effectively in a multicultural work environment (Alexia, 2014). In the case of Thailand, the economic integration requires that the country's accounting practices and professionals also undergo changes, so that they are aligned with international standards, including the International Education Standards (IESs) for Accounting Professions (Department of Trade Negotiations, 2011). The unequal accounting education standards and requirements between AEC members have highlighted the imperative need for these countries to develop their base of accounting professionals by enhancing their skills as recommended by the accounting international standards as proposed by the International Financial Reporting Standards (IFRS), and the International Education Standards for Professional Accountants (IES). By taking steps to enhance the professional accountants of the country, the competency of human capital in the accounting area would be insulated and perhaps even ameliorated. Without doubt, the establishment of the AEC has triggered several challenges for accounting professionals.

Many studies (Nguyen & Gong, 2012; Steelyana, 2012; Suttipun, 2014) have examined the readiness of the accounting profession towards the AEC membership. They focussed on factors such as age, knowledge, capabilities and technical skills as factors which might propel the accounting profession to seek ways to prepare themselves for the impact of the AEC. While these studies focussed on the accounting profession's need for development in meeting the AEC movement, little attention has been given to the accounting education's harmonisation efforts with existing IESs. In Thailand, the Federation of Accounting Professions (FAP), under the Royal Patronage of His Majesty the King, has administered the IES for accounting practitioners since 2001 (Suttipun, Sattayarak, Duangpanya, & Runglertkrengkrai, 2018). However, with unequal accounting education standards between AEC member countries and Thailand, it would seem that establishing IES requirements on the accounting profession in Thailand is the only means to ensure that the competency of its accounting professionals are insulated from other competitiveness. Therefore, the development and implementation of the IESs became a high-stake issue for all accounting professionals and academics (McPeak, Pincus, & Sundem, 2012).

In view of the limited studies conducted within the IES framework, this study aims to examine factors affecting accounting professionals' essential skills that are within the IES framework. In a bid to understand more, this study employs Aldefer's (1969) theory of existence, relatedness and growth needs (ERG). The ERG theory was developed from

Maslow's hierarchy of human basic needs for physiological, safety, love, esteem and self-actualisation (Maslow 1943). The theory developed by Alderfer (1969) is an alternative which refined Maslow's hierarchy of the five basic needs into three categories – existence, relatedness and growth. The first category – need for existence – is defined as the physical and material wants such as food, residence, salary, bonus, working environment and fair employment contract. The second category – relatedness need – is defined as the desire for interpersonal relationship with others/co-workers. The third category – growth need – is defined as the desire to be creative and productive such as for work promotions and new opportunities to develop and use one's talents. The ERG theory has been used as a construct to understand the internal drive that motivates human beings towards certain behaviours. With the establishment of the AEC in 2015, professional accountants are facing considerable challenges, which require them to enhance their competencies and skills, so that they can be more competitive and successful. While it is important for them to acquire skills that match the IES, the lack of intrinsic learning motivations may not lead to a positive outcome, despite encouraging work environments. Motivation refers to the unsatisfied needs that create a sense of tension and disequilibrium, causing the individuals to move towards a directed goal. Motivation is illustrated as the process of the individual's willingness to expand energy so as to attain an aim or reward. Thus, it is expected that internal motivations would influence the individual to acquire certain competencies, skills and values, with success. Thus, incorporating the ERG theory for the purpose of understanding the training needs of the accounting professionals may offer some insights and possibly, bridge the existing knowledge gaps. In the context of this study, we only focus on growth and relatedness needs because prior studies (Seger & Graylee, 2013) have already found that existence needs, which involves salary and benefits, were less important and less significant.

This study is expected to contribute to current literature in the field of accounting education in several ways. First, the outcome contributes to the emergent interest in this field which focussed on how, as an AEC member, Thailand responded to the needs of the IES requirements. Thus, the findings will highlight on the steps needed to prepare Thai accounting students for intense global competition among ASEAN member countries. Second, the outcome generated can be contrasted with previous studies by examining how the ERG theory can be adapted for the purpose of understanding the different factors affecting the skill development of the accounting professionals in terms of technical competence, professional skills and professional values, ethics and attitudes. The implications to be drawn from this study indicate that the ERG theory assists the managers in recognising that an employee has multiple needs to satisfy, simultaneously. Therefore, growth opportunities should be provided to employees, otherwise, they would regress to their relatedness needs.

The remaining discussion of this paper is organised as follows. Section 2 reviews the literature pertaining to the ERG theory and the IES framework. Section 3 discusses the research model and hypotheses developed. Section 4 discusses the methodology employed, while Section 5 reports on the results. Section 6 discusses the findings and Section 7 concludes the paper by focusing on the implications for management and theory.

2. Literature Review

2.1 International Education Standards

The International Education Standard (IES) serves as the authority on matters relating to the accounting profession. It is used predominantly by the International Federation of Accountants (IFAC) member bodies when setting education requirements for professional accountants and aspiring professional accountants (International Accounting Education Standards Board, 2017). This paper emphasises on the IES 2 – Technical Competence, IES 3 – Professional Skills, and IES 4 – Professional Values, Ethics and Attitudes. The reason is because these three standards have the most impact on the development of academic competencies and professional competencies for accounting students, upon their graduation. Linked to this is that IES 3 and IES 4 were implemented in the accounting education system of Thailand in 2017 (Federation of Accounting Professions, 2016). This paper could be one of the first to examine the determinants of IES 3 and IES 4 in the context of Thailand. Clearly, the objective of implementing these IES standards is to enhance the accounting professionals globally. By encouraging them to accelerate their competence in accounting, public trust is thus fortified (International Accounting Education Standards Board, 2017). As a consequence, the current study focusses on examining the factors that may assist stakeholders (educational institutions and business communities) in assisting the accounting professionals to ameliorate their learning and knowledge development.

As the regulatory body, the International Education Standard (IES) prescribes the knowledge content for the professional accounting education programme. The IES also stresses the need for professional accountants to function as competent and ethical professionals. The notion of professional competence is understood as that which goes beyond the knowledge of principles, standards, concepts, facts and procedures. Professional competence is the integration and application of: (a) technical competence, (b) professional skills, and (c) professional values, ethics and attitudes (International Accounting Education Standards Board, 2017).

2.1.1 Technical Competence (IES 2)

The objective of IES 2 was meant to establish the technical competence of aspiring professional accountants so that they are able to perform their role as a professional accountant. Technical competence is the ability to apply professional knowledge to perform a task according to the defined standards, legislations and regulations which are relevant to professional accountants. Within IES 2, the content of the professional accounting education should consist of: 1) accounting, finance and related knowledge, 2) organisational and business knowledge, and 3) information technology knowledge and competencies (International Accounting Education Standards Board, 2014a).

2.1.2 Professional Skills (IES 3)

The objective of IES 3 was meant to establish an appropriate mix of skills which a professional accountant needs in order to function competently. The skills noted within IES 3 are categorised into four areas of competence (International Accounting Education Standards Board, 2014b). They include: 1) intellectual skills which relate to the accountant's ability to solve problems, to make decisions and to exercise professional judgement, 2) interpersonal and communication skills which relate to the accountant's ability to work and interact effectively with others, 3) personal skills which relate to the accountant's personal attitudes and behaviour, and 4) organisational skills which relate to the accountant's ability to perform effectively with or within an organisation, so as to obtain optimal results or outcomes from the people and the resources available.

2.1.3 Professional Values, Ethics, and Attitudes (IES 4)

The objective of IES 4 was to prescribe the values, ethics and attitudes which a professional accountant needs to acquire during the education programme which leads to a qualification. Values, ethics and attitudes are defined as the behaviours and characteristics that would identify accountants as members of a profession. These include the ethical principles generally associated with accounting practices and are considered essential in defining the distinctive characteristics of professional accounting behaviour. Values, ethics and attitudes include the commitment to other elements such as: (a) technical competence and professional skills, (b) ethical behaviour (e.g. independence, objectivity, confidentiality and integrity), (c) professional etiquette (e.g. due care, timeliness, courteousness, respect, responsibility and reliability), (d) pursuit of excellence (e.g. commitment to continual improvement and lifelong learning), and (e) social responsibility (e.g. awareness and consideration of the public interest) (International Accounting Education Standards Board, 2014c: 7).

A review of the literature notes that papers written about the IES is relatively small as compared to the total publications conducted in the area of international accounting. Most of these articles tend to discuss the global implementation of the IES, from various regions to illustrate some international acceptance of the standards. Yet, there appears to be two opposing views relating to the IES establishment. On one hand, there are a handful of studies (Karreman, Ahern Jr, Kuijl, & Marrian, 2007; Needles, 2008; Wilson et al., 2009) that suggest the use of IES as a potential benchmark to identify the strengths and weaknesses of professional accountants and auditors so that further development could be made. On the other hand, there are scholars (Stocks, 2009; Tweedie, Dyball, Hazelton, & Wright, 2013) who suggest that the IES be utilised as a minimum requirement as an assurance of global consistency, instead of diminishing the differences.

From the geographical perspective, it was found that most studies were conducted in the context of developed economies, with Europe being the most dominant. Other regions, such as Asia appear to be less engaged with the discussion on the IES. In an early seminal work conducted by Needles (2005) and Quinn (2004), it was highlighted that the implementation of the IES in emerging countries, in comparison to the developed economies, may not be a smooth process, due to the lack of educational infrastructure and resources and the shortage of professionally qualified accountants who are willing to spend time mentoring junior level accountants. There are also empirical works (Crawford et al., 2010; Zeghal & Mhedhbi, 2006) done to obtain evidence to show the extent of IES adoption in accounting education in universities across several countries. Based on a questionnaire survey, Crawford et al. (2010), for example, found an extant gap in universities' accounting programmes in relation to IES implementation, in a few countries. Zeghal and Mhedhbi (2006) analysed the factors affecting the adoption of IESs by developing countries. They found that countries with the highest literacy rates, capital markets and an Anglo-American culture, were more likely to adopt the IESs. Within the context of Thailand, to the best of the researchers' knowledge, there appears to be limited studies conducted on the IES framework. Most of the studies conducted seemed to concentrate on the readiness of local professional accountants towards the AEC in general. There were no specific references to any international standards. For example, Suttipun (2014), in an exploratory study, investigated the competencies of Thai accounting students and their readiness for the AEC. It was found that the accounting students' readiness for the AEC was at a medium high level.

The literature review conducted shows that there are different views on the IES. Some agree that IES influences the accounting education and training worldwide. Thus, the goal of the IES is to ensure that all stakeholders can rely on the competence of the professional accountants. It seems evident that studies looking at the IES movement are small and in particular, research on this area in the context of Thailand is lacking. Being a developing country, with a different economy and infrastructure, different results may be obtained from Thai samples. Therefore, it is imperative to conduct a study within the IES framework in Thailand.

2.2 The Existence, Relatedness and Growth (ERG) Theory

In this study, the ERG theory is used to examine how intrinsic motivations affect the acquisition of essential skills that are in line with the IES. As explained above, the ERG theory is unlike Maslow's theory. It does not entail a rigid step-like progression since it does not require one need to satisfy the lower need before progressing to a higher-level need (Au, Ngai, & Cheng, 2008). Thus, the ERG theory has been widely used in empirical studies (Wiley, 1997; Arnolds & Boshoff, 2002;

Yang, Hwang, & Chen, 2011; Caulton, 2012). Evidence drawn from these studies show that it is related to human behaviours. Wiley (1997) used the ERG theory to observe motivational factors in the workplace. Data were collected from 550 employees working in industries such as retailing, services, manufacturing, insurance, utilities, health care and government agencies. It was found that the top five factors motivating employees were good wages, full appreciation for the work done, job security, growth in the organisation and interesting work. The same was noted in the study of Arnolds and Boshoff (2002) who investigated the influence of needs satisfaction on esteem and job performance. Focussing on top-level executives and frontline employees from a variety of industries in South Africa, they also found that top managers were motivated by growth needs; their performance intentions were influenced by their perception of opportunities for growth and advancement. In contrast, frontline employees were motivated by the need for growth. Yang et al. (2011) also used the ERG theory to investigate consumer satisfaction and desires when choosing mobile value-added services. They noted that, contrary to the predictions of the ERG theory, frustration with a service did not lead to a greater desire for services that address either the same need or lower order needs. Likewise, Islam and Ahmed (2014) conducted a comparative analysis between the US and Malaysian employees. They noted that lower basic need and existence, may not be an important criterion for the US subjects, as they were relatively better paid. In the context of training and development, Seger and Graylee (2013) found that salary and other personal benefits appeared to have insubstantial effect on employees' motivation to acquire new skills. They seemed more concerned with good image, and the ability of the training to bridge their knowledge, experiences and skills.

Based on these findings generated by past studies as indicated above, it can be deduced that the ERG theory is relevant for use in various contextual settings. The theory helps to highlight the internal factors driving human beings towards certain behaviours. A scrutiny of current literature, suggests that there is little research which use the ERG theory to examine the motives propelling aspiring accountants to acquire the necessary professional accounting skills. To the best of the researchers' knowledge, the current study serves as the first attempt to explain the determinants of the IES 2, IES 3 and IES 4 on accounting professional skills by applying the ERG theory. Based on the findings gathered from Seger and Graylee (2013), and Islam and Ahmed (2014), this study will thus focus on two different needs only – relatedness and growth. Considering that accountants earn a decent salary and benefits, it is deduced that the lower level needs may not be an attracting factor for the accounting subjects to aspire to acquire new skills.

3. Research Model and Hypotheses Development

Based on the literature, a conceptual model is developed. The model hypothesises that the internal needs of an individual, namely relatedness and growth, will influence his/her accounting technical competence, professional skills, values, ethics and attitudes. The following discusses the hypotheses development.

In the 21st century, organisations are putting more emphasis on salaries and other extrinsic rewards to satisfy the existence needs of employees. The effective system used by organisations to recognise and to reward individuals may motivate employees to acquire new essential skills since this may affect their entire being. However, despite the importance of a good salary and an effective reward system, some scholars (Albu, Nicolae Albu, & Mădălina Girbina, 2012) have stressed that workplace diversity, as is prevalent in multicultural organisations, may also impact on employees' motivation since there is no one size fits all approach. In a study conducted by Albu et al. (2012), it was found that the stereotypes held of accountants from developed countries, were different, suggesting that the process of change and improvement, might also be different. Therefore, the motivation of certain accountants may be affected by the different country setting. Nonetheless, as professionals, it is expected that accountants would be inspired to acquire new skills that would add value to their professional attributes and not just due to immaterial rewards (Islam & Ahmed, 2014). For example, enhancing their professional values, ethics and attitudes might enable the professional accountants to satisfy an intrinsic desire to do something good for society. Since accountants are well paid, the monetary incentives and rewards may not be a significant factor for them to acquire new skills. As such, they are expected to be more driven because the technical competence might offer them a sense of belonging and facilitate in bridging their knowledge and skills' gaps. They may be willing to acquire advanced professional accountancy knowledge, develop a continuing understanding of professional values, ethics and attitudes as well as equip themselves with the appropriate mix of professional skills so as to enable them to function as competent professional accountants within an increasingly complex and changing environment. Based on these arguments, this study postulates that:

H_1: Relatedness needs have a positive influence on professional accountants' growth needs.

Previous studies (Seger & Grayler, 2013) on human capital have demonstrated that some employees associate their desire to acquire new skills with an expectation for career growth and future promotions. In the context of the accounting profession, it was reported that training programmes can enhance the personal development of professional accountants or increase their job opportunities (Suttipun, 2014). As accounting professionals are expected to operate on international scales, they are, nevertheless, regulated by national bodies. This creates the fundamental difference in how accounting is practised and regulated (Needles, 2005). As a result of this expectation, there is a willingness among the accounting professionals to acquire new and essential skills which are in line with international standards, as shown in Figure 1.

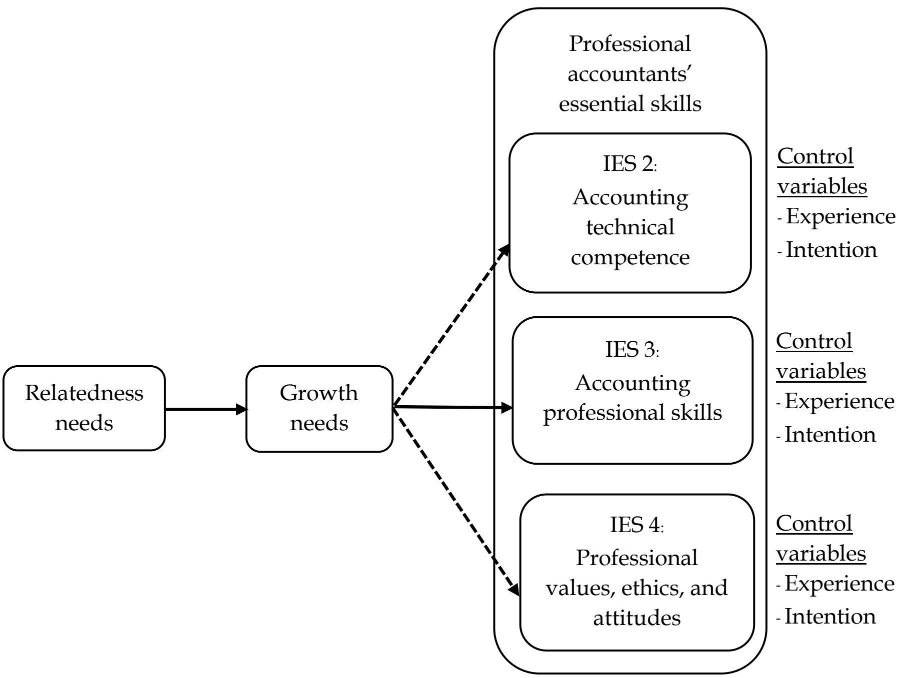

Figure 1: Conceptual Framework

Doing so may offer them new opportunities to practise their professions in other countries. Based on these arguments, this study postulates that:

H_2: Growth needs have a positive influence on professional accountants' essential skills.
H_{2a}: Growth needs have a positive influence on accounting technical competence.
H_{2b}: Growth needs have a positive influence on accounting professional skills.
H_{2c}: Growth needs have a positive influence on professional values, ethics and attitudes.

4. Methodology

4.1 Sampling Methods and Respondents' Profiles

As mentioned earlier, Thailand is chosen because IES 3 and IES 4 were recently implemented in the accounting education curriculum in Thailand (Federation of Accounting Professions, 2016). Apart from Bangkok, the capital city of Thailand, the northern part of Thailand has the highest number of universities per province, providing undergraduate and master's degree in accounting courses (Federation of Accounting Professions, 2018). The first regional university of Thailand was also established in the northern part of the country. Three types of university exist in Thailand: government, autonomous, and private. In the context of this study, data were collected from the largest universities of each type located in northern Thailand. The sampling frame consists of year 4 undergraduate accounting students who have internship experience in the accounting field. The lists of the students were obtained from the respective universities' administrators. Before the questionnaires were distributed for the actual study, ten respondents were selected for a pre-test. The feedback from the pre-test in terms of consistency of wordings and redundant questions were addressed before the questionnaire was refined for distribution to a larger sample size. Students were used as samples in this study because the International Education Standards (IESs) were implemented in the accounting education curriculum for the purpose of developing their accounting skills. The International Education Standards (IESs) were implemented to enhance their professional competence so that they are equipped with the necessary domestic and international skills before they embark on the professional labour market. A total of 412, year four (4) students participated. Selection was based on random numbers noted in the list. Three universities – one government, one autonomous and one private were involved. The procedure was assisted by the head of the Accounting Department of the respective faculty/university. Of the 412 administered, only 204 completed questionnaires were retrieved, yielding a response rate of 49.5 per cent.

Table 1 presents the profiles. The demographic profile indicates that most were female students (88.24 per cent). Their ages ranged between 21 to 23 years old (96.08 per cent). All the respondents were fourth-year students, with 99.5 per cent of them having at least one-month's training experience in accounting, auditing, taxation or internal auditing.

Table 1: Demographic Profile of Respondents

Demographic	Categories	Numbers	Percentage
Sex	Male	24	11.76
	Female	180	88.24
Age	Less than 18 years old	1	0.49
	18 to 20 years old	0	0.00
	21 to 23 years old	196	96.08
	More than 23 years old	7	3.43
Training experience	<1 month	1	0.49
	1-3 months	178	87.25
	>3 months	25	12.25

4.2 Operationalisation

This study adapted measures from prior studies. However, since this study appears to be the first attempt to look into factors affecting the acquisition of accounting skills from the ERG perspective, an in-depth interview involving one auditor, one accounting technical specialist from the Federation of Accounting Professions, and three HODs (Head of Accounting Department) from three universities located in the north of Thailand was also conducted in the first stage of this study. The aim is to determine the appropriateness of the adapted scales, in the context of accounting skills. The outcome generated from the interview provided some insights into possible factors that may affect the undergraduate students' accounting technical competence, professional skills and professional values, ethics and attitudes. The interviews also confirmed that relatedness needs, and growth needs could serve as possible factors. More importantly, all the interviewees suggested that the measures for relatedness needs (which were adapted from previous studies and consisted of three items) were not relevant for the current study since it only involved accounting students as samples. According to the experts interviewed, some of the questions would not be able to capture the true meaning as they were related to a real working environment whereas the samples were accounting students. Therefore, this variable was measured by a single item. Measuring constructs with a single item is encouraged (Wanous, Reichers, & Hudy, 1997; Rossiter, 2002) in the case of a narrow or unambiguous construct, such as this study is using. Hence, using a single-item measurement may suffice (Sackett & Larson Jr, 1990). Moreover, this single-item measure has been validated with the expert panels. Face validity was established by showing all the scales to two accounting professionals and one academic scholar. All agreed that the items captured the meaning of each construct. The single item constructs have both face and content validity and are consistent with Rossiter's (2002) call for more parsimonious measures. Some additional factors resulting from the interviews were also added, such as training experience, expected income and expected future career. To provide a robustness test to our hypotheses and to add more academic and practical contributions, we included an experience variable (EXPER) and students' intention to work in the accounting arena after their graduation (INTENT) as control variables. The number of years that the students had experienced as a trainee in the accounting fields is a proxy for experience variable. Students' intention was measured by a 5-point Likert scale. These two control variables were derived from the in-depth interviews. All interviewees agreed that these two variables served as additional key factors propelling students to improve their accounting competence. In this regard, we expect that EXPER and INTENT will be positively related with their accounting technical competence, professional skills, and professional values, ethics and attitudes.

The above information was then used in combination with prior literature to develop items for the constructs contained in the questionnaire (Table 2). We pre-tested the final questionnaire with 10 students. To ensure that the scales used were valid and reliable, various validity and reliability tests were also performed.

Table 2: Description of Scale Items

Dependent variables	
1. Accounting technical competence (IES2)	
IES2_1	Financial accounting and reporting
IES2_2	Management accounting
IES2_3	Finance and financial management
IES2_4	Taxation
IES2_5	Audit and assurance
IES2_6	Governance, risk management and internal control
IES2_7	Business laws and regulations
IES2_8	Information technology
IES2_9	Business and organisational environment
IES2_10	Economics
IES2_11	Business strategy and management
2. Professional skills (IES3)	
IES3_1	Intellectual competence
IES3_2	Interpersonal and communication competence
IES3_3	Personal competence
IES3_4	Organisational competence
3. Professional values, ethics and attitudes (IES4)	
IES4_1	Professional scepticism and professional judgment
IES4_2	Ethical principles
IES4_3	Commitment to the public interest
Independent variables	
1. Relatedness needs (RELATE)	
RELATE	I want acceptance from my boss and co-workers for my future career.
2. Growth needs (GROW)	
GROW_1	I seek a chance to apply my knowledge and my ability to improve my job performance in the future.
GROW_2	I am interested in working overseas.
GROW_3	I often think of a job that challenges my ability.
GROW_4	I intend to work at the company offering a clear-cut career path.

4.3 Measurement Model Evaluation

All the items in this study were subjected to scale purification, using confirmatory factor analysis (CFA). Convergent and discriminant validity were performed to ensure that the items used were in agreement and did not reflect other variables (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). In this study, convergent validity which denotes the degree of correlations between two or more measures of the same concept, was assessed by evaluating the factor loadings, composite reliability and average variance extracted values (Chin, 1998). As represented in Table 3, most items were retained in this study, since their loadings were above 0.5 (Hulland, 1999). However, one item, IES2_11, was dropped

Table 3: Confirmatory Factor Analysis and Reliability of Constructs

Variable	Factor Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's alpha
Accounting technical competence		0.943	0.609	0.879
IES2_1	0.555			
IES2_2	0.643			
IES2_3	0.585			
IES2_4	0.510			
IES2_5	0.661			
IES2_6	0.560			
IES2_7	0.694			
IES2_8	0.766			
IES2_9	0.672			
IES2_10	0.678			
IES2_11	0.341			
Professional skills		0.912	0.725	0.819
IES3_1	0.531			
IES3_2	0.708			
IES3_3	0.837			
IES3_4	0.697			
Professional values, ethics and attitudes		0.931	0.819	0.906
IES4_1	0.860			
IES4_2	0.882			
IES4_3	0.862			
Growth needs		0.868	0.625	0.772
GROW_1	0.610			
GROW_2	0.746			
GROW_3	0.735			
GROW_4	0.556			

Note: Factor loadings greater than 0.50 are considered significant.

from further analysis, as it loaded below the recommended value. The composite reliability values for all constructs were above 0.868, thus it achieved the recommended value of 0.6 (Nunnally, 1978). Cronbach's alpha was also noted to be above the recommended 0.80 level (Bagozzi & Yi, 1988; Bollen, 1989). Simultaneously, the Average Variance Extracted (AVE) values for all constructs were above 0.625. Therefore, these values were acceptable.

In this study, the discriminant validity test was performed in accordance to Fornell and Larcker's approach (1981). As shown in Table 4, all the scales appeared to have a substantially higher AVE value with other constructs, when compared to their squared correlation. This demonstrates the achievement of the discriminant validity. Based on these results, it can be assumed that the measures used demonstrated adequate convergent and discriminant validity, hence further analysis can be conducted.

Table 4: Correlation Matrix

Construct	IES2	IES3	IES4	RELATE	GROW
IES2	(**0.780**)				
IES3	0.638**	(**0.852**)			
IES4	0.172*	0.503**	(**0.905**)		
RELATE	0.006	0.065	0.135	(**0.874**)	
GROW	0.089	0.199**	0.120	0.267**	(**0.790**)

Notes: Figures in parentheses (boldfaced) indicate square root of AVE.
IES2 is Accounting technical competence, IES3 is Professional skills, IES4 is Professional values, ethics and attitudes. RELATE is Relatedness needs. GROW is Growth needs; ***, **, * indicate significant level at 1%, 5% and 10% respectively.

5. Results

5.1 Empirical Results

Assuming that the measurement model satisfied the validity and reliability issues, a structural model was then constructed, based on the results of the measurement model. The overall fit indices reported a χ^2/ degree of freedom (df) = 1.814, p-value = 0.00 level, the comparative fit index (CFI) = 0.902, the root-mean square error of approximation (RMSEA) = 0.063, and the incremental fit index (IFI) = 0.905. All statistics indicated a reasonable model fit. The results are reported in Figure 2 and Table 5. Similar to the main model, Table 5 confirms that the satisfaction of relatedness needs has a significant (β = 0.150, $p < 0.10$) impact on

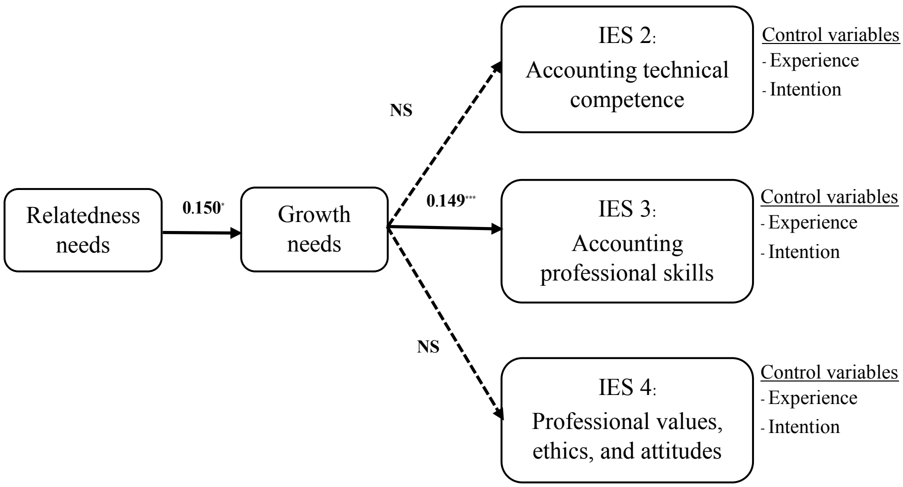

Figure 2: Structural Model Analysis

Note: NS denotes non-significant relationship. ***, * indicate significant level at 1% and 10% respectively.

Table 5: Regression Estimates

Paths	Hypotheses	Estimate	Standard Error	p-value
RELATE → GROW	H_1	0.150*	0.079	0.057
GROW → IES2	H_{2a} (+)	0.069	0.044	0.118
GROW → IES3	H_{2b} (+)	0.150***	0.049	0.002
GROW → IES4	H_{2c} (+)	0.127	0.103	0.218
Control variables				
EXPER → IES2		0.170***	0.066	0.010
EXPER → IES3		0.008	0.065	0.899
EXPER → IES4		-0.207	0.149	0.167
INTENT → IES2		0.050*	0.028	0.072
INTENT → IES3		0.117***	0.031	0.000
INTENT → IES4		0.071	0.066	0.282

Note: IES2 is Accounting technical competence, IES3 is Professional skills, IES4 is Professional values, ethics and attitudes, RELATE is Relatedness needs, GROW is Growth needs, EXPER is experience and INTENT is intention. ***, * indicates significant level at 1% and 10% respectively.

growth needs, hence supporting H_1. This study also found that the impact of growth needs was only significant on accounting professional skills (IES3) ($\beta = 0.149$, $p < 0.01$), while the impact of growth needs on the other two skills – accounting technical competence and professional values, ethics and attitudes, was non-significant, thereby rejecting H_{2a} and H_{2c} while supporting H_{2b}. Based on this, it can be said that there is evidence to suggest that the student's needs for acceptance by their superiors and peers, drove their desire to challenge their abilities for future growth. The growth needs enhanced the students' accounting professional skills.

6. Discussion

Building on the ERG theory, this study has attempted to examine the factors that would likely affect the accounting professionals' essential skills as required by the IES framework, in the context of Thailand. Similar with previous studies (Islam & Ahmed, 2014), this study found that relatedness needs stimulate accounting students desire to satisfy their growth needs. This is expected, as coming from a collectivist society, the psychological contract is relatively a strong drive for the students to equip themselves with appropriate professional skills, so that their career as an accountant is able to flourish in the future. As students, there is also a possibility that their perceptions about their future career growth lies in the centrality of the family. As indicated by Fuligni and Zhang (2004), students in a collectivist society commonly consider family obligation as a predictor of their academic motivation. A strong sense of obligation to the family, particularly parents, may serve as the motivational impetus for them to achieve better and to think about their future career. Hence, the accounting students of Thailand may recognise the legitimacy of their social surroundings, family as well as teachers, in making their educational decisions about their future career growth as professional accountants. These results also indicated that there is a higher chance for the respondents not to perform certain actions if those important persons do not agree with a particular future career growth decision. It is, therefore, possible to conclude that the accounting students of Thailand are likely to observe others' behaviours before they proceed with their own career decisions.

The findings of this study also highlight that fulfilment in one's personal career is the growth needs that the accounting students valued. Accounting students who perceived better self-efficacy in terms of how the acquired skills may make a difference in their future career, were more willing to develop their professional accounting skills. This is expected, considering that accounting students have a better academic background, and they anticipate a better grade. Hence, they were highly motivated by a challenging work environment and supportive instructors/supervisors. The satisfaction fulfilling this need gave the accounting students the opportunity to utilise their abilities and skills to their fullest potential. This finding suggests that providing opportunities for students to do challenging things at work will enhance their professional skills, including their intellectual skills, interpersonal and communication skills, personal skills and organisational skills. It appears that universities providing the accounting programmes need to offer the students relevant resources that will nurture their growth needs. This, in turn, will motivate them to acquire new skills as well as develop their skills further. At the practice level, the universities involved may need to increase the satisfaction of their growth needs by strengthening the link between the day-to-day classroom lectures with real life problems. The internship programme, for example, should not be treated as a mere training programme, but as an opportunity to contribute to the real business world by working on the real problems and issues, which their organisations experience. Such initiatives may create challenging roles and opportunities for the accounting students to not only learn and use their knowledge, but to also acquire new skills and knowledge for themselves, in envisioning a long-term career path in a globalised environment.

In comparing the effect of the growth needs with the three IES requirements, it was found that the effect is only significant for IES 3 – professional skills. This finding could be due to the fact that the accounting students were in their final year, and they have been furnished with quite an extensive level of accounting technical knowledge (Suttipun, 2014). Consequently, the accounting students saw the importance to develop and improve their accounting professional skills instead of the accounting technical skills. Similarly, being students, they may not see the importance of the ethical judgement and moral reasoning as a part of the accounting skills (Mustapha & Siaw, 2012). This situation may lead to their inability to establish a link between growth needs and ethical values in this study. This result highlights that Thai universities have a duty to create awareness, and to integrate ethical issues into their accounting programmes. This is because the Thai accounting students need to understand the need to act ethically.

This attribute would be reflected in their work after graduation, as it is also a part of the IES framework. Moreover, Thai universities should not concentrate solely on their students' skill and knowledge relating to accounting only but also to impart some ethical values for their accounting programmes.

7. Academic and Managerial Implications

This study provides a valuable contribution to academia and the business community. In terms of the academic contribution, this study is the first attempt to understand students' desires to improve their accounting competency, based on the EGR theory. The evidence presented in this paper affirmed that students' professional skills (IES 3) can be motivated by supporting the students' relatedness needs, and growth needs.

In terms of managerial implications, the findings indicated that in order to develop students' accounting technical skills (IES 2), the academic institutions should encourage them to participate in various accounting training programmes as a part of their course curriculum. The business units should also support training or internship programmes of institutions. This skill can enhance the students' excitement to be involved in the accounting field, upon graduation. The academic institutions should also provide a clear career path supported by a strong evidence of success cases of this profession as a further means to motivate students to work in the accounting field after graduation.

To enhance the image of the professional accountants, accounting firms or business owners should provide their accounting staff with a clear-cut career path and growth opportunity by emphasising the need to improve their professional skills (IES 3). These accounting staff can also be given opportunities to do more challenging tasks where they can use their knowledge and skills to improve their job performance. The results of this study also indicate that relatedness needs have a positive effect on growth needs. This implied that accounting professional skills (IES 3) can be enhanced when they get acceptance from their boss and co-workers. Such appreciations can make these professional accountants feel valued, hence they would engage with their work more. Consequently, they would be more enthusiastic and willing to deal with even a very difficult task. Therefore, the academic institutions may include communication and social skills as a part of the accounting curriculum where the tasks are designed in such a way as to encompass group work and where students are taught the effective techniques for giving and receiving feedback. Business units should also manage their accounting staff's communication and social skills as a means to ensure that such skills contribute to the growth needs of the professional accountants.

8. Limitations and Future Research

Although this paper offers many contributions to the stakeholders involved, there are some limitations too. First, the samples of this paper were confined to the accounting students from universities in northern Thailand. Future research can extend on the population by including accounting students from across the country in order to examine if the results would be similar. Second, this study only examined the effect of the ERG theory on three standards: IES 2, IES 3, and IES 4. Future researchers may continue to study the factors that may affect the IES 1 to 8, among graduate and undergraduate students. Finally, this paper applied Aldefer's (1969) ERG theory as the framework to examine human needs. Future research may consider other related human need theories such as Maslow's (1943) hierarchy of human basic needs, Macgregor's (1960) theory of X and Y, Herzberg's (1966) two factor theory, Vroom and Yetton's (1973) expectancy theory and Locke and Latham's (1990) goal setting theory.

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The Joint Effect of Accounting Knowledge and Self-serving Attribution on the Voluntary Disclosure of Management Earnings Forecast

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ABSTRACT

Manuscript type: Research paper
Research aims: This study investigates the effect of accounting knowledge and self-serving attribution bias on the voluntary disclosure of management earnings forecast.
Design/Methodology/Approach: An experimental design is conducted with 58 business programme graduate students. The participants are placed into two groups: low accounting knowledge and high accounting knowledge. The two groups are then randomly assigned to either the internal or external attribution condition.
Research findings: The results show that managers with high accounting knowledge are more likely to issue management earnings forecasts than those with low accounting knowledge. This study, however, indicates that the willingness to disclose management earnings forecasts is not dependent on the self-serving attribution.

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Despite this, the findings illustrate that the joint effect of the accounting knowledge and self-serving attribution will influence the voluntary disclosure of management earnings forecast. Specifically, managers with low accounting knowledge are more likely to withhold information if the cause of the unfavourable performance is due to internal factors. In contrast, they are more willing to disclose their future earnings failure if it is due to external factors. This situation, nevertheless, does not apply to managers with high accounting knowledge who tend to issue future earnings information, regardless of the internal or external factor.
Theoretical contributions/Originality: This study delineates the boundary effect of accounting knowledge and self-serving attribution on management disclosure decisions. The results of this study reveal that self-serving attribution bias influences managers' level of willingness in voluntarily disclosing management earnings forecast, under unfavourable outcomes.
Practitioner/Policy implication: The results of this study also reveal that high accounting knowledge can reduce the effect of self-serving attribution bias on managers' judgment, thereby making it more practical for managers to acquire more accounting knowledge.
Research limitation: This study treats the level of accounting knowledge based on the number of accounting courses taken by the participants rather than testing their accounting knowledge per se.

Keywords: Management Earnings Forecast, Attribution Bias, Accounting Knowledge
JEL Classification: M41

1. Introduction

Management earnings forecasts are voluntary managerial disclosures. These disclosures are related to the firm's expected performance, before the actual performance announcement is made (King, Pownall, & Waymire, 1990). Studies (Han, 2013; Hirst, Koonce, & Venkataraman, 2008; King et al., 1990) found that the number of management earnings forecasts issued by public companies had increased conspicuously with divergent contents and diverse timing (Kothari, Shu, & Wysocki, 2009; Miller, 2002; Skinner, 1994). Similarly, management earnings forecasts have been the focus of academic research for decades (e.g., Rogers & Stocken, 2005; Bozanic, Roulstone, & Van Buskirk, 2018). It was reported that management forecasts, as compared to other sources, offer rich information to investors. Considering the substantial evidence noted on the importance of management earnings forecasts, this study, therefore aims to explore the management's opportunity to withhold or conceal unfavourable future earnings information.

Many factors, such as litigation risk, reputation costs, market reaction and others, affect the firm's voluntary disclosure. These have been documented in prior studies (Kothari et al., 2009; Lev & Penman, 1990; Skinner, 1994; 1997). Whilst these studies provide insights into the issue of voluntary disclosure, there is still a lack of studies that investigate the characteristics of the decision makers or managers who decide to voluntarily disclose information to the public. On a similar note, Bonner (2008) suggested that individuals with strong knowledge contents are more likely to make better and more informed decisions than those with weak knowledge contents. Considering that accounting is an area of specialised knowledge, it is perceived that an individual's background and knowledge, could impact his/her judgment and decision-making (JDM). Within the accounting education literature, individuals who have received formal accounting training were expected to possess accounting knowledge structures that are dominated by the generally accepted accounting principles (GAAP), which do not generally incorporate opportunity costs within the business resource allocation decision (Vera-Munoz, 1998). This implies that individuals with high accounting knowledge are able to recognise and prioritise the information that is relevant to different decision makers. They would be able to realise that information should be accurately and fairly disclosed to the public. As information providers, they should be accountable to the information users, meaning that disclosed information should be transparent and equitable. Based on these arguments, this study posits that the extent of accounting knowledge could be a factor determining the asymmetric voluntary disclosure behaviour of managers. Although accounting knowledge in voluntary disclosure behaviours is important, it is difficult to measure the extent of its impact. One way to accomplish this is to conduct an experimental research so that researchers could isolate the effect of this particular factor, such as by controlling all other relevant factors.

When disclosing earnings forecasts, firms have the option to explain the cause of the forecasted figures. In relation to this, previous research (Baginski, Hassell, & Hillison, 2000; Baginski, Hassell, & Kimbrough, 2004) indicated that there are stronger market reactions when a causal explanation or attribution is given than when there is an absence of attribution. The attribution theory says that individuals tend to provide the explanation by associating it with internal (self) or external (outside of self) causes (Heider, 1958; Weiner, 1985) and poor results were likely to be associated with external causes (Baginski et al., 2004; Chen, Han, & Tan, 2016; Kimbrough & Wang, 2014). In other words, people tend to explain the causes in ways that "flatter them" or "put them in a good light" (Kimbrough & Wang, 2014). This principle is referred to as the "self-serving bias". Similarly, within the context of management earnings forecasts, managers rarely coincide earnings disappointments with internal causes. Managers have also been found to engage in self-serving attributions when they are facing earnings disappointment (Kimbrough & Wang, 2014) so as to manipulate the investors' perception of their firm's performance. This only occurs when their attribution is not regulated. Thus, prior empirical studies (Baginski et al., 2000; 2004) had not been able to explain whether such attributions were true or that they were part of the strategic management decision. It is difficult to test and validate the link between earnings forecast information and its attribution by using empirical evidence (Baginski et al., 2004). Given this limitation, the current study utilises an experimental method to examine whether self-serving attributions (both internal and external) influence the managers' decision to disclose earnings forecasts and if so, how does this takes place. Studies (Baginski et al., 2004; Chen et al., 2016) suggested that managers tend to provide attributions for firms' negative performance, but they rarely attribute these performances to internal causes. This study, thus assumes that managers will be less willing to disclose disappointing earnings forecasts when they are given internal attributions, as opposed to external attributions.

Taking into account that the extent of one's accounting knowledge and attribution can influence the asymmetric voluntary disclosure behaviour of earnings forecasts among managers, this study, hence, attempts to investigate the joint effect of these two factors. To the best of the researcher's knowledge, previous studies have not ventured into this area yet. The joint effect was examined by conducting an experimental method on 58 participants.

The findings of this study have the potential to contribute to both the voluntary disclosure literature and related regulations, involving forward-looking information. First, it provides the information which highlight that accounting knowledge helps to mitigate the self-serving attribution bias of managers who over-attribute earnings forecasts to internal causes. Based on this, it can be deduced that such accounting knowledge will increase the likelihood of managers issuing management earnings forecasts. Prior auditing literature (Nelson, 1993) had observed that auditors with different accounting knowledge could do analytical tasks at different levels. The present study thus provides insights into the strength of using the accounting knowledge as a variable when making decisions about the disclosure of proprietary information. This study further suggests that accounting courses should emphasise on the concepts of equality and fairness in financial reporting. These courses are likely to raise stakeholders' awareness about the importance of accountability. This advantage could also enhance managers' willingness to voluntarily disclose such significant information for the market investors. The strategic disclosure behaviour of withholding future earnings failures also tend to diminish when the accounting knowledge is higher. From the perspective of the regulators, it thus makes practical sense for managers to acquire more accounting knowledge.

Additionally, these findings also contribute to the attribution literature by linking the self-serving attribution from psychology to economic decision-making (e.g., the disclosure of management earnings forecasts). Even though prior research in psychology (Gurevich, Kliger, & Weiner, 2012) had suggested that causal attribution plays a role in the aforementioned decision, this study demonstrates that causality does not significantly affect decision makers when their decisions could not specify a right or wrong answer. In other words, causal attribution only impacts decision makers when the outcome is justified. Hence, this study extends on prior literature's assertion that self-serving attribution affects individuals' judgments when the task measures the explicit outcomes of the decision makers' choices. Nevertheless, this study extends on previous findings (Baginski et al., 2004; Kimbrough & Wang, 2014) by stressing that the effect of attribution on managers' propensity to issue future earnings information does not vary across individual's judgments. Instead, self-serving attribution bias is contingent on the individual's background knowledge or characteristics.

2. Theoretical Background and Hypothesis Development

2.1 The Propensity for Earnings Forecast Disclosure

Earnings forecast disclosure in firms is not mandated by law or regulation. Firms can decide to disclose or not to disclose. Earnings forecast disclosures are of interest to investors; they can also arouse market reactions, upon announcements. Thus, disclosure behaviours vary across firms and timeliness (King et al., 1990; Kothari et al., 2009).

Many studies have noted the association between the valence of earnings forecast news and management disclosure decisions (Kothari et al., 2009; Roychowdhury & Sletten, 2012; Skinner, 1994). In this regard, market reactions to negative earnings surprises tend to be large and asymmetric. Therefore, firms can anticipate significant costs to be associated with the missing market expectations.

It has been well established that managers strategically release positive news to show their firms' good performance to the investors and analysts, and also to highlight their own performance among their peers (Kothari et al., 2009; Lev & Penman, 1990; Miller, 2002). Managers can also manipulate their forecasting behaviours by strategically announcing only the positive forecast news and withholding the negative news during the pre-announcement date. Other studies (Rogers & Stocken, 2005; Skinner, 1994; 1997) noted that managers disclosed negative earnings forecasts early because they were in fear of the litigation risks involved. Nonetheless, it was also noted by Roychowdhury and Sletten (2012) that some managers appeared to be peculiar with this concern. Whenever the litigation risks were not high enough to induce voluntary disclosures, the possibility of delaying the issuing of bad news was more pronounced (Roychowdhury & Sletten, 2012). The managers often leak good news prior to their public announcements, whereas bad news were withheld for as long as possible (Kothari et al., 2009). In this regard, firms can be selective in their disclosure timeline, issuing some forecasts for a certain time period, followed by a hibernation period and then a resumption in disclosure (Houston, Lev, & Tucker, 2010; Rogers & Stocken, 2005).

In sum, the issuing of earnings forecasts depends on the management's decision since it is a voluntary practice. This makes it a less regulated activity. Specifically, this study focusses on the negative outcomes of omitting future earnings information in disclosures.

2.2 *Accounting Knowledge Content*

In this study, knowledge content refers to the quantity of information that is stored in the long-term memory (Bonner, 2008). The amount of knowledge content and its effect on the quality of judgment and decision-making (JDM), have long been studied in the fields of accounting and psychology (Bonner, 2008). Previous studies (Nelson, 1993; Picur, 2007; Rose & Rose, 2008; Vera-Munoz, 1998) have suggested that the integration of knowledge structures with information gathered from external sources, can be useful in guiding the individual's accounting task in relation to the JDM. Individuals with higher knowledge contents were more likely to employ a knowledge structure that would help them to make suitable decisions (Picur, 2007).

From psychology's definition of knowledge content comes another category of knowledge known as semantic memory, which is related to how concepts are understood and the ability to differentiate what is good or bad. Linked to this are the relevant values of accounting information which individuals have been trained to maintain and to have stored in their long-term memory (Vera-Munoz, 1998), to be used for future tasks. Individuals are expected to realise that the financial information contained within the accounting information is not only meant for the management (internal users), but also for the stakeholders (external users), such as investors, creditors, regulators and others. Contained within those financial information are significant data which are expected to be released to the public, in an equitable and timely fashion. Educators in the field of auditing and internal auditing have been stressing on the concept of corporate governance, transparency and accountability; concepts which managers are expected to acquire. The only issue here is that managers come from different backgrounds with different levels of knowledge due to different exposures. Therefore, their ideas regarding the effectiveness and efficiency of the business operation may vary. Some managers may choose to induce more self-interests, so they might resort to using strategic thinking for their own benefits. Others may not resort to such. Among these managers are Master of Business Administration (MBA) holders who may not have the basic bachelor's degree in accounting. This group of managers are, thus, less likely to appreciate the knowledge of auditing, internal auditing and accounting. They may perceive the accounting information as only one of the many tools to use so as to accomplish their desired results. In this regard, it is possible that managers with MBA degrees may strategically use acceptable accounting methodologies to improve their firms' performance announcement (Fischer & Rosenzweig, 1995).

According to the literature on motivated reasoning (Kunda, 1990), two types of motives affect the individual's judgment and decision-making – accuracy motives and directional motives. When individuals have the accuracy motive, they draw plausible and accurate conclusions (Kunda, 1990). They spend more cognitive efforts on issue-related reasoning. They also consider the relevant information with more caution, and they tend to use more complex rules. In particular, it is noted that the individual's semantic knowledge can impact on his/her judgment and decision-making. Therefore, managers with high accounting knowledge or with an accounting education background, would realise that the accounting information is a necessity for all decision making. Since managers should be accountable to the stakeholders, any significant information disclosed to the public by the managers, should be accurate and fair. Previous literature (Bonner, 2008) has corroborated on the benefits of having accounting knowledge and the ability to complete business-related tasks. Nelson (1993), for instance, suggested that different levels of basic accounting knowledge can also affect the individual's analytical performance in their audit tasks. Rose and Rose (2008) also found that audit committee members with more financial knowledge do not rely on the inadequate explanations gathered from the accounting judgments. Drawing from the motivated reasoning theory, this study posits that the individual's background accounting knowledge could motivate him/her to arrive at a more accurate conclusion when making decisions. It may also raise the individual's awareness of the costs and benefits involved in the strategy selected to make the necessary decision.

The other perspective is the directional motive. Meeting or beating an earnings benchmark is the directional motive that draws managers towards achievements. The motivated reasoning theory states that when people have their own preferences, they will engage in biased reasoning so as to reach their preferences (Kunda, 1990). This means that directional motives can influence people's construction of their attitudes, traits and preferences, all of which can affect their judgments (Kunda, 1990). Specifically, individuals tend to select and use the knowledge structures that support their desired conclusions (Gollwitzer & Moskowitz, 1996; Kunda, 1990). Therefore, when managers prefer to maintain or boost their stock prices, they would withhold the issuance of unfavourable earnings forecasts, as a way to comply with their preferences. In contrast, they would release positive outcomes early in order to signal their favourable performance to the market (Houston et al., 2010; Kothari et al., 2009; Lang & Lundholm, 2000; Lev & Penman, 1990). Sometimes, the management also applies strategic decisions by first putting more efforts into improving the unfavourable performance and withholding such information until a certain threshold is reached (Graham, Harvey, & Rajgopal, 2005; Kothari et al., 2009). This outcome has also been endorsed by Miller (2002) who found that firms strategically increase their disclosure level when they could sustain their strong performance or raise earnings. However, their disclosure level decreases when the firm's earnings deteriorated.

This study assumes that managers with high accounting knowledge would realise the importance of future earnings information, and its relevance to the decision of market participants. Consequently, these managers would be more likely to disclose future earnings information, despite their unfavourable future performance. In contrast, managers with low accounting knowledge would be less likely to disclose their unfavourable future earnings because of the missing market expectations. This study also anticipates that accounting knowledge could reduce managers' bias when evaluating future earnings disappointments. This leads to the first hypothesis:

H_1: Given the unfavourable future earnings, high accounting knowledge managers are more likely to disclose management earnings forecasts than low accounting knowledge managers.

2.3 *Self-serving Attributions*

The theory of attribution states that there are dichotomous constructs of causal attribution – internal and external (Heider, 1958; Weiner, 1985). Internal attribution focusses on a person's dispositional features, such as effort, ability and intention, while external attribution focusses on a person's situational causes of behaviour, such as task difficulty and luck. Individuals have the proclivity to under weigh situational influences and to overweigh dispositional explanations. From the perspective of psychology, it is noted that individuals have a tendency to avoid responsibility when they encounter failures; they attribute such failures to external causes (Miller & Ross, 1975). In other words, positive events are thus attributed to internal characteristics (e.g., personal skills or efforts) and negative outcomes are attributed to external causes (Miller & Ross, 1975; Weiner, 1985). This behaviour is referred to as self-serving attribution (Bettman & Weitz, 1983; Miller & Ross, 1975).

The application of internal and external attributions within public statements has been well documented in earlier studies (Baginski et al., 2000; 2004; Barton & Mercer, 2005; Bettman & Weitz, 1983; Chen et al., 2016). It is observed that many managers tend to engage the attribution strategies in order to sway the perceptions of market participants (Barton & Mercer, 2005; Kimbrough & Wang, 2014). One study (Kimbrough & Wang, 2014) argued that managers seemed to provide self-serving attributions in earnings press releases, as a way of managing the investors' perception of the firm's good and bad performance. In fact, earnings forecast reporting could also be biased or unbiased (Merkl-Davies & Brennan, 2007). In this regard, it is difficult for investors to distinguish between scrupulous and unscrupulous managers (Lev, 2003).

Returning to the management earnings forecast disclosures, it has been noted that forecast attribution is associated with unfavourable outcomes (Baginski et al., 2000) and maximum forecast forms (Baginski et al., 2004). Prior empirical research (Baginski et al., 2004) noted that earnings forecast disclosure is frequently accompanied by external attributions. In practice, managers rarely attribute their earnings disappointments to internal causes (Chen et al., 2016). It is possible that when managers expect upcoming earnings to be disappointing, they would initially seek out the causes, whether internal or external. However, if the negative outcome is associated with internal causality, the managers might not be willing to disclose their private information. In other words, managers may be bias in issuing earnings forecasts, based on internal and external causality. Despite the extent of studies conducted, prior empirical studies (Baginski et al., 2000; 2004) have not been able to clearly present managers' intent on manipulating the attributions. Therefore, the current study aims to fill the gap by investigating whether or not self-serving attribution bias impacts the manager's propensity to disclose negative earnings forecasts.

Based on the attribution theory, this study posits that the likelihood of issuing an earnings forecast[1] is influenced by the self-serving attribution bias (internal versus external), especially following an earnings disappointment (i.e., negative news). With unfavourable outcomes, managers with internal self-serving bias are less inclined to issue earnings forecasts. Thus, the second hypothesis is as follows:

H_2: Given the unfavourable future earnings, managers are less likely to disclose management earnings forecast due to internal attribution as compared to external attribution.

[1] In this study, attribution is concerned with managers' internal or external attribution (i.e., the research participants) rather than the organisations' attribution.

2.4 *The Joint Effect of Accounting Knowledge and Self-serving Attributions*

The asymmetric payoff to release positive versus negative news is one motivation for managers to abstain from offering voluntary disclosures. Motivated reasoning mechanisms affect personal involvements, including searching for information, creating a representative of the situation, overweighting on evidence, or the reconstruction of information that supports the JDM (Kunda, 1990; Kundra & Sinclair, 1999). Therefore, people may be bias in their evaluation of the information that is related to the disappointed performance. As mentioned earlier, given the missed market expectations, directional motives could induce the managers into withholding unfavourable earnings information so as to fit into their preference but accuracy motives may mitigate the managers' propensity to omit the bad news information. Therefore, earnings forecast disclosure decisions may depend on the individual's preference.

According to the concept of knowledge content, the individual's accounting knowledge is constructed through his/her prior training and constructive learning. Therefore, people with high accounting knowledge would employ knowledge contents in their JDM. People with greater accounting knowledge have the educational background highlighting the importance of accounting information and accountability. Thus, they are more likely to be concerned about stakeholders than self-preferences. Even though the cause of a disappointing performance may be due to internal or external factors, these individuals would be more willing to voluntarily disclose negative earnings information to the stakeholders, such that actions are brought to light for exhibiting transparent operations and accountability. Consistent with the motivated reasoning framework (Kunda, 1990; Kundra & Sinclair, 1999), accountability to a party with a known view, will have positive effects on the JDM (Bonner, 2008).

Because of the individual's diverse knowledge due to the individual's background and exposure, it can be deduced that people with less accounting knowledge are more influenced by their own preferences. Self-serving attribution bias emerges when the nature of information diverges from the ego-defensive motives (Miller & Ross, 1975). Individuals will attribute favourable performances to internal factors (self-enhancing), and unfavourable outcomes will be attributed to external factors (self-protective). In other words, individuals prefer to choose the factor that can support their motives. When an earnings forecast is disappointing, these individuals are more likely to seek and refer to external factors that align with their preferences, in support of their failures.

The current study expects that managers with high accounting knowledge are more likely to issue earnings forecasts because they are aware of the importance of full and fair disclosure of information that is relevant to the decision-making processes of capital market participants. Managers with high accounting knowledge are expected to be aware of their accountability to different parties who use the accounting information to make important decisions. Thus, with high accounting knowledge, the likelihood of issuing earnings forecasts among such individuals should be strong, regardless of the internal or external attributions. Attributions should only produce an insignificant difference. In contrast, managers with low accounting knowledge are expected to over-attribute the unfavourable outcomes to internal causes. Thus, less knowledgeable managers who are bias towards the internal attribution are less likely to issue disappointing earnings forecasts than those with external attribution bias (and low accounting knowledge). Based on this, the hypothesis is formulated as:

H_3: Given the unfavourable future earnings, the difference between the likelihood of managers with low and high accounting knowledge issuing management earnings forecast is greater under the internal attribution than under the external attribution.

3. Research Methodology

3.1 Participants

The participants in this study were 60 Master of Business Administration (MBA) and Master of Accounting (MACC) students in Thailand. There were managers, directors, vice presidents, audit managers, analysts and consultants within this group. The demographic characteristics of the participants and their descriptive statistics are shown in Table 1. Two participants were excluded because they failed the manipulation check questions, leaving the final sample to be 58 participants, comprising 32 MBA students and 26 MACC students. The MBA participants were categorised as low accounting knowledge and the MACC participants were categorised as high accounting knowledge.[2] Of these, 17 participants (29.31 per cent) had previously invested in individual common stocks.

The descriptive statistics shown in Panel B indicate that, on average, those from the low knowledge group have completed 2.75 accounting courses, and those in the high accounting knowledge group have completed 10.15 accounting courses ($p = 0.00$). However, the number of finance and business strategy courses are insignificantly different between the low and high accounting knowledge groups ($p = 0.20$ and $p = 0.19$, respectively). Thus, the results indicate that the MBA and MACC participants differ only in their accounting knowledge. The mean work experience between the two groups of participants – low accounting knowledge group (6.52 years) and high accounting knowledge group (6.21 years), is also insignificantly different ($p = 0.39$).

To ensure that all participants understand the function and influence of management earnings forecasts on capital markets, and that they have sufficient knowledge to complete the required task, the participants' management earnings forecast knowledge, is also tested through a post-experimental questionnaire which has been adapted from Wang and Tan (2013). The questionnaire is further reviewed for validity by an assistant Vice President who is related to a listed company in Thailand. The questionnaire asks eight questions which focus on the effects of earnings forecasts disclosures (or omission). For example, question (1) asks about management earnings forecasts disclosures influencing analysts' earnings forecast revisions; question (2) asks about the lower or higher management earnings forecasts disclosures vis-à-vis the actual earnings numbers affecting the company's stock price; and question (3) asks about the omission of management earnings forecasts disclosures adversely affecting the management's reputation and transparency. Responses to these questions are based on an 11-point (0-10) Likert scale, where 0 denotes strongly disagree and 10 strongly agree. The participants, whose average score is below the midpoint (i.e., 5), are excluded from further analysis.

The results indicate that the participants in both groups realise the significance of management forecasts disclosures, and their implications ($p = 0.00$ in all the eight post-experimental questions). Panel B of Table 1

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[2] Seventy per cent of participants with low accounting knowledge hold a non-business undergraduate degree (e.g., engineering, psychology, pharmacy, etc.) and have had no work experience in accounting.

Table 1: Demographic Characteristics and Descriptive Statistics

Panel A: Total sample

	N	%	Accounting Knowledge	
			Low	High
Initial sample	60		34	26
Less: Failed manipulation/ Incomplete questions	(2)		(2)	–
Final sample	58	96.67	32	26
Gender: (Male/Female)				
Male	21	36.21	17	4
Female	37	63.79	15	22
Investment experience				
Yes	17	29.31	15	2
No	41	70.69	17	24
Percentage of participants who had previously invested in common stocks	46.88	7.69		

Panel B: Descriptive statistics – Mean (S.D.)

	Accounting Knowledge (N=58)		t-statistics	p-value[a]
	Low	High		
Years of work experience	6.52 (1.92)	6.21 (5.32)	0.28	0.39
Management forecast knowledge score	8.03 (0.90)	7.96 (0.94)	0.29	0.39
Background knowledge:				
Number of accounting courses	2.75 (1.46)	10.15 (6.64)	-5.57	0.00***
Number of finance courses	1.90 (2.06)	2.34 (1.87)	-0.85	0.20
Number of business strategy courses	0.75 (1.50)	1.08 (1.32)	-0.88	0.19

Note: [a] One-tailed equivalent. ***, **, and * denote 1%, 5% and 10% significance levels, respectively.

also shows that the mean response of the management earnings forecasts knowledge is insignificantly different between the low and high accounting knowledge groups (8.03 and 7.96, respectively; $p = 0.39$, one-tailed). The results further indicate that even though the MBA students (low accounting knowledge) have taken fewer accounting courses than the MACC students (high accounting knowledge), they are like the other group. Both groups have adequate knowledge about management earnings forecasts which helped them to complete their tasks.

3.2 Research Design and Procedures

This study employs a 2x2 between-subjects design. The participants are randomly assigned to the attributions (internal or external), which act as an independent variable. They are then assigned as the low-high accounting knowledge groups. This experiment–study[3] is administered in two parts. The first part presents the background information and summarise the financial data of We Electronics — a hypothetical company listed in the technology industry. The manipulations are introduced in the second part. The additional information describes the cause of the management earnings forecasts (attribution manipulation), the analysts' consensus forecasts and the last quarter's actual earnings (constant numbers of earnings benchmark), and the company's disclosure policy, which emphasise on financial transparency and good corporate governance. Participants are assumed to be holding the posts of executive managers and are given the decision-making authority to disclose or withhold management earnings forecasts information.

Prior to the experiment, participants are informed of the purpose of the study and the required tasks. They are also required to sign a consent form, if agreeable. They are then handed the first envelope (Envelope 1), which contain one of the two attribution-based case materials (internal and external attribution) with questions given on the likelihood of management earnings forecasts disclosures. Upon completion, the first envelope is collected and the second envelope (Envelope 2), containing two sets of questions — manipulation checks and debriefing — is distributed. The second envelope is collected upon

[3] This study was conducted with strict review by the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University. The participants were protected from harm, and the information was kept confidential. There was minimal risk involved in participating in this study.

completion, and the third envelope (Envelope 3) is distributed. The third envelope contains the post-experimental questionnaire for knowledge test and the demographic questions. The entire task lasts 30 minutes, and participants are each given a 100-Baht (1 USD = THB 33) Starbucks complimentary card for participating.

3.3 Independent and Dependent Variables

Participants randomly receive the explanation which states that either the internal or external factors have caused the management's expected earnings (THB 0.90) to be lower than the previous quarter's earnings figure, and the analysts' consensus earnings forecasts (THB 1.10). The internal and external attributions are based on prior studies of attribution locus (Chen et al., 2016). In order to validate the instrument, all the case materials used in this study are pilot tested with 43 other graduate students who do not participate in the main study. The instrument is modified and refined before it is used in the actual experiment.

For the internal attribution, the lower earnings forecast is largely attributed to the company's marketing initiatives. For the external attribution, the lower earnings forecast is largely attributed to the main competitor's new marketing activity. The participants in all the conditions are asked to respond to a dependent variable by indicating the likelihood of issuing a quarterly earnings forecast. Responses are based on an 11-point Likert scale, where 0 denotes, 'not at all likely' and 10 denotes, 'extremely likely'.

3.4 Covariate Variable

Previous behavioural research (Bonner, 1990; Bonner & Lewis, 1990; Libby & Luft, 1993) in accounting have focussed on the effects of accounting knowledge and years of work experience on performance in the accounting setting. Libby and Luft (1993) noted that individuals with more work experience made better task-related decisions than their counterparts with less work experience. This fact is attributable to the former's higher knowledge store. The current study posits that knowledge and work experience affect the decision-making process differently. To mitigate the confounding effect of work experience on knowledge content, this study thus controlled the years of work experience for the two groups of participants. In addition, this study also uses a laboratory experiment to investigate the effects of the accounting knowledge (low versus high) on managers' JDM, with regards to voluntary earnings forecasts disclosure.

4. Results

4.1 Manipulation Checks

In the manipulation checks, respondents are instructed to answer an 11-point Likert scale (-5 to 5) on the source of attribution, with regards to the management earnings forecast, where -5, 0 and 5, would respectively denote internal attribution, neutrality and external attribution. The mean responses are -0.61 for the internal attribution and 2.63 for the external attribution ($p = 0.00$, one-tailed). The results also indicate that participants are aware that the company's marketing initiative is associated with the internal attribution and the main competitor's new marketing activity was associated with the external attribution. Thus, the manipulation checks are successful.

For attention checks, participants are asked two questions which are related to the earnings forecast numbers in the case materials. They are asked to specify whether the given management earnings forecast is above or below the earnings benchmark (i.e., the previous quarter's earnings figure and analysts' consensus earnings forecast). The results show that as many as 97 per cent of the participants answered both questions correctly.

4.2 Hypothesis Testing

In Table 2, Panel A presents the descriptive statistics for the likelihood of issuing a quarterly management earnings forecast, given the low/high accounting knowledge and the internal/external attributions. In Panel B, the two-way ANOVA results show that the simple main effect of accounting knowledge on the likelihood of earnings forecast disclosure, is statistically significant ($p = 0.01$). The mean likelihood of issuing a management earnings forecast for the high accounting knowledge is greater than that of the low accounting knowledge (mean responses = 8.12 and 7.00, respectively). Therefore, the findings are consistent with H_1 – that high accounting knowledge managers are more likely to disclose their unfavourable earnings forecasts than low accounting knowledge managers.

H_2 predicts that the managers are less likely to disclose management earnings forecasts when they resulted from internal causes rather than from external causes. Panel A in Table 2 indicates that the mean responses of the likelihood of issuing management earnings forecast in the presence of internal or external attribution, are 7.25 and

Table 2: The Likelihood of Issuing Management Earnings Forecast

Panel A: Descriptive Statistics – Mean (Standard Deviation)

Accounting Knowledge	Attribution		
	Internal	External	Total
Low	6.33 (2.26) N = 15	7.59 (1.77) N = 17	7.00 (2.08) N = 32
High	8.31 (1.25) N = 13	7.92 (1.19) N = 13	8.12 (1.21) N = 26
Total	7.25 (2.09) N = 28	7.73 (1.53) N = 30	7.50 (1.82) N = 58

Panel B: Two-way ANOVA

Sources	Sum of Squares	Df	Mean Square	F-statistics	p-value
Knowledge	19.20	1	19.20	6.59	0.01**
Attribution	2.75	1	2.75	0.94	0.34
Knowledge x Attribution	9.70	1	9.70	3.33	0.07*
Error	157.42	54	2.92		

Panel C: Contrast Tests

Sources	Mean Difference	t-statistics	p-value[a]
The effect of internal attribution			
Knowledge – Low vs. High	-1.98	-3.06	0.00***
The effect of external attribution			
Knowledge – Low vs. High	-0.33	-0.53	0.30
One-way ANOVA: F = 3.61, p-value = 0.02**			

Note: Dependent variable = the likelihood of issuing management earnings forecast. Participants were asked to specify the likelihood of issuing management earnings forecast using an 11-point (0-10) Likert scale, where 0 and 10 respectively denote not at all likely and extremely likely. Total likelihood is 100%. [a]One-tailed equivalent. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.

7.73 respectively. Panel B shows that the effect of the attribution on the likelihood of management earnings forecast disclosure, is insignificant ($p = 0.34$). These findings indicate that the likelihood of issuing management earnings forecasts is the same, regardless of whether the cause is internal or external. This outcome is inconsistent with the expectations of H_2. It means that the self-serving attributions do not impact on the willingness of the managers to voluntarily disclose future earnings information.

H_3 expects that the difference between the likelihood of issuing management earnings forecasts by managers with low and high accounting knowledge, under the internal attribution, is greater than that of the external attribution. In Table 2, Panel B shows that the joint effect of accounting knowledge and self-serving attributions, are marginally significant ($p = 0.07$). Panel C shows the one-way ANOVA contrast test results between the attributions (internal and external) and low and high accounting knowledge. Under the internal attribution, the mean responses are 6.33 and 8.31 respectively, for the low and high accounting knowledge ($p = 0.00$, one tailed). Under the external attribution, the mean responses are 7.59 and 7.92 respectively, for the low and high accounting knowledge ($p = 0.30$, one tailed). These findings are consistent with H_3. Figure 1 illustrates the joint effect of accounting knowledge (low and high) and self-serving attributions (internal and external) on the likelihood of issuing management earnings forecasts.

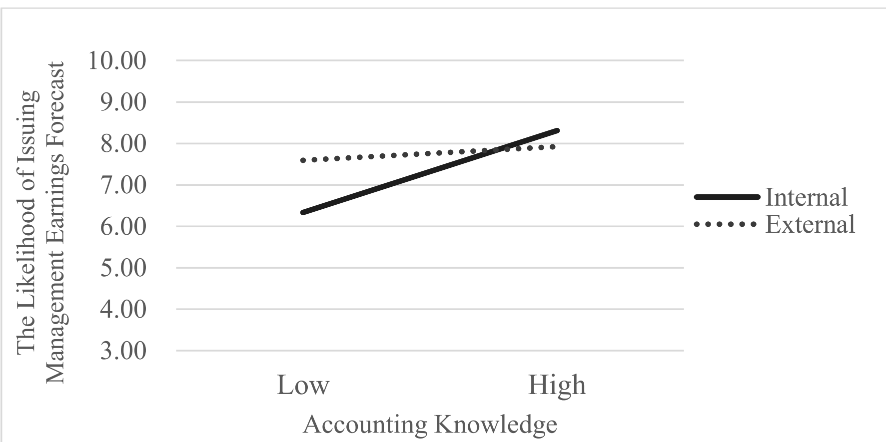

Figure 1: The Joint Effect of Accounting Knowledge and Self-Serving Attributions on the Likelihood of Issuing Management Earnings Forecasts

Recalling that this study focusses on accounting knowledge and years of work experience and their impact on the individual's performance when completing accounting tasks, an ANCOVA test is conducted so as to mitigate this confounding effect. The test is accomplished by using accounting knowledge and attributions as the independent variables, years of work experience as a covariate, and the likelihood of issuing management earnings forecast as a dependent variable.

Table 3 shows the results of the ANCOVA which indicate that the main effect of accounting knowledge is statistically significant (p = 0.01) and the interaction effect of accounting knowledge and attribution is marginally significant (p = 0.08). However, the effect of years of work experience on the likelihood of issuing management earnings forecast is not significant (p = 0.29). These results suggest that after controlling years of work experience, the effect of accounting knowledge confirm the main findings.

Table 3: The Likelihood of Issuing Management Earnings Forecasts

Panel A: Two-way ANCOVA – Years of working experience = a covariate

Sources	Sum of Squares	Df	Mean Square	F-statistics	p-value
Knowledge	19.83	1	19.83	6.82	0.01**
Attribution	3.09	1	3.09	1.06	0.31
Knowledge x Attribution	9.59	1	9.59	3.30	0.08*
Experience (covariate)	3.30	1	3.30	1.13	0.29
Error	154.12	53	2.91		

Note: Dependent variable = the likelihood of issuing management earnings forecasts. The participants were asked to specify the likelihood of issuing management earnings forecast using an 11-point (0-10) Likert scale denoting 'not at all likely' to 'extremely likely'. Total likelihood is 100%. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.

4.3 Additional Analysis

4.3.1 Debriefing

In general, managers have their own personal preferences and concerns with regards to the disclosure of earnings forecasts (Aboody & Kasznik, 2000; Hirst et al., 2008; Kothari et al., 2009; Wang & Tan, 2013). In the current study, participants are asked to respond to six additional post-experimental Likert-scale questions (debriefing questions) which emphasise on the ramifications associated with their disclosure and non-disclosure decisions. The debriefing questions are on an 11-point (0-10) Likert scale, where 0 denotes, 'not at all concerned' and 10 denotes, 'extremely concerned'.

A correlation analysis (untabulated) indicates a high correlation between the six debriefing questions. Therefore, the principal component analysis (PCA) is used to organise the variables into the same construct. The untabulated PCA results indicate three constructs, consisting of market expectation, reputation and forecast accuracy concerns (chi-square = 44.20, p = 0.00, eigenvalues = 1.72, 1.63 and 1.13, respectively). The three constructs are further analysed.

Table 4 tabulates the planned comparison results of the degrees of consideration regarding the ramifications associated with the disclosure and non-disclosure decisions. The low accounting knowledge group exhibits a significantly lower concern for forecast accuracy than the high accounting knowledge group (p = 0.02, one-tailed). In contrast, the market expectation and reputation constructs are insignificantly different between the low and high accounting knowledge groups (p = 0.34 and 0.15, one-tailed, respectively). Overall, the results show that

Table 4: The Effect of Consideration on the Ramifications Associated with Disclosure Decisions between Low and High Accounting Knowledge

Descriptive – Mean (Standard Deviation) and Planned Comparisons

Considerations	Accounting Knowledge		t-statistics	p-value[a]
	Low	High		
Accuracy	5.91 (1.52) N = 32	6.83 (1.69) N = 26	-2.18	0.02**
Market expectation	6.73 (1.50) N = 32	6.52 (2.38) N = 26	0.42	0.34
Reputation	6.70 (2.42) N = 32	7.29 (1.74) N = 26	-1.03	0.15

Note: The two groups of participants were asked to specify their degree of consideration with regard to market expectations, reputation and forecast accuracy using an 11-point (0-10) Likert scale, where 0 and 10 denote 'not at all concerned' and 'extremely concerned', respectively. [a]One-tailed equivalent. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.

the group with low accounting knowledge is less likely to issue earnings forecasts, and they express less concerns with regard to the accuracy of the forecasts, as compared to those with high accounting knowledge. The findings are consistent with prior evidence. This indicates that some managers intend to issue biased earnings forecasts to meet or beat market expectations (Aboody & Kasznik, 2000; Wang & Tan, 2013).

4.3.2 Forecast Horizon

Forecast horizons play a role in earnings forecast bias, such that quarterly earnings forecasts tend to be more pessimistically biased than longer-term forecasts (Rogers & Stocken, 2005). As a result, this study also performs an additional test to examine the effect of self-serving attributions and accounting knowledge on the likelihood of issuing a longer-term management earnings forecast (half a year). Participants are asked the likelihood of issuing an earnings forecast on a half-year basis, using an 11-point (0-10) Likert scale question, where 0 denotes, 'not at all likely' and 10 denotes, 'extremely likely'. The untabulated results suggested that accounting knowledge and attributions have no significant effect on the extended forecast horizon (F statistic = 1.16, p = 0.33).

5. Discussion and Implications

Previous studies have noted non-mutually conclusive results between bad news and disclosure behaviours. Some studies (Kasznik & Lev, 1995; Skinner, 1994) argued that bad news motivated the managers to disclose information early due to the potential for litigation, and the impact on reputation. Other studies (Graham et al., 2005; Kothari et al., 2009) agreed that managers withhold or delay bad news for as long as possible because of their own career concerns or self-interests. The findings of this study have shown that the likelihood of managers issuing bad news earnings forecast varied according to the individual's accounting knowledge. Managers with high accounting knowledge are willing to disclose their private information while managers with low accounting knowledge tend to apply strategic disclosure behaviour by withholding future earnings failure. The current results contribute to prior literature in that it shows that managers' accounting background knowledge is one of the characteristics that has an important role in influencing the managers into making voluntary disclosures, particularly when the news is bad. Prior research (Nelson, 1993; Rose & Rose, 2008) has indicated that one's accounting knowledge affects one's judgment and one's ability to do accounting-related tasks and the outcome drawn from this study certainly supported the claim that accounting knowledge benefits voluntary disclosure decisions. The emphasis of equality and fairness in financial reporting, and the importance of being accountable to all the stakeholders, should be contained within the contents of all basic accounting courses because this is one way to raise the consciousness of accounting students into being an accountable professional. This quality can enhance the managers' willingness to voluntarily disclose the significant information to their market investors.

This study also provides evidence which shows the effect of self-serving attribution on the management's judgment and disclosure decision. The findings further indicate that managers' willingness to issue earnings forecasts is not affected by the internal or external attribution. Psychology literature (Gurevich et al., 2012) on attribution has suggested that causal attribution plays a role in the aforementioned decision; causal attribution deviates from such decisions as stated in the game theory prediction which involves sharing gains between parties. Nonetheless, the results of this study are not congruent with Libby and Rennekamp (2012) who had observed that individuals engaged in the self-serving attribution bias by relating their favourable performance to internal factors and their unfavourable performance to external factors. This study also provides evidence which shows that the JDM is not affected by causal attribution. Therefore, as decision makers, managers do not engage in self-serving bias when making decisions regarding voluntary disclosure. The results generated from this study may be explained by how the response variable in the task was measured. Since participants are asked to indicate their likelihood of issuing a management earnings forecast, not a specific forecast number, their responses could not be determined to be right or wrong outcomes. In sum, this study also expands on prior literature by highlighting that self-serving attributions do not influence the individual's judgment and decision-making when the consequent outcome cannot be measured or justified.

When focusing on the interactive effects of accounting knowledge and attribution, this study observes that these factors jointly influence the manager's willingness to issue earnings forecasts. Specifically, the effect of self-serving attribution bias on the likelihood of issuing management earnings forecast is conditional on the manager's level of accounting knowledge. Low accounting knowledge managers engage in self-serving bias that referred to the internal causes of future earnings failures; they also produce strategic disclosures by withholding information. On the other hand, when facing an external cause of future earnings failures, low accounting knowledge managers are more willing to disclose their future earnings failure because they can attribute the earnings failure to an external cause. However, self-serving attribution bias does not seem to have the same effect on high accounting knowledge managers. In this regard, the likelihood of high accounting knowledge managers issuing future earnings information in the presence of either the internal or external factors, remained intact. This study combines the findings noted in motivated reasoning and attribution literature by providing evidence to show that accounting background knowledge can guide the decision maker's judgment into following accuracy motives, and into providing the timely disclosures of bad news earnings forecasts. Even though the effects of the internal and external causes could not be equally weighed, based on the individual's perception (Miller & Ross, 1975), the outcome of this study extends previous findings, in that the impact of self-serving attribution bias was contingent on the individual's background knowledge. The level of accounting knowledge helps to mitigate the self-serving attribution bias, such that managers with high accounting knowledge are less inclined to attribute bad results to internal causes. They are, however, more likely than those with low accounting knowledge, to disclose earnings forecasts, regardless of the results or causes. Therefore, the findings of this study contribute to existing attribution literature by zooming in on the relationship between accounting knowledge and self-serving attribution, both of which could be applied to make voluntary disclosure decisions.

Previous behavioural literature (Libby & Luft, 1993) in accounting have suggested that more accounting knowledge and more years of work experience contribute to better decision-making in accounting tasks. From the additional analysis conducted, this study is also able to mitigate the confounding effect of knowledge and experience on management disclosure decisions. The variable of years of work experience is used as a covariate. The results confirm the main findings. In addition, this study also examines the effects of accounting knowledge and self-serving attribution on the likelihood of issuing a longer-term management earnings forecast (i.e., half a year). The results also show that accounting knowledge and self-serving attribution have no significant impact on the extended forecast horizon. The current findings are, thus, consistent with previous findings which asserted that managers tend to disclose bad news forecasts early in the short-term forecast horizon (quarterly) instead of the longer-period forecast horizon. Overall, the findings of this study potentially contribute to both the voluntary disclosure literature and related regulations involving forward-looking information.

6. Conclusions and Limitations

This experimental study investigates the effects of accounting knowledge (low and high) and self-serving attribution (internal and external) on the likelihood of issuing quarterly management earnings forecasts. The attribution accounted for is either internal or external, and the level of accounting knowledge is low or high, proxied by the MBA (low) and MACC students (high), whose accounting background knowledge is statistically different.

The results reveal that the level of accounting knowledge influences the managers' decision to disclose earnings forecasts when facing future earnings disappointment. High accounting knowledge managers are more likely to disclose earnings forecasts. The likelihood of managers issuing earnings forecasts do not differ, whether the cause is attributed to the internal or external factor. However, accounting knowledge and self-serving attribution have a joint effect on the managers' willingness to issue earnings forecast. Low accounting knowledge managers impose more bias on earnings forecast; they are less likely to issue earnings forecast when the results are attributed to internal causes. However, high accounting knowledge managers are more likely to issue future earnings information, regardless of the causes (internal or external). Despite controlling the years of work experience as the covariate, the results are still robust.

This experimental study, however, encountered three limitations. First, this study evaluates the accounting knowledge of the participants based on the number of accounting courses taken, rather than on the results of an accounting knowledge test. However, this weakness is supported by an experimental methodology that contained tight controls (e.g., control for years of work experience and business and finance knowledge). Second, this study does not take into account the impact of forecast frequency. Instead, it is restricted to a single forecast frequency (i.e., quarterly forecast). Subsequent research could investigate the moderating effect of forecast frequency on the likelihood of issuing management earnings forecasts. Third, this study does not investigate the impact of accounting knowledge on the level of earnings forecast accuracy. Future research could explore whether managers with high accounting knowledge or a stronger background, produce more accurate earnings forecasts or put less bias on earnings forecasts.

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Appendix: Experimental Materials

Definition of Management Earnings Forecast

Management earnings forecast is a voluntary managerial disclosure concerned with a firm's expected performance prior to actual performance announcement. Issuance of earnings forecast is voluntary (i.e. not required by law).

PART 1
BACKGROUND INFORMATION

We Electronics Public Company Limited (hereafter, "*We Electronics*" or "the Company") is a leading electronics parts manufacturer and distributor. The core products include circuit boards, electric circuitry, automotive electronics and electronic instruments. Domestic sales account for 60 per cent of its revenue and the remaining 40 per cent from exports to the European market. *We Electronics*' business has grown steadily over the last five years, and its stocks are traded on the Stock Exchange of Thailand (SET). However, the Company is facing fierce competition from other players in the industry.

Table A1: We Electronics' Earnings History

Annual Income Statement (partial)	(in million baht, except per share data)		
Year Ended	2014	2015	2016
Net Sales	9,294	11,284	12,449
Gross profit	2,451	3,567	3,914
Net Income	1,574	1,923	2,240
Earnings Per Shares (EPS)	3.60	3.90	4.10

Management Earnings Forecasts of We Electronics

The forecast division has provided you with the earnings forecast information for the first quarter of 2017 (Q1 of 2017) for consideration. The quarterly earnings forecast is estimated based on the financial models that incorporate historical earnings patterns and other information. The financial consultant believes that the estimated earnings for the first quarter of 2017 would be realised at the 95 per cent confidence level. *The expected earnings per share (EPS) for the first quarter of 2017 is 0.90 Baht*. (1 USD = THB 33)

PART 2
ADDITIONAL INFORMATION ABOUT WE ELECTRONICS

Analysts' Consensus Forecasts for We Electronics

Because of the Company's continuous historical growth and interests from investors, *We Electronics* has attracted a following by certain financial analysts. The analysts have a positive view of the company's growth, and *the analysts' consensus* earnings per share (EPS) forecast for the first quarter of 2017 is *1.10 Baht*.

Management Earnings Forecasts of We Electronics

The additional information for the first quarter earnings forecast (Q1 of 2017) is as follows:

	Actual earnings of the last quarter of 2016	Expected earnings for Q1 of 2017	Change
Earnings Per Share (THB)	1.10	0.90	(0.20)

Attribution Manipulation

Internal Attribution Condition

The company expects the earnings per share (EPS) for the first quarter of 2017 to be *below* last quarter's actual earnings, which could *largely be attributed to the company's marketing initiatives*. The main competitor's new marketing activity plays a negligible role in the company's earnings expectation.

External Attribution Condition

The company expects the earnings per share (EPS) for the first quarter of 2017 to be *below* last quarter's actual earnings, which *could largely be attributed to the main competitor's new marketing activity*. The company's marketing initiatives play a negligible role in the company's earnings expectation.

Response Variable Sheet

Based on the aforesaid information about We Electronics Public Company Limited, please answer the following questions.

As an executive manager of *We Electronics*, you are likely to "*publicly issue management earnings forecast*" for the first quarter of 2017. Please response with slash (/) on the provided line that most describes your thought or opinion.

0	1	2	3	4	5	6	7	8	9	10
Not at all Likely										Extremely Likely

Effect of Financial Information and Corporate Social Responsibility Disclosure on Investment Decision: Evidence from an Experimental Study

Hijroh Rokhayati*, Ertambang Nahartyo and Haryono

ABSTRACT

Manuscript type: Research paper
Research aims: This research is based on an experiment which is conducted to examine the effects of financial information and corporate social responsibility (CSR) disclosure on investment decision.
Design/Methodology/Approach: The research employs the laboratory experiment design which involves 45 graduate students as subjects. The independent variable, financial information, is manipulated by favourable and unfavourable financial information while the CSR disclosure is manipulated by prevention focus and promotion focus. The dependent variable, investment decision, is manipulated by using the 10-point Likert scale. Subjects are randomly assigned to one of four treatments (favourable or unfavourable financial information and promotion focus or prevention focus of CSR disclosure).
Research findings: The results show that CSR disclosure affects investment decision. The results also show that subjects decide on

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greater investments when the CSR disclosure is with a prevention focus.
Theoretical contribution/Originality: By investigating the effect of financial information and CSR disclosure on investment decision, this research has effectively used the CSR disclosure strategy to determine investment decision. This research contributes to extant literature by highlighting that CSR disclosure based on regulatory focus can be more effective for investment decision, especially when it has a prevention focus. This persuades investors to make their investment decision.
Practitioner/Policy implication: The findings of the current research show that investors make greater investments in financial information and CSR disclosure with a prevention focus. The findings of this research will encourage firms to disclose their CSR activities by taking into consideration the situational aspects, based on the prevention focus that emphasises on avoiding social and environmental negative effects.
Research limitation/Implications: This research only examines the situational focus of regulation on investment decision. Future research can examine the effect of chronic regulatory focus on investors.

Keywords: Financial Information, Corporate Social Responsibility, Regulatory Focus Theory, Experimental Design, Investment Decision
JEL Classification: M41

1. Introduction

Corporate social responsibility (CSR) has been widely studied by researchers (McWilliams & Siegel, 2001) due to its prevalence in the corporate world. Companies practise CSR voluntarily, as a form of compliance with social obligations that go beyond the legal requirements (McWilliams & Siegel, 2001). The expanding demand of CSR has resulted in many companies reporting their voluntary CSR activities which emphasise on environmental and social issues. Investors believe that CSR is an important factor for business success and many investors equate the CSR performance of companies as a performance measure. Consequently, studies (Eccles, Serafeim, & Krzus, 2011) are done to understand if the market would be interested in using non-financial information, including the disclosure of companies' social and environmental performance, to make investment decisions.

Over the years, the voluntary disclosure of companies' CSR activities has been increasing (Dhaliwal, Li, Tsang, & Yang, 2014). This shows the increased practice of transparency among companies. In the voluntary disclosure literature, many studies (e.g. Jensen & Meckling, 1976; Healy & Palepu, 2001) have argued that the agency theory is the main motivation for companies to report on CSR, with a view that companies disclose information to signal their good performance. Yet, there are conflicting findings with regards to the relationship between CSR disclosure and firm value. Some studies (Al-Tuwaijri, Christensen, & Hughes Ii, 2004; Clarkson, Fang, Li, & Richardson, 2013; Plumlee, Brown, Hayes, & Marshall, 2015) indicated a positive relationship between disclosure and firm value. These studies highlighted that CSR was positively received by investors although there were no future cash flows. This indicates that investors believe in companies that are involved with CSR activities. They also perceived these to bring in positive social benefits. There are also studies (Cho, Michelon, Patten, & Roberts, 2015; Clacher & Hagendorff, 2012) which observed that disclosure was not in line with firm values and investors do not pay attention to the CSR disclosure. In one experimental test, there was evidence to show that explicit CSR assessments made investors estimate the fundamental firm values to be lower as compared to implicit CSR assessments (Elliott, Jackson, Peecher, & White, 2014). Other researchers (Kolstad, 2007) noted that CSR activities were viewed as reducing shareholders' welfare to accommodate social purposes.

Since previous research has been inconclusive, further investigation is necessary so as to examine the effect of CSR disclosure on investors' investment decisions. In making a decision, an individual always considers various alternatives and preferences (Bonner, 1999). It is believed that CSR disclosure will give a different corporate value, depending on the effectiveness of the CSR disclosure. The understanding of the effect of CSR disclosure, therefore, is a critical issue. The current research aims to address this gap by experimentally examining the effects of financial information and corporate social responsibility (CSR) disclosure on investment decision. For this purpose, the regulatory focus theory is applied. This study aims to examine the differences of CSR disclosure effect by using two factors – promotion focus and prevention focus, and their effect towards the decision-making process of investors. It also investigates the role of CSR disclosure as a moderator between financial information and investors' decision-making. The current research is conducted using a laboratory experiment focusing on inter-variable causality aspects.

This research provides three contributions. First, it takes into account the regulatory focus theory for explaining the motivation factors underpinning investors' judgement and decision-making. The regulatory focus theory can predict and explain aspects of the individuals' motivation in achieving their goals by distinguishing between promotion focus (orientation in expectation fulfilment, ideal condition, improvement and advancement) and prevention focus (orientation in obligation fulfilment, responsibility, safety and security), as recommended by Higgins and Cornwell (2016). Individuals with a promotion focus are expected to be more sensitive to the presence or absence of gains; they tend to direct their behaviour towards accomplishment. In contrast, individuals with a prevention focus are expected to be more sensitive to the presence or absence of loss, thus they direct their behaviour towards protection, security and responsibility. While the presence of promotion and prevention focus are indicated in the investment evaluation contexts, there is still a lack of studies that have attempted to tie this theory with CSR and investment decision. Second, this research contributes methodologically by conducting an experimental method to test CSR disclosure. Given the unavailability, quality and reliability of archival CSR data, it is believed that experiments will stand out as a better method to understand the CSR disclosures and their consequences on investors' decision-making (Moser & Martin, 2012). Third, this research provides practical contributions by providing evidence to highlight how CSR disclosures are related to investors' judgement. Such an understanding offers insights for managerial decisions in determining CSR disclosure strategy as a means to provide maximum benefits for companies.

This paper is structured as follows: Section 2 reviews the literature and hypotheses development. Section 3 explains the research methodology. Section 4 analyses the data, Section 5 discusses the findings and Section 6 concludes.

2. Literature Review and Hypothesis Development

2.1 Corporate Social Responsibility (CSR)

Corporate social responsibility is a form of voluntary compliance to social obligations. It goes beyond the interests of the company and the legal requirements (McWilliams & Siegel, 2001). Whilst CSR is voluntary, it has become more prevalent over the years. It appears to be used as a mechanism to motivate stakeholders and to manage societal perceptions about the role of businesses in societies and communities, a strategy that goes beyond their core function of producing and selling goods to consumers. The CSR phenomenon is instigated by the upsurge of sensitive consumers who begin demanding for more environmentally friendly products and services, which need to be produced in a sustainable way (Gauthier, 2005; Van Beurden & Gössling, 2008). This situation then led to the emerging importance of CSR disclosure (Buniamin, Alrazi, Johari, & Abd. Rahman, 2008). The CSR report contains a great deal of information, such as expenses related to environmental protection and climate change, charity donation and employees' welfare, all of which are typically not reported in the financial statements but which bear significant implications for assessing firm value (Dhaliwal et al., 2011). In a survey of the largest 250 firms worldwide conducted by KPMG in 2017, it was found that 78 per cent of the respondents indicated that they believed that CSR data are useful for investors to make decisions. However, since the CSR disclosure is voluntary, there is no specific rule to follow, thereby resulting in the various forms of information disclosure. To overcome this discrepancy, companies can use the Global Reporting Initiative (GRI) as guidance for international public and private entities that wish to produce sustainability reports. The scope of issues covered by this standard includes economic, environmental, social and governance topics (GRI, 2013).

Within today's environment, rational decision makers need sound information, which not only include financial performance but also non-financial performance, including the CSR investment measurements to enable them to make optimal decisions (Hales, Matsumura, Moser, & Payne, 2016). CSR investment measurements can be divided into costs and benefits (Sprinkle & Maines, 2010). Measurement of costs for CSR investment will be more accurate and more convenient as compared to the measurement of benefits for CSR investment. Measurement of benefits tends to be unknown and relatively subjective. However, in practice, managers often avoid the disclosure of CSR investment cost. These managers often disclose their CSR activities which benefit other parties because the managers expect a reaction from various parties, including from investors (Martin & Moser, 2016).

2.2 *Corporate Social Responsibility in Indonesia*

Over the years, the Indonesian government has been continuously introducing numerous laws and regulations. These laws and regulations require companies to engage in certain types of socially responsible behaviour (Rosser & Edwin, 2010). For example, in 2007, the local authority issued a new Limited Company Act known as UU No. 40, which requires any company using natural resources or not directly using natural resources but where their operations have effects on the environment, to undertake social and environmental responsibility activities. Under this regulation, all limited liability companies are obliged to disclose information containing environmental and social responsibility programmes in their annual reports. Another regulation, No. KEP-431/BL/2012, which was established in 2012, also requires that the annual reports of Indonesian publicly listed companies to include their CSR, which should contain labour practices, product responsibilities, social empowerment as well as policies and programmes developed for environmental performance (Ketua Badan Pengawas Pasar Modal dan Lembaga Keuangan, 2012). These annual reports, however, can be disclosed through multiple channels such as annual reports, separate sustainability reports or separate CSR reports (KPMG, 2015). Despite this phenomenon, it appears that the frequent and quality reporting of CSR in Indonesia is still below expectations. This could be due to the ineffective supporting infrastructure for CSR reporting. It also appears that Indonesian companies are not aware of this need to disclose their social activities comprehensively in their annual reports. Apparently, they are still looking at another form of report to accommodate the information of their social activities (Gunawan, 2015).

The practice of CSR has been made mandatory in Indonesia (Rosser & Edwin, 2010) but it seems that CSR practice could not be disclosed with effectiveness because it is difficult to measure (Fajar, 2018). The implementation of CSR by the Indonesian government is meant to change perceptions of the public towards such companies. It also signals a change of the public's expectations toward how companies should communicate their social and environmental related activities (Yaya, Wibowo, & Ulfaturrahmah, 2018). Although CSR practice is mandatory, the rules and regulations for implementing it have not been promulgated properly (Herrera, Roman, Alarilla, de Jesus, & Uy, 2011), and its enforcement mechanism is also weak Even though many companies have been involved in philanthropy or charitable activities, there is still a lack of integration of such initiatives with business strategies (Herrera et al., 2011). Further to this is the weak knowledge and expertise for implementing CSR. All of these have been identified as barriers to the development of CSR in Indonesia (Waagstein, 2011).

Within the literature of CSR practice in Indonesia, there are studies (Famiola & Adiwoso, 2016; Gunawan, 2015) which have highlighted the motivations propelling companies towards CSR implementation. Famiola and Adiwoso (2016) and Gunawan (2015), for example, illustrated that these motivations could be relational, institutional or community based or they could be inspired by shareholders or government pressure. In another study, Hermawan and Mulyawan (2013) found that Indonesian firms embraced CSR as a means to maintain their good reputation, rather than meeting their social responsibility towards community. In another stream of studies, researchers looked into the status of CSR implementation. Herrera et al., (2011) reported that many companies in Indonesia disclosed their CSR activities in the annual report. These companies demonstrated a high commitment towards CSR, both internally and externally, covering the triple bottom line. Likewise, Hidayati (2011) also reported that such companies have gained several benefits in terms of reputation and other competitive advantages. Juniarti's (2018) study illustrated that the development of CSR in Indonesia provided values to long-term shareholders. She argued that implementation of CSR was related to shareholders' value to companies which have low social environmental risks (high-profile companies). This applied to market-based measurements and accounting-based measurements. Smaller companies appear to be reluctant to invest in CSR, possibly because they fear it would negatively affect their corporate financial performance (Fauzi, Mahoney, & Abdul Rahman, 2007). Nonetheless, companies in Indonesia are less frequent in implementing CSR when compared to multinational companies (MNC) (Fauzi, 2008).

The review of relevant literature (Waagstein, 2011) also highlighted that even though CSR practice is mandatory, there is evidence that CSR disclosure in Indonesia comes in various manifestations, suggesting that there is no uniformity, thereby making the process of evaluating companies' values, difficult. This has made the CSR issues a prime interest among academics. While the studies offered some insights into the status of CSR practices and disclosures as well as motivations behind the move, it seems that there is a lack of study that has attempted to link CSR disclosures with investment decision by using the regulatory focus theory as framework.

2.3 Regulatory Focus Theory

Regulatory focus theory (Higgins, 1997; 1998) distinguishes two states of motivation – promotion focus and prevention focus. Individuals incline towards the promotion focus tend to have an orientation in expectation fulfilment, ideal condition, improvement and advancement. In contrast, individuals inclined towards the prevention focus have an orientation towards obligation fulfilment, responsibility, safety, and security. Individuals with a promotion focus, think of the gains or non-gains; they will be more sensitive to the presence and absence of positive results. Individuals with a focus on prevention focus think about the loss or non-loss; they will be more sensitive to the presence and absence of negative results. The inter-individual regulatory focus is different, depending on which focus is more sustainable and situational. Regulatory focus theory can be used for understanding the motivational underpinnings of judgment and decision making (Higgins & Cornwell, 2016).

Regulatory focus can be activated by manipulating the characteristics of the needs associated with promotion focus (achievement needs) and prevention focus (security needs) (Crowe & Higgins, 1997; Higgins, 2002). Another manipulation that can be used is the default target, which is a situation that leads to ideal conditions being improved for promotion focus and obligations that should be done for prevention focus (Liberman, Molden, Idson, & Higgins, 2001). Manipulation can be done by framing the message, situation, product attributes, type of decision or instruction, through the consequences of a positive result (for promotion focus) or the consequences of a negative outcome (for prevention focus) (Zhu & Meyers-Levy, 2007). Regulatory focus theory also states that there are differences in the way (means) the appropriate strategy between promotion focus and prevention focus achieve goals (Cesario, Grant, & Higgins, 2004; Higgins, 1997; Lieberman, et al., 2001). Individuals inclined towards promotion focus prefer to use eager strategic means to make sure of the presence of positive outcomes and to guard against the absence of positive outcomes. Meanwhile, individuals with prevention focus will prefer to use vigilant strategic means to avoid negative outcomes.

Psychologically, a person's decision is assessed from the perspective of the result value and effort value. The value of a decision is not only related to the final outcomes but also to the appropriate ways of achieving those outcomes. This appropriateness is called 'fit', from a new perspective on decision-making. A common strategy in decision-making is stimulating feelings when making certain choices. Based on the regulatory focus theory, one can feel the good and bad things in a different way. With regards to promotion focus, people can feel good about the success of promotions (positive presence or gain) and they likewise, feel bad about the failure of promotion (the absence of the positive-non-gain). On the prevention focus, people can feel good about the success of the prevention (the absence of a negative outcome-non-loss) or they can feel bad about the inability to prevent failures (presence of the negative result-loss) (Idson, Liberman, & Higgins, 2000).

Previous research confirms that individuals adopt a strategy that fits their motivation orientation. Research conducted at the organisational level found that a feeling-right experience that results from a match between an employee and an organisation climate, produces perceptions that the company's prevailing procedures are fair. Past empirical studies have proven that regulatory focus influences individual behaviours in terms of taxation (Holler, Hoelzl, Kirchler, Leder, & Mannetti, 2008), marketing (Cho, Loibl, & Geistfeld 2014), firm acquisition (Gamache, Mcnamara, Mannor, & Johnson, 2015), and innovation decisions (Wallace, Butts, Johnson, Stevens, & Smith, 2016).

Gu, Bohns, and Leonardelli (2013) applied the regulatory focus theory to predict how individuals achieved both relative and absolute results on the interdependence of decision-making which cannot be explained by traditional theories. They argued that the focus of security (prevention focus) directs attention to the relative yield while the focus of the promotion directs attention to the absolute results. Holler et al. (2008) examined the information campaign to improve tax compliance by using a different framing strategy. Based on this theory, it was deduced that tax compliance campaign will be effective if it was congruent with the receiver's promotion or prevention focus. The highest tax compliance was achieved when there was a regulatory fit. If the receiver's regulatory focus fitted the goal that was framed over the message, the communication process will be more effective because the information was easier to collect (Aaker & Lee, 2001; Cesario, et al., 2004).

Gamache et al. (2015) investigated whether chief executive officers' (CEOs') regulatory focus impacted the proclivity of firms in undertaking acquisition. It was believed that promotion and prevention foci are important individual differences to consider within organisational settings, particularly when investigating the effects of CEO attributes on firm strategic outcomes. Wallace et al. (2016) tested a multilevel model which examined the effects of employee involvement climate on the individual-level process which linked employee regulatory focus (promotion and prevention) to innovation via thriving. Using data collected at three points from 346 participants who were from 75 groups, the multilevel path analytic results demonstrated support for the positive indirect effect of promotion focus to innovation, via thriving, and a negative indirect effect from prevention focus to innovation, via thriving. The results further showed a positive indirect effect from employee involvement climate to innovation, via thriving.

Cho et al. (2014) tested the motivation of saving for emergencies and saving for retirement by using the regulatory focus theory too. They stated that the orientation of promotion and prevention personalities influenced the respondents' financial decision making. Zhou and Pham (2004) predicted differences in financial products which enabled promotion and prevention focus activation. The difference was caused by sensitivity to the potential advantages and disadvantages of the product. The result also demonstrated that investment behaviour was mediated by the difference in promotion and prevention orientations.

Poels and Dewitte (2008) examined behavioural prevention and promotion stimulation which directed the purpose of advertisement. The emotional approach of hope was used in the information presented by the advertisers. Their study attempted to provide insights into the mechanism of hope in influencing behaviour. Hope that comes from a state of dissatisfaction is related to the avoidance of undesired results while hope that comes from satisfying states is related to the achievement of the desired results. Related to the individual's regulatory focus, promotion focus is linked to hope for positive achievement whereas prevention focus is linked to hope for negative resultant avoidance. The study by Poels and Dewitte (2008) found that the advertisement containing prevention focus showed a better result in terms of product information memory and the resulted treatment. This is because individuals with prevention focus were found to be more vigilant and tended to focus on details. Therefore, they were more analytical towards providing information. The outcome generated by Poels and Dewitte (2008) was consistent with what Kim, Kang and Mattilac (2012) found of CSR marketing activities on consumers' behaviour. They noted that consumers were more sensitive to information with a prevention focus because it involved hope for promotion, while information with promotion focus only focussed on the promotion.

In the current research, the individual regulatory focus is situationally triggered by using specific stimulus such as framing, the disclosure of promotion focusses on gain and non-gain, or the disclosure of prevention focus on loss and non-loss. The use of gain and non-gain framing make the goal seemed optimal by emphasising gain over the success of desired result achievement. In comparison, loss and non-loss framing make the goal minimal by emphasising on the final goal achievement over the negative absence. The regulatory focus theory is used to examine decisions involving non-financial information, as recommended by Johnson, Smith, Wallace, Hill and Baron (2015). This research responds to the context of investment decisions which are related to CSR information.

2.4 CSR Disclosure and Investment Decision-Making

There are many studies which have investigated areas related to CSR (e.g. Al-Tuwaijri et al., 2004; Clarkson et al., 2013; Plumlee et al., 2015). These studies indicated that the disclosure of CSR benefits companies by way of allowing these companies to send a positive signal to investors. The CSR information provided in the annual reports implied that the company was giving a fair treatment to other stakeholders. It also developed a positive outcome on investors who were inclined towards the perception that they would be treated fairly in the future. Plumlee et al. (2015) observed that the quality of environmental responsibility information disclosed actually affected corporate value through cash flow and cost of capital. Similarly, Clarkson et al. (2013) and Griffin and Sun (2013) stated that voluntary environmental disclosures provided additional information about the company's competitiveness and the future company's performance. Both were found to generate a positive return to shareholders. Studies in this area show that the market, including the analyst and investors, reacted positively to the disclosure of CSR. The information on CSR, taken together with the financial information, are both used by investors to facilitate themselves in market valuations. Based on this, the hypothesis is formulated as:

H_1: CSR disclosure influences investment decision-making positively.

2.5 CSR Disclosure, Focus Regulatory and Investment Decision-Making

While it appears that CSR disclosure will have a positive impact on investment decision-making (Plumlee et al., 2015; Martin & Moser, 2016), some studies have noted the negative relationship between these two variables (Beneabou & Tirole, 2010). For example, Hassel, Nilsson and Nyquist (2005) reported that information disclosing environmental performance tended to be negatively related to the market value of equity for Swedish companies. Their findings supported the cost-concerned perspective, whereby CSR was seen as a reduction of the shareholders and manager's welfare. In view of the inconsistent results, it is believed that the investors' decision-making is dependent on prevention and promotion goals, as highlighted by the regulatory focus theory. Individuals with a focus on prevention will be more vigilant to the information obtained; they would avoid negative issues with regards to achieving the purpose and they would analyse the information with more details. Furthermore, with the logic that CSR is a negative state due to the sacrifice of profits, the prevention focus is more suitable to the negative avoidance purpose on social and environmental circumstances. Poels and Dewitte (2008) and Kim et al. (2012) found that the role of the advertisement with hopes of prevention was more influential to consumers' behaviour when compared to advertisement with hopes of promotion. In accordance with the context of CSR disclosure, it is claimed that disclosure with the prevention focus would have a greater impact than promotion focus. Based on this, the hypothesis is formulated as:

H_2: An investment decision making based on CSR disclosure with prevention focus is greater than CSR disclosure with promotion focus.

2.6 Financial Information, CSR Disclosure, Focus Regulatory and Investment Decision-Making

Even as financial performance disclosure is claimed to be more credible than non-financial performance (Lipe, 1998), other researchers like Maines et al. (2002) stated that the value of financial measures increased when interacting with non-financial measures. The positive and negative tendencies of financial measures affect how analysts pay attention to the non-financial measures (Coram, Mock, & Monroe, 2011; Ghosh & Wu, 2012). It is highlighted that the non-financial performance, such as management quality, innovation, product quality, customers and employees' degree of satisfaction, are only used by analysts when financial information was positive. If the financial information is negative, the non-financial information would not affect the analysts' recommendation. These results are found to be consistent with the prospect theory proposed by Kahneman and Tversky (1979). They mentioned that differences in sensitivity to the gains and losses have different impacts on investors who reacted differently to the positive or negative results. Additionally, in making judgments, the negative aspects of a situation tend to be weighted greater than the positive aspects (Kahneman & Tversky, 1984). In relation to these arguments, it is believed that CSR disclosures can provide effective persuasions for investors to make investment decisions. Individuals' motivation of behaviours can be induced in the information frame of either promotion or prevention focus. Since the focus of loss and non-profit tends to be avoided by individuals who are in the prevention focus, the frame of message or information with a prevention focus will be more effective than information with a promotion frame (Idson et al., 2000).

The current research develops the interaction test of financial and non-financial disclosures in the context of CSR with promotion focus and prevention focus. It is assumed that the relationship of financial information on investors' decision would be moderated by CSR disclosures (with a corresponding focus on promotion and prevention). CSR disclosures with prevention focus would be more influential for the relationship between financial information and investment decision as compared to the CSR disclosure with promotion focus. Based on this, the hypothesis is thus formulated as:

H_3: The CSR disclosure moderates the relationship between financial information and investment decision making. (Specifically: A relationship between financial information and investment decision making will be stronger when CSR disclosures contain prevention focus than when it contains promotion focus).

3. Research Method

3.1 Participants and Experimental Design

Originally, 60 graduate students participated in this study but due to the fact that 15 did not pass the check on financial information and CSR disclosure manipulation, only 45 graduate students were eligible. Participants are from the Faculty of Economics and Business, Universitas Jenderal Soedirman, Purwokerto, Indonesia. Most are financial practitioners serving in both the public and private sectors. This indicates that they understood the business processes of Indonesia well. As graduate students, the participants can be involved as proxies for non-professional investors with uncomplicated tasks (Elliott, Hodge, Kennedy, & Pronk, 2007). Graduate students in the role of non-professional investors have also been involved in previous research on CSR disclosures (Holm & Rikhardsson, 2008). Non-professional investors or retailers, from time to time, had been shown to have a significant role to play in the capital markets (Cohen, Holder-Webb, Nath, & Wood, 2011).

3.2 Research Variables

The independent variables used in this research comprise financial information and CSR disclosure. Financial information is manipulated with favourable and unfavourable financial performance. We present a hypothetical company's performance that is derived from the financial statements noted in the Indonesian capital market, which show favourable (positive) and unfavourable (negative) financial performance. The financial performance is based on accounting measures: profitability, return on assets (ROA), return on equity (ROE) and earnings per share (EPS). These measurements are adapted from Lu and Taylor (2015) who separated the measurements based on market and accounting.

The variable, CSR disclosure, is based on the promotion focus and prevention focus perspective, as developed by Poels and Dewitte (2008). The CSR disclosure with a prevention focus describes the disclosure which gave hope to avoid negative occurrences of social and environmental conditions, subsequent to achieving the positive results of the social and environmental conditions. The disclosure with a promotion focus was based on the positive results of the social and environmental conditions.

The dependent variable used in this research is the investment decision. We measure investment decision by using a 10-point Likert scale (Ghosh & Wu, 2012). In the experiments, we ask participants to decide investment for: sell, hold or buy shares. We give the participants several questions to make sure that they understand the experimental instruments. This research applies a manipulation test with participants rating the financial information and the CSR disclosure. The research instrument is tested through a pilot study involving experts in the field of accounting.

Following the experts' feedback, improvements are made on the financial information and the manipulation check. Feedback from the pilot test is used to fine-tune the wordings on favourable and unfavourable financial information. These are then validated with the manipulation of the questions, to see whether the company's financial information is favourable or unfavourable. Improvements are then made accordingly. The manipulation check of the unfavourable financial information, that is, "Is a company's financial information favourable?" is then adjusted. If it is found that the participant's answer lies between a scale of 1 to 4, it would be assumed that the answer has passed the manipulation check because the participants do not agree. Following this, the CSR disclosure is also fine-tuned.

3.3 Experimental Procedures

The experimental instrument is conducted with pencil and paper. All the participants who have agreed to participate are randomly assigned to one of the four experimental conditions. Each participant receives a numbered package for randomisation purposes. Each participant is then informed about his/her role as an investor. They are then asked to follow the experimental steps in sequence, as follows.

Step one

Participants are given the company's profile and share-ownership information. The company is a chemical company with several business units. The company has branches spread in some areas. Participants have held 30,000 shares for 6 months (Appendix 1).

Step two

Participants are given a set of activation questions on regulatory focus. Participants with the promotion focus are asked to write their expectations of the social and environmental conditions. Participants with the prevention focus are asked to write their obligations of the social and environmental conditions (Appendix 2).

Step three

Participants are given the financial information (favourable or unfavourable). Favourable (unfavourable) financial information is indicated by an increase (decrease) in corporate earnings: return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Favourable financial information contains information about the company's financial performance improvement from the previous year. Among others, it includes: profit increase of 16 per cent (1,063.2 billion IDR to 1,349.2 billion IDR), ROA increases from 5.5 per cent to 6.8 per cent, ROE increases from 15 per cent to 17 per cent and EPS increases by 55,000 IDR (208,000 IDR to 263,000 IDR). The favourable financial information given to participants are noted in two columns. The unfavourable financial information shows a declining financial performance over the previous year – a decline in earnings of 1,196.6 billion IDR (-16 per cent). The ROA has decreased from 16.2 per cent to 11.9 per cent, the ROE has decreased from 23.1 per cent to 17.1 per cent, and the EPS has decreased from 937,000 IDR to 762,000 IDR. The unfavourable financial information for participants is provided in cells 3 and 4 (Appendix 3). The favourable financial information shows an increasing profit of 286 billion IDR (16 per cent) from the previous year of 1,063.2 billion IDR. ROA increased to 6.8 per cent as compared to the previous year of 5.5 per cent. ROE increased to 17 per cent as compared to the previous year of 15 per cent. EPS increased to 263,000 IDR compared to 208,000 IDR (Appendix 5).

Step four

Participants are asked to answer the manipulation test. Participants are asked to rate the company's financial information on a 10-point Likert scale. They would give a high scale (6 to 10) if they consider favourable financial information and a low scale (1-5) if they consider unfavourable financial information. Participants are asked to write their justifications.

Step five

Participants are given the CSR disclosure. The CSR disclosure with a prevention focus shows the avoidance of negative effects on social and environmental impact but the CSR is beneficial. The CSR disclosure focuses on the benefits received on activities presented, with tables to facilitate investor analysis. The CSR disclosure is presented with a focus on disaster avoidance, reducing unemployment, maintaining health and preventing children from dropping out of schools. The CSR disclosure on avoiding natural disasters contains the planting of 3.3 million trees, reducing of unemployment by providing training and assistance to 865 SMEs with beneficiaries of 3,346 people. The company is responsible for public health by establishing 915 healthcare centres and providing free treatment to 94,223 patients. The company also discloses the prevention of dropout-children by providing scholarships to 2,360 children. Images are presented with negative social and environmental conditions and pictures of positive conditions, after the CSR activities are conducted. The images illustrated a more detailed picture of the social and environmental circumstances. The CSR disclosure with prevention focus is noted in cells 2 and 4 (Appendix 4). The CSR disclosure with a promotion focus presented a CSR costs of 2.7 billion IDR incurred by the company, with details of tree planting allocations of 2.7 billion IDR, 8.5 billion IDR for UMKM training, 6.5 billion IDR for scholarships and free medical treatment of 6 billion IDR. The CSR disclosure was presented in an outline but accompanied by a successful image of the CSR programme (Appendix 6).

Step six

Following the above steps, participants are asked to answer the manipulation test. They are asked to rate the CSR disclosure on a 10-point Likert scale. The participants would give a high score (6 to 10) when the company achieves positive results for promotion focus or prevent negative effects on social and environmental conditions for prevention focus. Participants are asked to write their justifications.

Step seven

Participants then make their investment decisions (sell, hold or buy). The buy decision is shown with a high scale (6-10) and the sell decision is shown with the lowest scale (0-4), while the hold decision is shown on a scale of 5. The experiment ends with a debriefing to explain the conduct simulations of previous investment decisions.

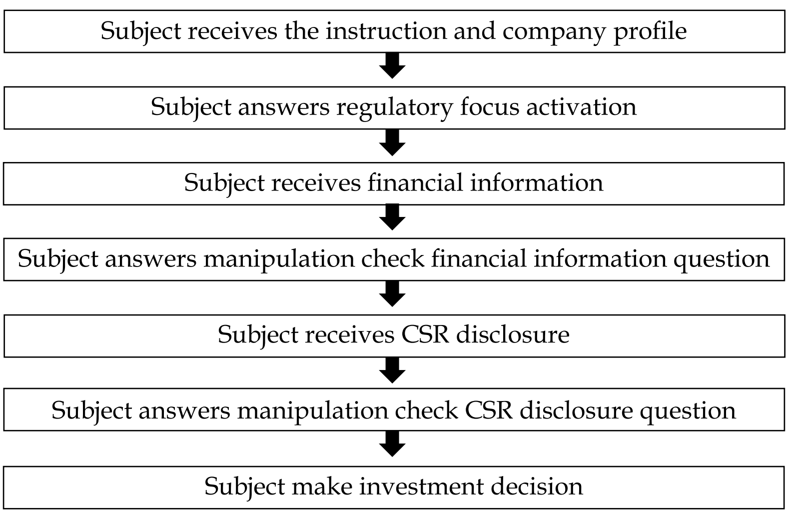

Figure 1: Flow of the Experiment

4. Findings

4.1 Participants' Demographic Data

The participants comprise of 21 females and 24 males. The average age of the participants is 30.7 years with an average of 5.8 years of work experience. Participants' demographic profiles are presented in Table 1.

Table 1: Participants' Demographic Data

Demographic Profiles	Categories	Frequency	Percentage
Gender	Female	21	47.0
	Male	24	53.0
Age	< 25 years old	6	13.3
	25–30 years old	15	33.3
	>30 years old	24	53.3
Work Experience	<1 year	6	13.3
	1–10 years	29	64.4
	>10 years	10	22.2

To ensure effective randomisation, one-way ANOVA tests are conducted to ensure that there is no demographic difference in the participants' character (age and gender) within the group. The randomisation results are presented in Table 2.

Table 2: Participants' Randomisation

		Sum of Squares	Df	Mean	F	Sig
Gender	Between Groups	3.143	1	3.143	0.605	0.441
	Within Groups	223.435	43	5.196		
	Total	226.578	44			
Age	Between Groups	0.004	1	0.004	0.001	0.979
	Within Groups	226.574	43	5.269		
	Total	226.578	44			

Participants are divided into four (4) groups. The average response of each group is shown in Table 3. The average group with favourable financial information and CSR disclosure with promotion focus is 7

Table 3: Mean (Standard deviation) Financial Information and CSR Disclosure of Experiment Group

CSR Disclosure	Financial Information					
	Favourable			Unfavourable		
	Mean	Std. Dev.	n	Mean	Std. Dev.	n
Promotion	7.00	1.00	11	3.80	1.75	10
Prevention	8.46	1.62	13	5.64	1.57	11

(SD = 1), with favourable financial information group response and CSR disclosure with prevention focus is 8.46 (SD = 1.62), with unfavourable financial group response information and CSR disclosure with promotion focus is 3.8 (1.751) and with unfavourable financial information group response and CSR disclosure with prevention focus is 5.64 (SD = 1.57).

4.2 Manipulation Test

Manipulation tests have been done on financial information and CSR disclosures by using a 10-point Likert scale. Participants are considered to have successfully tested the manipulations if they answer on a scale of five (5) for financial information and if they answer below 5-scale for unfavourable information. Participants are considered to have passed the test of CSR disclosure manipulation with the promotion focus and prevention focus when they answer on a scale above five (5). This is further shown in Table 4. The mean score for the group with favourable financial information is 8.33. The mean score for the group with unfavourable financial information is 2.86. The mean score for the group with CSR disclosure with promotion focus is 8.33. The mean score for the group with CSR disclosure with prevention focus is 9.13. The manipulation results are also presented in Table 4.

Table 4: Manipulation Test

	Financial Information		CSR Disclosure	
	Favourable	Unfavourable	Promotion	Prevention
Mean	8.33	2.86	8.33	9.13

4.3 Test of Hypotheses

H_1 tests whether CSR disclosure influences investment decisions positively. Results show that CSR disclosure influences the investment decision positively. The ANOVA results confirm the significant effect of CSR disclosure on investment decision. The main effect test shows that information on financial performance and CSR disclosure are significant at *p* value which is less than 0.01 (Table 5). This indicates that CSR disclosure influences investment decisions positively and supported H_1.

Table 5: Main Effects and Interactions Effects Test

	Type III SS	DF	Mean Square	F-Value	Sig.
Financial information	101.195	1	101.195	44.433	0.000*
CSR disclosure	30.318	1	30.318	13.312	0.001*
Financial information * CSR disclosure	0.392	1	0.392	0.172	0.681
Error	93.376	41	2.277		

Note: * significant at 1%.

H_2 tests the differences in investment decision on the CSR disclosure with promotion focus and prevention focus. We predict that the investment decision will be greater in the CSR disclosure with prevention focus than the CSR disclosure with promotion focus. The test is carried out by using an independent t-test for the CSR disclosure with promotion focus and the CSR disclosure with prevention focus on investment decision. The results are presented in Table 6.

Table 6. Independent t-test

	n	Mean	Std. Dev.	Independent t-test
Financial Information				
Favourable	24	7.79	1.53	F=0.225; p=0.000
Unfavourable	21	4.48	1.87	
CSR Disclosure				
Promotion Focus	21	5.48	2.14	F=0.423; p=0.011
Prevention Focus	24	7.17	2.12	

It can be seen that the H_2 test results show that the mean score of the investment decision making with the CSR disclosure containing prevention focus is 7.17 while the mean score of the investment decision making with the CSR disclosure containing promotion focus is 5.48. The difference is significant at *p* value which is less than 0.05. The results of the data thus support H_2.

H_3 predicts the interaction effect between financial information and CSR disclosure in investment decision. Specifically, the relationship between financial information and investment decision will be stronger when the CSR disclosure carries a prevention focus. The ANOVA result also shows that the results do not support H_3. Table 5 illustrates.

5. Discussions

The results of this research indicate that financial information and CSR disclosure affect CSR investment decision. The ANOVA results show that the main effect is significant, at 1 per cent. The CSR disclosure results influence investors' decision. This means that management would try to disclose information that is useful for decision makers. The result generated from the current research is consistent with the study conducted by Martin and Moser (2016) who noted that investors react to CSR disclosures. This implies that the CSR information provides additional resources for the investors to make their decision (Clarkson, et al., 2013), and it also shows that the CSR information is useful for investors (Cohen, et al., 2011; Martin & Moser, 2016). Therefore, the current research has proven that investors not only use financial information in making investment decisions, they also use information sourced from CSR disclosures. Clearly, CSR disclosures emphasise that companies not only sought profit for their welfare but that they are also responsible for the society and environment. The result generated from the current research also shows that CSR disclosures are practised by corporations as a means to enhance themselves. This is because investors are likely to react or respond to CSR disclosures if they are perceived to add value to the corporations. Thus, the current findings support the outcomes provided by Juniarti (2018), which showed that CSR disclosure was positively associated with sustainable shareholder values.

The results of this research also indicate that CSR disclosure with a prevention focus will further lead to greater investments than CSR disclosure with a promotion focus. The t-test results has shown that the group with the CSR information containing a prevention focus has an investment decision score of 7.17 while the group with the CSR information containing a promotion focus has an investment decision score of 5.48. Therefore, these results prove that investors would be more affected by the information presented with the prevention focus. These results also reveal that the regulatory focus theory (Higgins, 1997; 1998) can be used to explain the differences in CSR disclosure strategies used for investment decisions. The findings of this research further validate the findings of previous research such as Idson, et al. (2000) who found that in a loss or non-profit state, investors would be sensitive to the prevention focus.

In the context of CSR disclosures, which are related to the company's expenditure on social and environmental activities, it would seem that CSR expenditures would serve as an activity that reduced the welfare of the company and shareholders. Therefore, the CSR information that is framed with a prevention focus would be more effective because it fitted with the individuals' motivation. Investors have the motivation to respect companies that respond to social and environmental aspects. Thus, CSR activities that focus on the prevention of damages done to the social and environmental surroundings would inhibit the negative effect of operations, hence they would illustrate a positive effect for the company, society, and environment. In this way, it can be seen that CSR disclosures with the prevention focus would be presented with more details and more information about the benefits of those CSR activities that have been carried out. Such results are in tandem with Kim, et al. (2012) and Poels and Dewitte (2008) who also observed that with the hope–prevention focus, individuals hoped for positive achievements by preventing negative things. The results of the current research also show that in the case of decision-making, the prevention focus contained in the CSR disclosures is more effective (Gu, et al., 2013). The reason is because the CSR disclosure with prevention focus carries more details, and it emphasises on risk aversions by highlighting the benefits of the CSR activities. Inevitably, this strategy draws more responses from the investors who are more motivated to invest in companies that are involved with CSR activities.

6. Conclusion and Implications

This research has experimentally examined the effects of financial information and corporate social responsibility (CSR) disclosure on investment decision. There is evidence to show that CSR disclosure affects the investment decision. In addition, the results also show that investment decisions would be greater when the CSR disclosure contains a prevention focus than when it contains a promotion focus. This experimental research also contributes to the regulatory focus theory by providing empirical evidence to support that the CSR disclosure with prevention focus is higher comparatively. This is consistent with the outcomes of Higgins (2002) which stated that the situational aspects of promotion focus differ from prevention focus, in accordance with the behavior to achieve individual goals. The implications drawn for academics suggest that future research needs to use potential future regulatory focus theories to explain and to predict investors' behavior on CSR disclosure.

The implications of this findings for practitioners is that companies need to pay attention to CSR disclosures and how they are presented to investors. It is inevitable for companies to adopt strategies that allow investors to respond to the information positively. The findings of this study further indicate that companies need to disclose CSR activities with a prevention focus and the information should be detailed and should also highlight the benefits provided by the company to the society and the environment. Companies also need to accentuate the enormous cost of the CSR involvement if CSR is not performed accordingly. Although CSR disclosures may have an effect on the financial information and on investment decisions, they are not proven to interact with each other. This result is, therefore not in line with previous studies (e.g. Ghosh & Wu, 2012).

The implications to be drawn for management is that they need to pay attention to CSR activities and CSR disclosures. Companies should focus not only on making profits but also be concerned about the social and environmental conditions. The results of this research have also indicated that investors are not homogeneous in how they respond to information. Given that investors are sensitive towards negative information, regulators should, thus ensure that sufficient regulations exist so as to prohibit management from failing to disclose negative information to the public. In addition, management and regulators need to consider the investors' goals while designing the disclosure strategies and policies. They should disclose CSR activities and they can adopt disclosure strategies by adopting the prevention focus which avoids negative social and environmental aspects of the company's activities. Companies that have CSR disclosure would have more investors' responding to such information when making investment decisions.

This research is, nonetheless, also limited in some ways. First this research does not distinguish explicitly whether CSR performance is favourable or unfavourable. Instead, it used the reason that CSR disclosure is an activity that shows a reduction in manager and shareholders' welfare. Therefore, future research needs to focus on examining favourable or unfavourable CSR performance, with more comprehensive promotion and prevention frames.

This research only examines the situational effects on the regulatory focus. It does not examine the chronic effects on individual's regulatory focus. Future research is expected to implement both the chronic and situational effects on individual's regulatory focus for decision making (Idson, et al., 2000). Furthermore, this research applies the explicit assessment of CSR disclosure in making decisions which could produce different results if the participants have not conducted an assessment (Elliott et al., 2014). Therefore, future research may consider the individual's affective reactions to investment decisions.

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Appendix 1. Company Profile, Role and Task

Company Profile

PT. Medico Jaya is a pharmaceutical company with the deed of establishment No. 17 on 2nd February 2001 at the notary of Jakarta and has been approved by the Minister of Justice of the Indonesian Republic. The company produces medicines that are nationally distributed. By 2015, the company already has 21,356 employees at 62 branch companies across Indonesia.

Role

Your role is investor in PT. Medico Jaya with ownership of 30,000 shares. You have owned since six (6) months ago. The value of each share is 6,000.00 IDR.

Task

You have to make an investment decision

- buy additional shares (BUY)
- retain owned shares (HOLD)
- sell shares that have been owned (SELL)

Appendix 2. Focus Regulatory Activation (Prevention Focus CSR)

Write your obligations on social and environmental conditions:

1.
2.
3.

Appendix 3. Manipulation Unfavourable Financial Information

In 2015 the company experienced a decrease in earnings of 1,196.7 billion IDR (16%). Return on Assets (ROA) decreased to 11.9% compared with the previous year of 16.2%. Return on Equity (ROE) decreased to 17.1%, compared with 23.1% in the previous year. Earnings per share (EPS) decreased to 762,000 IDR compared to the previous year of 937,000 IDR. Financial performance is presented as follows (Figure A3.1):

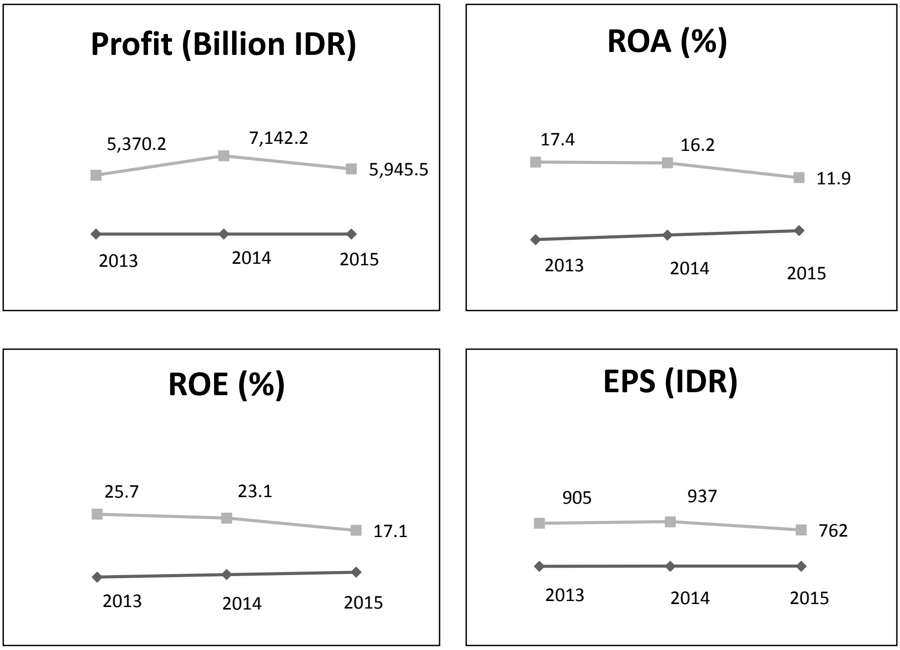

Figure A3.1: Financial Information Manipulation Check

The company has favourable financial performance in 2015.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Strongly Disagree									*Strongly Agree*

Please explain your reason:

Appendix 4. Manipulation CSR Disclosure – Prevention Focus

PT. Medico Jaya participates in sustainable development through social responsibility activities by contributing significantly to improving the quality of life of Indonesians. PT. Medico Jaya is committed to providing added value to the progress of Indonesians in the fields of education, environmental conservation, health services and the development of small and medium enterprises (SMEs) that support the economic income of the wider community. The company has provided benefits to the community by issuing CSR funds of 23.7 billion IDR. This value increased from the previous year's expenditure of 18.4 billion IDR.

In addition to the funds allocated for social and environmental, in business processes, companies pay attention to the safety of their employees, conduct environmentally friendly business processes and manage waste well so avoid pollution. As a form of company's seriousness on social responsibility activities, the company has been awarded by the government for the implementation of corporate social responsibility (CSR). This award can enhance the company's reputation as a good company.


Note: PT. Medico Jaya participates to avoid natural disasters and environmental pollution by realising tree planting programs to achieve environmental conservation. PT. Medico Jaya has planted more than 3.3 million trees.


Note: PT. Medico Jaya participates to reduce the number of unemployed with training and assistance for the community. PT. Medico Jaya provides training and capital assistance to 865 SMEs with 32,346 beneficiaries.


PT. Medico Jaya is obliged to help maintain public health. PT. Medico Jaya founded 915 health care establishments and provided free treatment to 94,223 patients.


Company participate in preventing children from dropping out, by providing scholarships. PT. Medico Jaya provides scholarships to 2,360 children so they can continue their education.

Manipulation Check of CSR Disclosure-Prevention Focus

The company has prevented negative effect of social and environment.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Strongly Disagree									*Strongly Agree*

Please explain your reason:

Based on the available information, please make investment decision:

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Sell				*Hold*					*Buy*

Appendix 5. Manipulation Favourable Financial Information

In 2015, the company achieved a profit of 1,349.2 billion IDR; this shows an increase in profit of 286 billion IDR (16%) from the previous year's 1,063.2 billion IDR. Return on assets (ROA) increased to 6.8% compared to the previous year's 5.5%. Return on equity (ROE) increased to 17%, compared to the previous year's 15%. Earnings per share (EPS) increased to 263,000 IDR compared to the previous year's amount of 208,000 IDR. Financial performance is presented as follows:

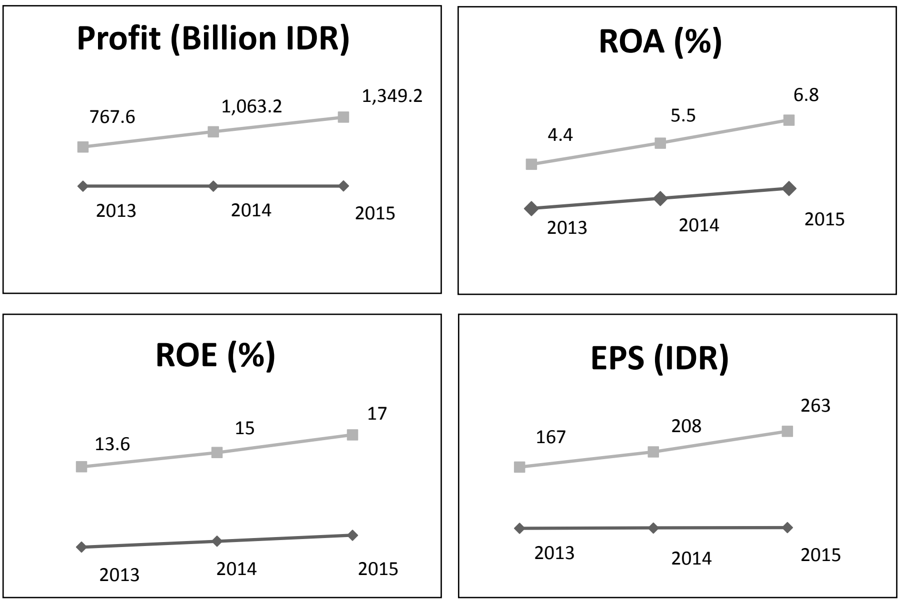

Figure A5.1: Financial Information Manipulation Check

The company has favourable financial performance in 2015.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Strongly Disagree									*Strongly Agree*

Please explain your reason:

Appendix 6. Manipulation CSR Disclosure – Promotion Focus

The company supports sustainable community development efforts through a variety of social assistance initiatives and programs covering the environment, health, SME empowerment and education. The environmental development program is intended to improve the social conditions around the company and other areas that need it. The company identifies the needs of each region in the implementation of the environmental development program. Total funding for CSR activities is 23.7 billion IDR.

PT. Medico Jaya allocated 2.7 billion IDR for tree planting

PT Medico Jaya conducts training and assistance for SMEs with a total cost of 8.5 billion IDR

PT Medico Jaya provides free treatment of 6 billion IDR

PT Medico Jaya provides a scholarship of 6.5 billion IDR

Manipulation Check of CSR Disclosure-Promotion Focus

The company has achieved positive results on social and environmental conditions through CSR activities.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Strongly Disagree									*Strongly Agree*

Please explain your reason:

Based on the available information, please make investment decision:

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Sell				*Hold*					*Buy*

Effects of Transformational Leadership, Organisational Learning and Technological Innovation on Strategic Management Accounting in Thailand's Financial Institutions

Kornchai Phornlaphatrachakorn*

ABSTRACT

Manuscript type: Research paper.
Research aims: This study aims to investigate the effects of transformational leadership, organisational learning and technological innovation on strategic management accounting in Thailand's financial institutions.
Design/Methodology/Approach: Data were collected from 141 financial institutions in Thailand through a questionnaire survey. Hierarchical multiple regression analysis is conducted to examine the relationships.
Research findings: The findings indicate that transformational leadership, organisational learning and technological innovation positively influence strategic management accounting. The results also indicate a positive relationship between strategic management accounting and firm performance.
Theoretical contributions/Originality: This study expands on existing literature by investigating the role of transformational leadership, organisational learning and technological innovations as antecedents to the implementation of strategic management accounting. It thus extends on the applicability of strategic management accounting in helping financial institutions in Thailand to gain superior performance.

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Practitioner/Policy contributions: The results of this study suggest that executives of financial firms need to pay attention towards building and developing transformational leadership, organisational learning and technological innovation for strategic management accounting implementation. This can be achieved by leveraging on the firm's competencies, capabilities, resources and assets. In other words, strategic management accounting can serve as a tool for organisations to gain a competitive edge in today's dynamic business environment, thereby fulfilling firm performance.
Research limitations/Implications: To increase the generalisability of this study, future research needs to collect data from a different set of population or country. This will help to expand on the database of the financial businesses throughout the world.

Keywords: Transformational Leadership, Organisational Learning, Technological Innovation, Strategic Management Accounting, Firm Performance
JEL Classification: M41

1. Introduction

The prevalence of globalisation and the rapidly evolving technology which contribute to today's dynamic business environment is forcing financial institutions to undergo changes and to respond to these changes almost on a consistent basis in order to sustain themselves. While the financial industry used to be described as a highly regulated sector in the past, armed with limited products and restricted by geographical expansion, today's situation of the financial industry has changed (Rasid & Rahman, 2009; Laela, Rossieta, Wijanto, & Ismal, 2018). Currently, financial institutions trade in various range of complex financial assets. They also have to respond to the mergers and the acquisition exercise's call between insurers, banks and asset managers, resulting in a complex business world. The deregulation practices caused by the effect of globalisation have additionally terminated the complacent approach financial institutions used to practice. In order to address this dynamic and uncertain environment in which today's business is involved in, financial institutions have had to undergo rapid transformation in order to gain a competitive advantage. These institutions need to search for a valuable strategic tool to help them to succeed, survive and be sustainable in these turbulent situations.

Literature (e.g. Simmonds, 1981; Nixon & Burns, 2012; Turner, Way, Hodari & Witteman, 2017) has emphasised on the application of strategic management accounting (SMA) as an important tool, that could be used to enhance decision-making. Within the financial service industry, the need for SMA lies in its ability to provide quality management information which help to signal problems posed by globalisation, thereby enabling the management to react swiftly in response to the challenges (Rezaee, 2005; Kafafian, 2001).

A review of the SMA literature (Turner et al., 2017; Bhimani & Langfield-Smith, 2007, Cravens & Guilding, 2001) highlighted that this field of study has grown tremendously within the last few decades with a wide ranging scope (Langfield-Smith, 2008) and entailing different subjects (e.g. marketing, operations, strategic management). Researchers (Carlsson-Wall, Kraus, & Lind, 2015; Juras, 2014; Roslender & Hart, 2010) have also attempted to look into individual techniques such as target costing, life-cycle costing, attribute costing, and others to see their effect on SMA. Nonetheless, there has been a relative neglect on research investigating the linkage involving business strategies, SMA usage and firm performance (Carlsson-Wall et al., 2015). Since its introduction into academia, scholars and practitioners have expressed doubts on the practicality of SMA (Juras, 2014; Roslender & Hart, 2010). This is compounded by the lack of research to explain its practices in organisations. Within the limited empirical evidences of SMA as noted in literature, only a few have highlighted its adoption in the financial industry.

Motivated by this lack in research contributions, the current study aims to contribute to the knowledge by examining how transformational leadership, organisational learning and technological innovation can affect SMA and how in turn, it influences firm performance. In this study, strategic management accounting is defined as the provision and analysis of management accounting data involving a business and its competition. The outcome generated from using SMA can be used for developing and monitoring business strategies, particularly those related to the levels and trends of real costs and prices, volume, market share, cash flow, and proportions demanded of a firm's total resources (Simmonds, 1981). SMA also refers to the provision of information that can be used to support organisational decisions in the long run, which would eventually lead to organisational performance (Jones, 1988). SMA provides firms with external non-financial information as well as internally generated information. Both are relevant for assessing the firms' competitive position within an industry; it particularly emphasises on customers and competitors, as externally located objects of management accounting analyses. Firms with successful implementation of SMA are expected to have a superior performance in doing business.

This study aims to contribute to the management accounting literature in two ways. First, the study fills the research void by focussing on financial institutions which play a relevant role in a country's economic growth. Financial institutions channel surplus funds to deficit units to help the country to ease its economy. The economic health of a country's financial system is of great concern since the sector is prone to instability phases. Such instability phases can generate a sizeable negative spillover effect on the country. The shortage of management accounting research, therefore warrants focus. Second, this study aims to provide empirical evidence which can illustrate the extent to which some SMA tools are used to support organisational performance, the role of transformational leadership, organisational learning and technological innovations. Many studies (Baines & Langfield-Smith, 2003; Chenhall, 2003; Ahmad & Mohamed Zabri, 2015) that have attempted to examine the effectiveness of accounting and management control systems in organisations, have mainly adopted the contingency theory. These studies also include factors which are related to the environment, technology, size, organisational structure and culture, as their contingent factors. In comparison, there are few studies which have highlighted that a firm's ability to adapt, especially in a fast-changing environment, relies, to a great extent, on its people's thoughts, behaviours, 'good organisational culture' and 'excellent management teams' (Yang, 2015). This highlights the need to include other factors such as transformational leadership, organisational learning and technological innovations as antecedents to SMA implementation.

The remainder of this study is organised as follows. Section 2 highlights the literature review, the underpinning theory and the hypotheses development. Section 3 discusses the research methods. Section 4 reports on the results and offers some discussions and Section 5 concludes the paper by discussing the practical and theoretical contributions followed by future recommendations.

2. Literature Review

2.1 Strategic Management Accounting (SMA)

The ideology of strategic management accounting (SMA), was introduced by Simmonds (1981). It was developed based on the failure of traditional management accounting techniques in providing sufficient information to managers (Guilding, Cravens, & Tayles, 2000). Simmonds (1981) then positioned SMA as a distinctive concept which offers a more external, long-term, forward-looking and strategic focus since it is associated with companies and customers as well as competitors and markets. Similarly, Tillman (2003) mentioned that SMA differs from traditional management accounting practice in a number of ways. For instance, SMA combines management, accounting and marketing within its strategic management framework. It focusses not only on competitors, but also on the competitive environment, moving towards strategic innovation which is outside the norm of traditional accounting. Some scholars such as Cravens and Guilding (2001) and Roslender and Hart (2010) looked at SMA as a combination of the traditional accounting practices with a more contemporary approach such as life-cycle costing, attribute costing, benchmarking, strategic cost analysis and value chain costing. Whilst these techniques may have been applied by management accountants independently, it is believed that the techniques, when used collectively, can serve as an SMA concept.

Researchers (Cinquini & Tenucci, 2007; Roslender & Hart, 2010; Juras, 2014) have attempted to explain the concept of SMA as an alternative to management accounting. Cinquini and Tenucci (2007), for example, found that SMA techniques such as attribute costing, customer accounting, strategic pricing and competitive positions were extensively used in the Italian context. They further highlighted four standout features: competitors, long-run, processes and customer orientation. Other studies (Šoljakova, 2012; Fowzia, 2011) attempted to review the SMA technique usage. For instance, Fowzia (2011) noted that some SMA techniques can influence the financial performance of a firm but the intensity of usage may vary among different countries. Šoljakova (2012), on the other hand, argued that SMA concepts are applicable in strategic management, with many of the techniques traced to the extended application of the traditional methods. Within the financial industry, Oboh and Ajibolade (2017) examined the practicality of SMA adoption in Nigeria. They found that SMA contributes significantly to strategic decision-making; it helps firms to gain a competitive advantage by increasing their market shares. However, Oboh and Ajibolade (2017) only offered some insights into the usage of SMA from the perspective of a developing country. Their study is limited in scope, as it did not attempt to look into the antecedents of SMA use and their impact on firm's financial performance as a whole. Apart from the study of Oboh and Ajibolade (2017), there are very few SMA studies looking at the financial and banking sector. Past studies (Pavlatos, 2015; McManus, 2013) have only offered a view into using business strategies and property size as precursors to SMA use. These studies are also diverse in background as they are from different industrial sectors, hence the different characteristics of the financial industry.

2.2 Theoretical Framework and Hypotheses Development

This study draws its interpretations from the contingency theory (Chenhall, 2003) and resource-based views. Contingency theory which is frequently used in research focussing on management accounting serves as an approach to examine organisational behaviours, where reasons are given to explain how contingent factors or contextual variables, such as technology, culture, organisational structure and external environment shape the design and functions of a firm. The underlying assumption of the contingency theory is that there is no single type of organisational structure to fit all organisations. Instead the effectiveness of the organisation depends on the compatible match between the contextual variables or contingent factors. Based on the underlying assumption that organisational activity is the product of the organisational context, this study then takes the stance that the contingency theory asserts that when there is an appropriate match between accounting activities and the contextual factors, the firm's organisational performance is likely to accelerate. Building upon the contingency theory, this study postulates that the contextual variables encompassing transformational leadership, organisational learning and technological innovations will lead to SMA usage, which in turn, enhances firm performance.

According to the resource-based views of the firms, the key to enhance a firm's performance is based on the firm's internal resources, which are valuable, rare and not easily imitated and substitutable (Barney, 2001). Firms seek to secure and practice permanent or semi-permanent control over resources that can offer them competitive advantage over their competitors. As firms practice various levels of control over different resources, they would be unique from each other. Based on the resource-based views, SMA is regarded as a valuable source of the firm's competitive advantage and performance. More successful SMA implementations can explicitly drive firms to have greater performance. Figure 1 shows the conceptual model of the relationships.

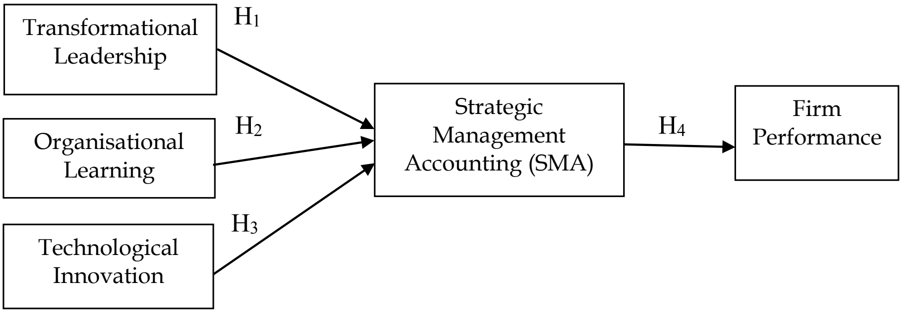

Figure 1: Conceptual Model of the Research Relationships

2.2.1 Transformational Leadership

Transformational leadership is the first antecedent of SMA. It refers to a particular leadership style that is likely to heighten consciousness of the collective interest among the organisation's members, helping them to achieve their collective goals (García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 2012). Transformational leadership is explicitly committed to the organisation's goals. It provides inspiration by motivating its followers to seek the best possible organisational performance. Firms with transformational leadership tend to focus on inspiring the values and ideals of employees, and ultimately, motivating them towards performance that is beyond expectations (Cho, Park, & Michel, 2011). Transformational leadership consists of four behavioural components: idealised influence – holding high standard of morality, ethical and personal conduct, inspirational motivation – providing a strong vision for the future, intellectual stimulation – challenging organisation's norms and encouraging creative thinking, and individualised considerations – identifying and meeting employees' developmental needs (Jin, Seo, & Shapiro, 2016). It is essential to provide employees with useful feedback, encourage them to make additional efforts to achieve novel solutions and to boost their intrinsic motivation to think creatively. Similarly, transformational leadership is defined as a set of behaviours that motivate employees to achieve performance that is beyond expectations by changing their attitudes, beliefs and values (Yucel, McMillan, & Richard, 2014). Transformational leadership attempts to bring about higher levels of performance among individuals by influencing their goals and beliefs. Hence, transformational leadership has the potential to become a key driver for the successful implementation of SMA in an organisation. It could serve to enhance the firm's sustainable competitive edge and superior performance. Based on this, transformational leadership is likely to have a positive influence on strategic management accounting. The hypothesis thus formulated is:

H_1: Transformational leadership has a positive relationship with strategic management accounting.

2.2.2 Organisational Learning

Organisational learning is the second antecedent of SMA. It is defined as a continuous, dynamic and interactive learning process among individuals, groups, and organisations (Jiang & Li, 2008). It is a vigorous process of creating, acquiring, generating, exploiting and transferring valuable knowledge through interaction, communication, interpretation and comprehension across partners. It is achieved by encouraging the firm's capacity to act and modify their behaviours which reflect new knowledge and insights. Firms which focus on organisational learning have the potential to transform the individuals who work in the organisation and transmit common knowledge into the system, structure and procedures used. By doing so, the firm and its members are equipped with a competitive advantage, thereby promoting superior performance, profitability and success. The main characteristic that reflects an organisation which is experiencing organisational learning is the people's acquisition of knowledge to solve the common problems faced. This is because organisational learning develops new knowledge which has the potential to influence behaviours involving the commitment to learn, be open minded and a desire to gain knowledge (Hu, 2014). Organisational learning is an important and basic organisational process through which information and knowledge can be processed. However, this can only be achieved through a change in the organisation's attributes, behaviours, capabilities and performance. Because of its benefits, organisational learning has been utilised by firms via knowledge acquisition, knowledge distribution, shared interpretations and organisational memory (Yu, Dong, Shen, Khalifa, & Hao, 2013). This explains why it is critical to firms in helping them to maintain their survival and sustainability. Accordingly, organisational learning also supports creativity; it inspires new knowledge and ideas; it increases the ability to understand and to apply these ideas, thereby favouring organisational intelligence. Organisational learning also serves as the background for firms to implement their valuable strategies (Bolívar-Ramos, García-Morales, & García-Sánchez, 2012). These strategies can be used to anticipate and understand customer needs and their competitors′ strengths and weaknesses. As a result of that ability and knowledge, firms are able to generate greater organisational capabilities and results. In other words, organisational learning is likely to have a positive influence on SMA. Based on this, the hypothesis developed is:

H_2: Organisational learning has a positive relationship with strategic management accounting.

2.2.3 Technological Innovation

The last antecedent of SMA is technological innovation. It is a strategic potentiality to apply firm′s usable and valuable actions, activities, operations and strategies to generate high firm performance (Camisón & Villar-López, 2014). Technological innovation has a significant role in driving the firm′s ability to compete and succeed in the rigorous markets. Technological innovation refers to firms′ capacity to innovate and introduce new tools, instruments and processes of firms for the competitive market (Verdu, Tamayo, & Ruiz-Moreno, 2012). Firms use this approach as a support for them to provide strategic flexibility and to enhance their profitability and success. Technological innovation is explicitly applied by firms through their existing technology in order to fill new market needs and to respond to environmental changes (Ratten, 2008). Consequently, technological innovation is an important driver of economic progress, productivity, growth and long-term performance within a complex market and environment. It enables firms to match technologies with market opportunities so as to generate a sustainable and competitive advantage as well as to promote their engagement and growth. To obtain prosperity in a dynamic environment, technological innovation has to be of two categories: exploitative innovation which concerns using current technological resource base and exploratory innovation which concerns searching and implementing new technological resource base (Wei, Yang, Sun, & Gu, 2014). Both can be used by firms as a means to increase productivity and flexibility, thereby reducing cycle times and improving firm performance. Both these benefits can help the firm to apply strategic options, operations and practices which bring about competitiveness and greater firm outcomes, currently demanded by the uncertain markets and environment.

Technological innovation is the key propelling successful strategic management accounting implementation. Due to this, technological innovation is likely to have a positive influence on SMA. Therefore, the hypothesis developed is:

H_3: Technological innovation has a positive relationship with strategic management accounting.

2.2.4 Strategic Management Accounting

As discussed earlier, transformational leadership, organisational learning and technological innovation are three main antecedents used for determining successful SMA implementation. In this study, SMA is taken to refer to the provision and analysis of management accounting data concerning a business and its competitors. SMA implementation can be used for the development and monitoring of business strategies (Simmonds, 1981). The three determinants proposed as antecedents of SMA can be a collective tool for firms to use their own business information to assess their competitive positions. SMA specifically emphasises on customers and competitors as the externally located objects of management accounting analyses. Therefore, more successful strategic management accounting implementation can be derived from the assessment. SMA also contributes to good decision making. In the provision of information that supports the firm's decisions in the long term, SMA also has a significant effect on firm performance (Jones, 1988; Turner et al., 2017). It is a technique that focusses on external and non-financial information as well as internally generated information. Firms have used SMA as the common-sense approach to deal with problems emanating from the ever changing, competitive and technological environment. Accordingly, SMA comprises three components: environmental scanning, competitor orientation and forward-looking information (Lachmann, Knauer, & Trapp, 2013). These components reflect the firm's strategies in gaining a competitive advantage and performance. Firms with effective SMA implementation tend to have a sustainable and competitive advantage over others, thereby achieving a superior performance. As a result, SMA is likely to have a positive relationship with firm performance. Hence, the hypothesis developed is:

H_4: Strategic management accounting has a positive relationship with firm performance.

3. Research Methods

3.1 Sample Selection and Data Collection Procedure

The samples retrieved for this study comprise 210 financial institutions that are listed on the Thailand Stock Exchange. They include banks, insurance companies, investment companies and security companies. As large organisations, these financial institutions also have many complex transactions, operations, activities, practices and actions. In this regard, strategic management accounting (SMA) would be most adequate to be used by these organisations to enable them to operate effectively and to succeed in highly complex situations and environment. In this study, data are collected by using a mail survey questionnaire. Prior to actual data collection, the questionnaire is first pilot tested with 30 respondents from the financial industry. The purpose of the pilot study is to examine the inconsistency of wording and the vagueness or ambiguity of items. Following feedback, the questionnaire is refined for the larger study.

The key informants for this study are accounting executives of financial institutions in Thailand. They also hold positions with the highest responsibilities involving accounting functions and other related activities in their organisations. Their positions thus include Chief Financial Officers, Accounting Directors or Accounting Managers. Of the 210 questionnaires mailed out, 147 were received, indicating a response rate of 70 per cent. Aaker, Kumar and Day (2001) indicated that a response rate that is greater than 20 per cent for a mail survey, with an appropriate follow-up procedure, is considered acceptable. The assessment of the non-response bias is centred on two different procedures: (1) a comparison of sample statistics and known values of the population such as firm age and firm capital, and (2) a comparison of the first and the second wave data, as recommended by Armstrong and Overton (1977). It is found that neither procedure show any significant differences, indicating that the non-response bias is not an issue. Table 1 outlines the demographic characteristics of these institutions.

According to the data shown, more than half or 59.18 per cent of the financial institutions have operated their businesses for 15 years or more. In addition, three quarters or 76.19 per cent of these financial institutions have 500 employees or more in their organisations, and more than half or 64.63 per cent of these institutions engaged in a firm capital of less than 10,000 million baht.

Table 1: Demographic Characteristics of Financial Institutions in Thailand

Descriptions	Categories	Frequencies	Percentage
No. of operation periods	<15 years	60	40.82
	=> 15 years	87	59.18
No. of full-time employees	> 500 employees	35	23.81
	=> 500 employees	112	76.19
Firm capital	< 10,000 million baht	95	64.63
	>= 10,000 million baht	52	35.37

3.2 Measures

All the constructs are measured using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), except for firm age, firm size, and firm capital. Measurements of these constructs are adapted from existing literatures. Table 2 presents the measurements of all the variables in this study.

The first of these is transformational leadership, which refers to the leadership style of leaders which helps to increase the consciousness of collective interest among members of the organisation, helping them to achieve their collective goals (García-Morales et al., 2012). The next variable is organisational learning which refers to the dynamic process of creating, acquiring, generating, exploiting and transferring valuable knowledge, through the interaction, communication, interpretation, and comprehension among partners. Organisational learning also refers to the firm's capacity to act and modify behaviours which can reflect new knowledge and insights (Jiang & Li, 2008). The third variable is technological innovation, which refers to the firm's capacity to innovate and introduce new tools and instruments as well as the firm's processes so as to be competitive in the current market (Verdu et al., 2012). The fourth variable is SMA which refers to the provision and analysis of management accounting data regarding a business and its competitors. SMA can be used for developing and monitoring business strategies (Simmonds, 1981). The last variable is firm performance which refers to an outcome displaying the firm's competence and capability in practicing its business competitively (Cacciolatti & Lee, 2016; Wang & Sengupta, 2016).

Of the control variables, it is assumed that firm age (FA) may influence the firm's technological learning capacity, its implemented

Table 2: Measurement of All Variables

Variables and Items	Sources
Transformational Leadership (TL) 1. Our executives provide good business visions and policies for for gaining operational success. 2. Our executives continuously develop capabilities and competencies of employees in order to improve our efficiencies. 3. Our executives explicitly invest an objectivity of information technology for attaining a goal achievement. 4. Our executives outstandingly support employees to learn and develop themselves continuously for promoting our competitiveness.	García-Morales et al. (2012)
Organisational Learning (OL) 1. We believe that our employees have knowledge, competencies, skills, and responsibilities in helping achieve organisational success. 2. We support exchange, coordination and working collaboration between teams that help make a decision quality. 3. We enhance employees to bring their best experiences for adjusting their practices and responsibilities in an organisation. 4. We concentrate systematic knowledge exchanges among employees for providing operational success.	Jiang and Li (2008)
Technological Innovation (TI) 1. Technology that has been continuously developed and improved affects best adjustment and learning development. 2. Growths of communication networks have supported businesses to operational efficiency. 3. Tools, operational processes and supporting systems that continuously occur can promote businesses to succeed. 4. Technology innovation that continuously occurs can enhance businesses to have a goal achievement.	Verdu et al. (2012)
Strategic Management Accounting (SMA) 1. We utilise the systematic and objective analysis of operational environments for effectively implementing management accounting in operations by gaining maximised benefits. 2. We emphasise the best understanding of competitor situations for presenting management accounting efficiently and effectively to the enterprises. 3. We apply current and future information in modernise, beneficial and capable aspects in promoting management accounting to become important tools in supporting the highest administrative goals.	Simmonds (1981)

Table 2: continued

Variables and Items	Sources
Firm Performance (FP) 1. We have critically achieved the goal and objective settings. 2. We have gained more profitability and market share than competitors. 3. We have been recognised from stakeholders which we have outstandingly developed our administrations. 4. Our executives have satisfied our previous business outcomes continuously.	Cacciolatti and Lee (2016); Wang and Sengupta (2016)

business activities, actions and strategies as well as the profitability of its operations (Zahra, Ireland, & Hitt, 2000). Firm age is measured by the number of years a firm has been in existence, by using a dummy variable as less than 15 years = 0 and equal to or greater than 15 years = 1. The next control variable is firm size (FS). It is also assumed that this may affect the firm's ability to learn and diversify its operations, and so compete and survive in the market (Arora & Fosfuri, 2000). Firm size is measured by the number of employees in a firm by using a dummy variable where less than 500 employees = 0 and equal to or greater than 500 employees = 1. Finally, firm capital (FC) is expected to impact the capacity of the firm to implement business methods and strategies in order to achieve a competitive advantage leading to superior performance (Ussahawanitchakit, 2007). Firm capital is measured by the amount of money a firm has invested in doing business by using a dummy variable, where less than 10,000 million baht = 0 and equal to or greater than 10,000 million baht = 1.

4. Analysis and Discussion of Findings

4.1 Measurement Validation

Factor analysis, using principal component analysis with varimax rotation, is performed to evaluate the construct validity of the variables used in this study. Prior to performing this, the Kaiser-Meyer-Olkin (KMO) statistics are assessed to ensure that factor analysis is suitable for use. A value of 0.76 with $p<0.001$ indicated that factor analysis is appropriate to be conducted (Kaiser, 1974). Table 3 presents the results for the factor loadings, item-total correlation and Cronbach's alpha for

Table 3: Results of Measure Validation

Items	Factor Loadings	Item-total Correlation	Cronbach Alpha
Transformational Leadership (TL)	0.69-0.87	0.71-0.81	0.74
Organisational Learning (OL)	0.65-0.80	0.69-0.79	0.75
Technological Innovation (TI)	0.83-0.87	0.84-0.87	0.87
Strategic Management Accounting (SMA)	0.67-0.79	0.61-0.82	0.76
Firm Performance (FP)	0.78-0.95	0.78-0.95	0.86

the multiple-item scales used. In this study, factor analysis is conducted separately for each set of items representing a particular scale due to limited observations. As indicated by Table 3, the items loaded for each factor are greater than 0.4 and so, statistically significant (Nunnally & Bernstein, 1994).

In this study, we also inspect the item-total correlation. It is found that all the items achieve the values of 0.61-0.95, which are greater than 0.30 (Churchill, 1979). The resulting scales are also evaluated using Cronbach's alpha coefficients. All the scales are found to have acceptable alpha values of greater than 0.70 (Nunnally & Bernstein, 1994). One-tailed Pearson correlation is then employed to evaluate the predictive validity and to assure that the scales do not violate the multicollinearity issue. As shown in Table 4, all the independent variables are found to be significantly correlated with the dependent variable. All the independent variables are not highly correlated with each other. This result indicated that the multicollinearity effect is not an issue.

Table 4: Descriptive Statistics and Correlation Matrix

Variables	TL	OL	TI	SMA	FP
Mean	4.10	4.21	4.15	4.01	3.98
Standard Deviation	0.48	0.43	0.42	0.50	0.72
Transformational Leadership (TL)					
Organizational Learning (OL)	0.26				
Technological Innovation (TI)	0.28	0.49***			
Strategic Management Accounting (SMA)	0.27	0.34**	0.63***		
Firm Performance (FP)	0.26	0.28	0.57***	0.54***	

Note: **p<.05, ***p<.01.

A hierarchical multiple regression analysis is then conducted to examine the effects of transformational leadership, organisational learning and technological innovation on strategic management accounting; it also examines the relationships between strategic management accounting and firm performance. Because all variables in this study are neither nominal data nor categorical data, the hierarchical multiple regression analysis is an appropriate method for examining the hypothesised relationships. Table 5 presents the results of the hierarchical regression analysis showing the relationships among transformational leadership, organisational learning, technological innovation and strategic management accounting and also the relationships between strategic management accounting and firm performance.

Table 5: Results of Hierarchical Multiple Regression Analysis

Independent Variables	Dependent Variables			
	SMA	SMA	FP	FP
TL		0.32** (0.15)		
OL		0.24* (0.22)		
TI		0.30* (0.23)		
SMA				0.53*** (0.14)
FA	0.02 (0.14)	-0.13 (0.12)	-0.10 (0.14)	-0.11 (0.12)
FS	-0.01 (0.13)	-0.11 (0.12)	-0.06 (0.13)	-0.05 (0.11)
FC	0.15 (0.13)	0.06 (0.11)	0.14 (0.13)	0.06 (0.11)
Adjusted R^2	0.04	0.27	0.03	0.24

Note: *p<.01, **p<.05, ***p<.001, a beta coefficient with standard errors in parentheses.

4.2 Regression Result

In this study, the results show that transformational leadership is significant and positively linked to SMA ($\beta = 0.32$, $p < 0.05$), hence H_1 is supported. This is expected since transformational leadership provides employees with useful feedback, encouraging them to make additional efforts to achieve novel solutions, in addition to boosting their intrinsic motivation to think creatively for achieving performance that is beyond expectations. Under the transformational leadership, employees are encouraged to change their attitudes, beliefs and values, in order to achieve this high performance (Yucel et al., 2014). Therefore, transformational leadership can help firms with the successful implementation of SMA. Transformational leadership would stimulate and inspire the employees to accept the SMA as a way to solve problems and to challenge the status quo.

The findings generated from the analysis also show that organisational learning is positively associated with SMA ($\beta = 0.24$, $p < 0.01$), thus H_2 is supported. This implies that the successful implementation of SMA is dependent on the financial institution's ability to learn, absorb, adapt and apply the conceptual changes and also to integrate them within the organisation. Firms have utilised organisational learning through knowledge acquisition, knowledge distribution, shared interpretation and through the development of organisational memory (Yu et al., 2013). Employees' ability to learn new sets of skills that are related to the new and innovative accounting techniques, on a continuous basis, represents a sustainable source for the organisation to have a competitive advantage. Financial institutions with the learning focus will encourage their employees to provide feedback which enables the continuous improvement activities to be incorporated into the knowledge base of the employees.

The analysis of this study also noted that technological innovation has a significant effect on SMA ($\beta= 0.30$, $p < 0.01$), hence H_3 is supported. Considering that technological innovation is an important driver of economic progress, productivity growth and long-term performance in emerging economies such as Thailand, this result is not surprising (Wei et al., 2014). An earlier study conducted by Boonyanet and Komaratat (2008) and Nimtrakoon (2015) had shown that the use of contemporary management accounting practices which comprises the SMA is relatively low. In this regard, more technological innovation initiatives are needed to push for the usage of SMA in the financial industry of Thailand. Nonetheless, technological innovation may affect the design of the SMA used. For instance, technological innovations like enterprise resource planning (ERP) support the integration of both internal and external business processes, which have opened up a broader basis for management control.

Similar with Turner et al. (2017), SMA is found to significantly affect firm performance positively ($\beta = 0.53$, $p < 0.01$). In existing literature (Simmonds, 1981), SMA is shown to provide information that is relevant for firms to assess their competitive position within an industry. Clearly, SMA is a technique which stresses on external non-financial information and internally generated information for helping firms to make better decisions within an ever changing, competitive and technological environment. Firms that have successfully implemented the SMA are more likely to enjoy superior performance. Thus, it is not surprising that SMA is a key determinant of firm's performance.

5. Contributions and Implications

This study has attempted to investigate the antecedents that may influence the successful implementation of SMA and their effects on firm performance within Thailand's financial service industry. Using the contingency theory, this study has provided evidence to show that no single organisational design can be effectively applied universally. Three variables are incorporated to examine if they influence SMA and our findings indicate that transformational leadership, organisational learning and technological innovation contribute to the successful implementation of SMA among the financial institutions and that they also affect firm performance positively. Thus, this adds to the literature on SMA research.

The outcomes generated from this study also suggest that financial institutions in Thailand need to be more innovative and forward thinking in order to sustain themselves in today's competitive and turbulent environment. Specifically, they need to adopt innovative accounting management practices, which incorporate a broader scope of procedures involving informal, external and non-financial information, which are based on a long-term perspective and which are strategically oriented. As a part of the Asian region, Thailand has the potential to compete at the global level, especially with the integration of the ASEAN Economic Community (AEC) in 2015. Thus, Thailand needs to be aware of the new development of management accounting so that it can tap into its greater financial investments.

This study has explicitly identified transformational leadership, organisational learning and technological innovation as the valuable factors that affect successful SMA. The findings also show that to apply

SMA, financial firms need to fine-tune their organisational culture, by cultivating transformational leadership. This is important as the current changing business environment requires a leader who is not only able to function as a manager who administers and controls but could also act as a catalyst for change. Such leadership styles clearly facilitate firm development by enabling it to maintain an innovative control system. This will further help the firms to promote divergent thinking, thereby creating new ideas. Financial institutions in Thailand, in their effort to implement SMA, should also leverage on organisational learning capabilities. Being equipped with this allows the financial institutions in Thailand to focus on providing new skills to their employees and to shift towards organisational learning, whereby knowledge can be captured and distributed. This will also enable the firms to apply the knowledge for enhancing organisational practices, including SMA.

The findings of this study highlighting the relevance of technological innovation reinforce the suggestion for supplementing SMA use with technology capabilities. The fact that technology has emerged to be one of the contributors accelerating changes in the business environment may allow us to extrapolate the importance of technology; it is an important aspect for the successful implementation of SMA. In fact, technological innovations when applied in the financial industry which uses modern technology and processes would propel SMA practices. In summary, to maximise the benefits and advantages of SMA implementation, it is evident that financial executives need to furnish their firms with the information on how transformational leadership, organisational learning and technological innovation can add value to their institutions.

While this study has important implications on the financial industry in a developing country like Thailand, it is not without limitations. First, the list of financial institutions identified for use in this study was self-collected from the Stock Exchange of Thailand and the Bank of Thailand. They include banks, insurance companies, investment companies and security companies. In this regard, there are possibilities that some of them may be listed officially but not detected by this study. Therefore, our findings could have been affected. Likewise, the background of the financial institutions may differ among themselves, but these too are not identified in the current study, hence it is possible that some variations may exist; these could also affect the implementation of the SMA.

6. Conclusion

Existing literature shows that SMA is important for supporting firms in gaining a competitive advantage, superior performance, survival and sustainability, within the rigorous competitive market and environment. Accordingly, this study has examined the effects of transformational leadership, organisational learning and technological innovation on SMA implementation by the financial institutions of Thailand. This study also examines the relationships between SMA and firm performance. A total of 147 financial institutions are contacted via the mail survey questionnaire. Using a statistical analysis to project the findings, the results show that transformational leadership, organisational learning and technological innovation positively affected SMA. Similarly, SMA also has a positive relationship with firm performance. This implies that transformational leadership, organisational learning and technological innovation are the key determinants for successful SMA. It seems evident that SMA effectively drives positive changes in the firm's performance. To expand on the contributions of the current study, future research may need to collect data from different populations and countries so as to test the generalisability of the current study. Future research may also consider using a comparative study to test the research relationships and to search for a reliable database of financial businesses in Thailand in order to obtain a higher credibility of the findings.

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Does Ownership Structure Affect Firm Performance in an Emerging Market? The Case of India

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ABSTRACT

Manuscript type: Research paper
Research aim: This study aims to examine the impact of ownership structure (ownership concentration and identities) on the financial and market performance of Indian listed firms, post the US financial crisis 2008.
Design/Methodology/Approach: This study is based on a six-year financial dataset of 100 Bombay Stock Exchange (BSE) listed firms, from FY 2009-10 to FY 2014-15. The study applies the static panel data model (pooled OLS, fixed effect and random effect) and the dynamic panel data model (two-step generalised method of moments) for the hypotheses testing.
Research findings: This study finds that in the case of ownership concentration, large owners have no link with the financial performance. However, they have an adverse impact on the market performance. The presence of promoters, domestic institutions and foreign institutions appears to boost the financial performance, whereas the foreign institutional investment seems to enhance the market performance.

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Theoretical contribution/Originality: The major contributions of this study are the two dimensions of ownership concentration (large owners) and identity (types of owners) being considered as ownership structure, the use of the dynamic panel models to check for the endogeneity issue and the post US financial crisis analysis derived from this study. All of these contribute to the impact of ownership volatility and performance variation in the context of India, thereby making this study a novel one.
Policy implications: Policymakers should consider developing more lucrative policies so as to encourage institutional investors to invest in the Indian market. This is because domestic and foreign institutional owners are central to the enhancement of both the corporate financial and market performance. Further, corporate executives should aim to prevent inefficiencies so as to safeguard the interest of large owners.
Research implications/Limitations: This study has used ownership structure as one of the essential governance mechanisms. Future research may consider other mechanisms like board structure or CEO duality.

Keywords: Ownership Structure, Performance, Panel Data, GMM, Emerging Market
JEL Classification: G32, L25, C33

1. Introduction

The role of ownership and its impact on modern organisations and their performance has been a debated topic in financial economics since the early works of Smith (1776). The concept of ownership structure is developed based on the existence of multiple owners or shareholders in modern companies. Berle and Means (1932) attempted to delineate ownership from control in large corporations in the United States, where ownership does not lie in the hand of one person alone, but is instead, disseminated among many persons. The control of these companies, therefore, lies with the managers who represent the interest of the owners in the respective companies (Smith, 1776).

Since the emergence of the concept of diluted ownership, limited ownership rights and the rise of managerial powers in listed companies or firms, the relationship between ownership structure and firm performance has been of great concern. Without the firm owners' proper control, firm performance may decline, and expropriations by managers may rise (Berle & Means, 1932). Jensen and Meckling (1976) observed that managerial ownership could lower agency conflict but increase firm performance. Nonetheless, Shleifer and Vishny (1986, 1997) and Thomsen and Pedersen (2000) explained that strong ownership control is vital for improving firm performance. The ambiguity of the relationship between ownership structure and firm performance has thus instigated the interest of research today as it is very crucial for governance.

Earlier studies (Jensen & Meckling, 1976; Lichtenberg & Pushner, 1994; Mehran, 1995) found a monotonic relationship between ownership structure and firm performance. However, there were also studies (Morck, Shleifer, & Vishny, 1988; McConnell & Servaes, 1990; Chen, Hexter, & Hu, 1993; Short & Keasey, 1999) which found a non-monotonic relationship between the two. All these studies have assumed ownership as the exogenous factor. Nonetheless, Demsetz (1983) and Demsetz and Lehn (1985) challenged the notion. They claimed that ownership structure is an endogenous variable which has no direct relationship on firm performance. Past studies by Demsetz and Villalonga (2001), Farooque, van Zijl, Dunstan and Karim (2007) and Boone, Colombage and Gunasekarage (2011) as well as Loderer and Martin (1997) noted a bidirectional relationship between the two. These results, therefore showed that there is no unanimous conclusion and the debate is still prevailing. Based on this, the current study aims to examine the relationship of these two variables in the context of the Indian public listed companies.

This study attempts to examine the impact of ownership structure on corporate performance in an emerging market scenario, post the US financial crisis of 2008. It is hoped that the outcome can contribute to existing ownership literature in a few ways. First, the ambiguity in the derived inference on the relationship between ownership structure and firm performance, as gathered from extant literature, cannot be generalised. Hence, a further study is inevitable. Second, most of the studies in this line of thought are based on developed markets like the US, the UK and the European community, which may not be applicable in the context of emerging countries such as India, due to different socio-economic and political structures (Fan, Wei, & Xu, 2011). Unlike their developed counterparts, emerging economies are confronted with a different type of agency problem, where majority of the inside shareholders tend to benefit themselves unfairly. This practice is liklely to disregard the interests of the minority or outside shareholders. Specifically, India has become one of the largest emerging markets in the world, where investors across the world are keen to invest in the Indian market. However, the institutional settings and corporate governance of India is different from the developed markets (La Porta, Lopez-de-Silanes, & Shleifer, 1999), making the procedure either more tedious or more difficult. In this regard, information gathered from the current study would be able to provide investors with a better understanding of the Indian market, hence enabling them a better decision making process for investment purposes.

Second, ownership structure in India is typically concentrated on family firms and business groups (Chauhan, Dey, & Jha, 2016) which are mostly inter-connected either through formal or informal means. In many cases, it is the owners who control these firms through a complicated pyramidal and cross-holding ownerships. This practice allows the owners to own low-equity ownership yet be able to retain a tight control of the firms. In most of the family-owned firms, anyway, the family members are commonly promoted to the upper echelon of the management due to family ties and not merits. These family-promoted upper management members play a central role in the decision-making of the firms. They have the power to transfer resources from one firm to another, as a means to gain private benefits (Cheung, Rau, & Stouraitis, 2006; Gopalan, Nanda, & Seru, 2007). Taking this scenario to be typical of developing countries, it would seem that a study on India is thus imperative.

Third, this study takes into account two dimensions of the ownership structure: ownership concentration and identities. Studies (Kogan, Ross, Wang, & Westerfield, 2006) showed that ownership structure such as non-institutional ownerships and individual ownerships have been minimally regarded before. Individual ownerships or retail investors play a significant role in the capital market. Through their frequent trading, they can positively contribute to the market liquidity and resilience. Evidence also showed (Kogan et al., 2006) that retail investors' trading can have a persistent impact on share prices and market efficiency. Based on this, individual ownership and other types of ownership structure are also included in this study.

Fourth, both the static (pooled OLS, fixed effect and random effect) and dynamic panel models (generalized method of moments – GMM) are employed in this study. The GMM is used to check the endogeneity issue due to the simultaneity bias which exists in the ownership structure. This is rarely used in earlier ownership studies focussing on the Indian context. Fifth, we consider market capitalisation as the measure for market performance. This variable is also not considered in earlier studies focussing on the Indian context.

Finally, this study takes into account the US financial crisis of 2008, as one element to understand its effect on Indian corporate performance and ownership variations. The US financial crisis was one of the worst financial epidemics that the world had ever witnessed since the Great Depression of 1930. Undoubtedly, the financial crisis has had a severe impact on investors' sentiment and corporate performance, especially in the context of emerging Asian countries (Kim, Kim, & Lee, 2015). Based on this, the current study assumes that the post-crisis era can be used to gauge the influence it might have had on the Indian market.

The rest of this paper is structured as follows. Section 2 describes the Indian institutional framework. Section 3 deals with theories and empirical studies related to the ownership structure and its relationship with firm performance, followed by the development of the hypotheses. Section 4 discusses the data, research methodology and model specifications. Section 5 provides the discussion of the empirical results and Section 6 concludes by looking at the limitations and implications.

2. Literature Review

2.1 The Indian Institutional Setting

The Indian economy has opened up since the structural economic reforms which occurred in 1991, due to the balance of payment crisis. The ambitious plan was launched as a means to attract foreign funds, to privatise the public sector undertakings (PSUs), and to liberalise the stringent rules of India. The impact of the new policy of Liberalisation, Privatisation and Globalisation (LPG), was noticed in the Indian economy in the new millennium. Privatisation led to the transfer of ownerships from the state or central government to the private and public owners (Mukhopadhyay & Chakraborty, 2017). Similarly, Indian corporate players went public in large numbers, in a bid to attract huge funds so as to compete with the global firms. Consequently, this move diluted the ownership structure of these firms. After the firms became public, there were many players like promoters, management, institutions, foreign investors and corporate players who retained some percentage of the total ownership. The diversification of the ownership structure in the Indian private sector has, inevitably, made governance an emerging issue of concern.

There are significant discrepancies between the governance systems of the emerging economies and developed economies. India, as an emerging economy, has different institutional settings and regulatory and legal environments in comparison to the developed countries (Prowse, 1992; Krishna, Ojha, & Barrett, 2017). Therefore, there are certain marked differences in the ownership structure, board structure, business practices, corporate disclosure practices, investor protection laws, governance codes and the market for corporate control. Corporate governance models across the world are different according to the variety of capitalism practised but two popular models stand out. They are the liberal model and the co-ordinate model. The former model prioritises shareholders' interest and it mainly exists in the Anglo-Saxon countries whereas the latter model acknowledges the benefit of stakeholders and it is mainly found in continental Europe and Japan.

The current institutional framework and regulatory functions of India are adopted from Great Britain due to its colonial past, but the Indian corporate governance model is developed from a mixture of the Anglo-Saxon and German model. In this regard, the Indian corporate sector is further classified into the private sector and the public sector. Much of India's industry is most closely held and dominated by the promoter groups while the public sector companies are mainly monitored by the state or central government. The ownership pattern of both the private and public sector companies was radically altered after the LPG era. The public sector companies became mainly socially driven and this has lowered the profitability and efficiency of the public companies. In contrast, the private sector was primarily driven by the controlling promoter groups (Balasubramanian & Anand, 2013) with the intention of maximising its benefits. The major issue here is the conflict of interest between the major and minor shareholders of the private companies.

Although India has adopted many governance and regulatory mechanisms from the west, it is still slow in its execution of these rules due to its low political will and insensitive bureaucracy coupled with corruption. The prevalence of the concentrated ownership structure among the large private sector of India has led to a lack of transparency and clarity of its governance and regulatory implementations. Even though India has a market-based system like western countries do, it is still infirm in various areas, for instance, the shortage of an active market for control, the lack of a free flow of information from companies to investors, and the presence of market anomalies. Consequently, the ownership structure that prevails among India's corporate sector has become a crucial mechanism for governance.

2.2 Review of Theory and Empirical Evidence

The ownership structure is based on the distribution of the equity and property rights of the firms among the shareholders in publicly traded firms. The corporate ownership structure and its relationship with firm performance is developed under the framework of the agency theory (Jensen & Meckling, 1976) which explains the relationship between the principal and agent, where the agency conflict arises due to the diverging interest between the two coordinating parties (Fama, 1980). Managers of the firms may not work for the best interest of the owners in the absence of their close supervision (Smith, 1776). This will mitigate the profit maximisation purpose of the owners, and also creates doubt on the survival of the firm (Fama, 1980). To alleviate the agency problem and to optimise firm performance, ownership control has become a crucial governance mechanism even though earlier evidence looking at the relationship between ownership structure and performance had been mixed.

2.2.1 Ownership Concentration and Firm Performance

The agency theory also delineates the separation of ownership from control, and this leads to the confiscation of property by managers. The dilution of the owners' supervision in the firm boosts managerial opportunism and it can adversely affect firm performance (Berle & Means, 1932). Owners with small ownership in the firms are not interested in disciplining the blundering managers (Grossman & Hart, 1980), but owners with concentrated ownership can discipline the managers by utilising their voting rights. Their knowledge and resources can also enhance firm performance (Carney & Gedajlovic, 2001). Blockholders, with their complete control over the management, can also be helpful for resolving the free rider problem and moral hazards in their firms (Shleifer & Vishney, 1986), an action which can reduce agency costs.

The survey conducted by La Porta et al. (1999) mentioned that most of the economies of the world have a concentrated ownership structure except for the USA and UK. The study by Shleifer and Vishny (1997) also concluded that ownership concentration prevailed in most of the

Latin American, European, East Asian and African listed firms, but in Asian countries, the ownership structure was noted to be pyramidal and cross-sectional (Claessens & Fan, 2002). Studying Japanese companies, Kang and Shivdasani (1995) found that there was a high ownership concentration but Prowse (1992) found that financial institutions were those with the largest shareholders in the Japanese listed firms. In China, most of the firms were of high ownership concentration, with majority of the ownership being in the hands of the government (Xu & Wang, 1999) but in the case of Germany, large shareholders seemed to control the management of the listed firms (Franks & Mayer, 2001).

Studies (Berle & Means, 1932; Jensen & Meckling, 1976; Shleifer & Vishny, 1986) have noted that most of the countries' corporate world is dominated by concentrated ownership and large shareholders who controlled the management of the firms so as to maximise their returns. This was verified by Berle and Means (1932) and Jensen and Meckling (1976) who agreed that in a dispersed ownership pattern, ownership concentration can mitigate the agency problem. This helped to enforce firm performance. Shleifer and Vishny (1986) also argued that large shareholders have the capacity to streamline the action of the managers and to motivate them into improving firm performance. This was endorsed by La Porta et al. (1999) who stated that in a country with a less developed capital market and weaker investor protection, ownership concentration is beneficial for improving firm performance.

Thomsen and Pedersen (2000), Gorton and Schmid (2000), Earle, Kucsera and Telegdy (2005), Alonso-Bonis and de Andrés-Alonso (2007) and Krivogorsky and Grudnitski (2010) examined the effects of ownership concentration in the context of European countries. They all documented the positive effects of ownership concentration in their findings. Other studies witnessing the positive effect of ownership concentration on firm performance in other countries can be traced to Javid and Iqbal (2008) who examined Pakistan, Hu and Izumida (2008) who focussed on Japan, Boone et al. (2011) and Gaur, Bathula and Singh (2015) who examined New Zealand, and Desoky and Mousa (2013) who focussed on Egypt.

Despite this being so, some studies had noted the negative relationship between ownership concentration and firm performance. For instance, Leech and Leahy (1991) observed the ownership concentration of UK listed firms and Agrawal and Knoeber (1996) studied the interdependence of the control mechanisms in 400 of the largest USA firms. Both studies found no empirical relationship between insider ownership and firm performance. Similarly, Jiang (2004), Džanić (2012) and Al-Saidi and Al-Shammari (2015) also reported the negative effect of ownership concentration. Investigating the relationship between ownership concentration and firm performance among a sample of USA firms, Demsetz and Villalonga (2001) also concluded that large shareholders were negatively related to firm performance.

Nonetheless, some studies found the inter-deterministic relationship between ownership structure and firm performance. For instance, Demsetz (1983) noted that ownership concentration was considered as the endogenous variable; it had no effect on firm performance. Likewise, Demsetz and Lehn (1985) found the endogeneity between ownership concentration and firm performance in the USA listed firms to be unassociated. The study of Demsetz and Villalonga (2001) also considered ownership structure as an endogenous variable; they stated that there was no significant link between ownership structure and firm performance. Finally, Manawaduge, De Zoysa and Rudkin (2009) looking at Sri Lanka and Al-Saidi and Al-Shammari (2015) looking at Kuwait, also reported no significant association between ownership concentration and firm performance.

2.2.2 Ownership Identity and Performance

Ownership identity is the other dimension of the ownership structure observed in the current study. It is a concept which can be described as made up of different types of owners who have a certain percentage of shares in the firms. They thus comprised promoters, corporate investors, financial institutional investors, government bodies, individual investors and employee stock owners (Boone et al., 2011). These ownership types or ownership identities have a different level of behaviour, which signifies the various kinds of engagement that can influence firm performance (Denis & McConnell, 2003). Ownership identities offer the shareholders three bases of powers, such as formal power, social impact power and expertise in the firms concerned (Kang & Sørensen, 1999).

In ownership identities, large institutional shareholders have the highest level of motivation, incentive and resources to control the actions of the managers. They can drive managerial behaviour towards improving firm performance by reducing the managers' self-consuming behaviours (McConnell & Servaes, 1995). In their studies, Leech and Leahy (1991), Xu and Wang (1999) and Al-Khouri (2006) reported that institutional investors have a positive impact on the firm's value. In contrast, Agrawal and Knoeber (1996), and La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) noticed that domestic and institutional investors do not have any effect on firm performance while Barnhart and Rosenstein (1998) detected a negative association between institutional ownership and firm performance. Finally, Cronqvist and Nilsson (2003) found no association.

State ownership or government ownership is the next kind of ownership structure which prevails in most countries across the world. In the case of state-controlled companies, politicians are the ones who select the executives and other personnel, based on politicians' bias, rather than on the selected members credentials. This practice can lead to more transaction costs (Megginson, Nash, & Van Randenborgh, 1994). The influence of the politicians and bureaucrats in the decision-making process is very rampant in government-controlled firms and this unhealthy practice can adversely affect firm performance and firm efficiency (Shleifer & Vishny, 1994). Focussing on Middle Eastern countries, Aljifri and Moustafa (2007) and Omran, Bolbol and Fatheldin (2008) noted that government ownership has a positive association with firm performance. In contrast, Gunasekarage, Hess and Hu (2007) and Liao, Shyu and Chien (2014) stated that the high level of government ownership adversely affected firm performance in the case of China.

Another type of ownership structure is the founding family investors who try to enhance their interests by side lining the concerns of other shareholders (Morck et al., 1988; Prowse, 1992). In their study, Anderson and Reeb (2003) examined the performance of family-owned and non-family owned firms in the USA. They found that family-owned firms performed better than non-family owned firms. Chu (2011) mentioned that when family members of the firms were also the heads of the business, top executives or were members on the board of directors, the performance of the firms is strong. This claim was endorsed by Barontini and Caprio (2006) who studied ten European countries and were able to show evidence of the positive impact of family control on firm performance. This outcome was also validated by Yammeesri and Lodh (2004) and Shyu (2011) who looked at Taiwanese firms. Nonetheless, Filatotchev, Lien and Peisse (2005) found this not to be true.

Investments can come from any individual or group. Corporate investors, or business entities, for instance, invest with the purpose to control the actions of the managers, and to earn a huge financial gain. They have more inclinations towards earning a profit and in gaining information about the firms (La Porta et al., 1999). Researchers like Xu and Wang (1999), Qi, Wu and Zhang (2000) and Hovey, Li and Naughton (2003) mentioned that the presence of corporate investors increased firm's profitability. In the case of individual shareholders, it was observed that their impact on the firm's decision-making process was very limited. This is because individual shareholders do not have the required power or the voting right to monitor the management (Zeitun & Gang Tian, 2007). Besides individual shareholders, another kind of ownership structure can be traced to managerial ownership. This type of ownership could influence firm performance as noted by Alabdullah (2018). However, Al-Khouri (2006), Džanić (2012) and Muller-Kahle (2015) detected that it had a negative effect on firm performance. Likewise, Liao, Shyu and Chien (2014) also found that managerial ownership had no influence on firm performance in Taiwan. Table 1 shows a summary of the empirical works done on ownership structure and firm performance.

2.2.3 Evidence from India

So far, we have witnessed certain studies which had stressed on the effect of the ownership structure on firm performance, whether positively, negatively or neutrally. This section highlights those studies which had focussed on India specifically, as shown in Table 2. In this regard, Ganguli and Agrawal (2009) mentioned that promoters were one of the largest shareholders in India. Their monitoring helped to improve the performance of the Indian companies (Haldar & Rao, 2011; Manna, Sahu and Gupta 2016; Mishra & Kapil, 2017). Likewise, Deb and Chaturvedula (2003) and Manna et al. (2016) also detected evidence showing that institutional ownership was positively related to the firm's performance measures. However, Srivastava (2011) stated that promoters have no influence on firm performance.

As noted in the table, empirical works conducted in the context of India are not very widespread. Among these studies, we also identified some limitations within. First, the consideration of ownership concentration in this line of research in the context of India is rather limited. Many of these studies had focussed on the promoters and institutional ownership. Second, earlier studies have not considered the endogeneity issue which exists in the ownership structure. Third, the use of the dynamic panel data methodology was hardly done in earlier works. Fourth, a post-US financial crisis had not been considered

Table 1: Summary of Empirical Works on Ownership Structure and Firm Performance

No.	Authors (Year)	Sample	Ownership Variables	Performance Measures	Main Results
1	Thomsen & Pedersen (2000)	214 firms from 12 European countries (1990-1995)	Ownership concentration	ROA and Market to book ratio	Positive effect
2	Gorton & Schmid (2000)	283 German listed firms (1975-1986)	Ownership concentration	ROE and Market to book ratio	Positive effect
3	Demsetz & Villalonga (2001)	223 US Firms (1976-1980)	Ownership concentration	Tobin's Q, Average accounting profit rate	No significant relationship
4	Jiang (2004)	33 Chinese firms (2003)	Ownership concentration	ROE	Negative effect
5	Earle et al. (2005)	168 Hungarian firms (1996-2001)	Ownership concentration	ROE and Operating efficiency	Positive effect
6	Al-Khouri (2006)	89 listed firms at the Amman Stock Exchange (1998-2001)	Institutional ownership shareholdings, Directors' ownership	Tobin's Q	Institutional investors (positive), Managerial ownership (negative)
7	Farooque et al. (2007)	660 Bangladeshi firm years (1995-2001)	Financial Institutional Shareholdings, Govt shareholdings, Public shareholdings	Tobin's Q and ROA	No significant effect
8	Alonso-Bonis & de Andrés-Alonso (2007)	101 Spanish listed firms (1991-1997)	Ownership concentration, Directors' ownership	Tobin's Q	Ownership concentration (positive), Directors' ownership (No relationship)
9	Javid & Iqbal (2008)	60 non-financial Pakistan listed firms (2003-2008)	Ownership concentration, Financial institution ownership, Foreign ownership, Individual ownership	ROA, ROE and Tobin's Q	Ownership concentration, family and foreign ownership (Positive). Financial institution and individual ownership (No relationship)

Table 1: (continued)

No.	Authors (Year)	Sample	Ownership Variables	Performance Measures	Main Results
10	Hu & Izumida (2008)	Japanese listed firms (1980-2005)	Ownership concentration	ROA and Tobin's Q	Ownership concentration (Positive)
11	Manawaduge et al. (2009)	45 Sri Lankan listed companies (2007-08)	Ownership concentration	ROA, Market to book ratio and Tobin's Q	No significant effect
12	Krivogorsky & Grudnitski (2010)	891 public firms of Continental Europe (2005)	Blockholders ownership	Return on Shareholders' fund and Tobin's Q	Positive effect
13	Boone et al. (2011)	612 firms of New Zealand years (2002-2007)	Individual blockholder, Director blockholder, Financial blockholders, Corporate blockholders and Foreign blockholders	Tobin's Q and Market value to book value ratio	Ownership concentration (Positive) and ownership identity (positive)
14	Džanić (2012)	237 Croatian joint stock companies (2003-09)	Ownership concentration, managerial ownership	ROE, Tobin's and labour efficiency	Blockholder ownership (Negative) and managerial ownership (Negative)
15	Desoky & Mousa (2013)	99 listed companies of Egypt (2009)	Ownership concentration, Government ownership, Corporate owners, Bank owners, Individual owners	ROA and ROE	Ownership concentration (positive with ROE), Bank owners and Individual owners (significant effect)
16	Liao et al. (2014)	488 Taiwanese manufacturing firms (1994-2004)	Directorial ownership, Managerial ownership	Tobin's Q	Director ownership (positive), managerial ownership (no influence)

Table 1: (continued)

No.	Authors (Year)	Sample	Ownership Variables	Performance Measures	Main Results
17	Muller-Kahle (2015)	187 US and UK firms (2000-2007)	CEO owner, Pressure Resistant and Pressure sensitive	Tobins' Q, ROA	CEO ownership (negative), dominant owners (positive)
18	Gaur et al. (2015)	169 New Zealand listed firms	Ownership concentration	ROA, ROE and ROS	Ownership concentration (positive)
19	Al-Saidi and Al-Shammari (2015)	103 listed firms of Kuwait (2005-2010)	Ownership concentration, Institutional ownership, Government ownership and Family ownership	Tobin's Q, ROA	Ownership concentration (no effect) and Government and Individual and Family owners (positive)
20	Alabdullah (2018)	109 listed firms of Jordan (2012)	Managerial ownership and Foreign ownership	Market share	Managerial ownership (positive)

Table 2: Summary of the Empirical Evidence of Studies Done in India

No.	Authors (Year)	Sample	Ownership Variables	Performance Measures	Main Results
1	Deb & Chaturvedula (2003)	443 BSE listed firms	Promoters, Institutional and Individual shareholders	Tobin's Q	Institutional owners (positive) and individual shareholders (negative)
2	Douma, George, & Kabir (2006)	1005 BSE listed firms	Foreign ownership, Foreign institutions, Foreign corporations, Domestic ownership,	ROA and Tobin's Q	Foreign ownership, Foreign corporations, and Domestic corporation (positive)

Table 2: (continued)

No.	Authors (Year)	Sample	Ownership Variables	Performance Measures	Main Results
			Domestic institutions, Domestic corporations, Managerial ownership		
3	Ganguli & Agrawal (2009)	NSE 98 mid-cap listed companies	Promoters and non-promoters shareholders	Tobin's Q	Promoters' holding (positive) and Non-promoters' holding (negative)
4	Srivastava (2011)	98 BSE listed companies	Domestic promoter, Foreign promoter, Non-promoter institutional investors, Non-promoter non-institutional holdings	ROA, ROE, Price to book ratio and Price-earnings ratio	No relationship
5	Haldar & Rao (2011)	BSE-500 listed firms	Promoters and non-promoters shareholders	Tobin's Q, ROA, and ROCE	Promoters' holding (positive) and Non-promoters' holding (negative)
6	Jameson, Prevost & Puthenpurackal (2014)	1796 Indian firms	Family ownership, Founding ownership, Founding family ownership	Tobin's Q	Family, Founding, and Founding family ownership (negative)
7	Manna et al. (2016)	42 NSE listed firms	Foreign promoters, Institutional investors	Tobin's Q, Market value added, Earning per share, and ROCE	Foreign promoters and intuitional owners (positive)
8	Mishra & Kapil (2017)	391 Indian companies	Promoter ownership	Tobin's Q, ROA	Promoters owner-ship (positive)

in those studies. The use of the agency theory in these studies had also conceptualised that the ownership structure enhances firm performance by mitigating the agency problems (Jensen & Meckling, 1976; Fama, 1980). Based on this philosophy, we predict that ownership structure has a positive and significant effect on firm performance. We consider ownership concentration and ownership identities as two dimensions of the ownership structure (Denis & McConnell, 2003). Further, firm or corporate performance is segregated into two categories: financial performance and market performance. Based on the review of previous literature mentioned, we hypothesised that:

H_1: Ownership concentration has a significant positive impact on the financial performance of the Indian listed firms, after the US financial crisis.

H_2: Ownership identities have a significant positive impact on the financial performance of the Indian listed firms, after the US financial crisis.

H_3: Ownership concentration has a significant positive impact on the market performance of the Indian listed firms, after the US financial crisis.

H_4: Ownership identities have a significant positive impact on the market performance of the Indian listed firms, after the US financial crisis.

4. Data and Methodology

4.1 Sample

This study selected the largest 100 firms from the Bombay Stock Exchange (BSE) and data over a period of six years from financial year 2009-10 to financial year 2014-15 are used to test the hypotheses. The BSE is the largest and oldest stock exchange of India which has been in operation since 1875. As of August 2016, more than 5500 companies are listed on the BSE. In this study, the BSE-100 companies are selected due to their total market capitalisation, that is, 67 per cent of the total market capitalisation of the BSE. This signifies that the BSE-100 companies represent almost 70 per cent of the BSE (International Finance Corporation, 2018). Further, we develop this study by using data that exist after the US financial crisis of 2008, so as to gauge the impact of the crisis on the variations of firm/corporate performance and ownership patterns. We then form two models in this study. The first model is developed to uncover the causal relationship between ownership concentration and firm/corporate performance, where the sample comprised 91 BSE listed firms. The second model discusses the impact of the ownership identities on firm/corporate performance, where 93 listed companies are finalised as samples. The data involving firm/corporate performance, ownership structure, and firm-specific variables, are collected from the PROWESS database of CMIE (Centre for Monitoring the Indian Economy).

4.2 Measurement Variables

This study applies two dependent variables – return on assets (ROA) and market capitalisation (MC) as proxies for the financial performance and market performance, respectively. These two performance measures – ROA and MC, are taken from previous literature (Thomsen & Pedersen, 2000; Farooque et al., 2007; Haldar & Rao, 2011; Al Mubarak & Hamdan, 2016). Two broad independent variables are used for the ownership structure: ownership concentration and ownership identities. The first of these, ownership concentration, is measured by the percentage of the shareholdings of the largest shareholder (C1) and the top five largest shareholders (C5), as noted in the works of Demsetz and Villalonga (2001), Jiang (2004), Earle et al. (2005), and Desoky and Mousa (2013). The ownership identities are next categorised into five variables: promoter holdings (POWN), domestic institutional owners (DIO), foreign institutional owners (FIO), non-institutional owners (NIO), and individual owners (IO). These ownership identity variables are derived from previous literature (Deb & Chaturvedula, 2003; Javid & Iqbal, 2008).

4.3 Control Variables

Several control variables are also considered in this study so as to adjust for the economic and industry effects which explain the firm's performance significantly. Firm-specific variables like firm age (FA), firm size (SZ), leverage (LEV), asset turnover ratio (ATR) and liquidity (LIQ) are also taken into account. Firm age is represented by the number of years of the firm's incorporation. Firm size is considered as one of the important firm-specific factors which has a significant impact on firm performance (Džanić, 2012). Firm size is included in the empirical model to control the size effect across the firms. This is because the size of the firms can determine if firms get to enjoy the economies of scale and scope. In the current study, we use the natural logarithm of total assets of the firm as a proxy for firm size (Džanić, 2012; Alipour, 2013). The leverage is incorporated because debt disciplines the managers which then reduces the agency cost and improves the firm's performance positively (Park & Jang, 2010). The assets turnover ratio indicates how the firms utilise their assets to generate revenue. A better utilisation ratio leads to a better performance (Welch, 2003). Liquidity is measured by the ratio between current assets and current liabilities, and higher liquidity leads to better firm performance (Alipour, 2013).

4.4 Methodology

The data in this study are extracted from the cross-sectional and time series base via the panel data method. The STATA version 12 is used to conduct the panel data analysis so as to examine the impact of the ownership structure on the firm's performance. The panel data method has been used significantly by researchers in the area of financial economics. This is because it captures the individual and time effect of the samples, and it also controls the heterogeneity problem which may exist in the data (Hitt, Gimeno, & Hoskisson, 1998). Hence, the panel data model is considered to be better than the cross-sectional and time-series models. In this study, we employed the static and dynamic panel models to test our hypotheses. The static panel data models we used include pooled OLS, fixed effect and random effect. Following this, the three tests comprising the F-test (Baltagi, 1995) is used to choose between the pooled OLS and the fixed effect while the Lagrange multiplier test (Breusch & Pagan, 1980) is utilised to choose between the pooled OLS and the random effect. Finally, Hausman test (Hausman, 1978) is applied to choose between the fixed effect and the random effect.

In the case of the dynamic panel model, we use a two-step generalized method of moments (GMM) to address the endogeneity issue. The GMM model is helpful in eliminating the endogeneity problem through the internally generated instrumental variables. The Arellano-Bond test is next applied to check the serial correlation problem, where AR(1) and AR(2) would indicate the first-order and second-order serial correlation. We use the Sargan test to examine the over-identification and validity of the instruments. The Sargan test, with high p-value approves the validity of the model while the significant p-value of the Wald test implies validity for the overall model.

4.5 Model Specification

The empirical findings are segregated into two sections. The first section deals with the impact of the ownership concentration on firm performance by estimating the following panel data regression model.

$$FP_{it} = \alpha + \beta1C1_{it} + \beta2C5_{it} + \beta3FA_{it} + \beta4FS_{it} + \beta5LEV_{it} + \beta6ATR_{it} + \beta7LIQ_{it} + \varepsilon_{it} \quad (1)$$

$$MP_{it} = \alpha + \beta1C1_{it} + \beta2C5_{it} + \beta3FA_{it} + \beta4FS_{it} + \beta5LEV_{it} + \beta6ATR_{it} + \beta7LIQ_{it} + \varepsilon_{it} \quad (2)$$

where,

FP_{it} = Financial performance represented by return on assets
MP_{it} = Market performance represented by market capitalisation
$C1_{it}$ = Shareholdings of the single largest shareholder
$C5_{it}$ = Shareholdings of the top five largest shareholders
FA_{it} = Firm age
FS_{it} = Firm size
LEV_{it} = Leverage
ATR_{it} = Assets turnover ratio
LIQ_{it} = Liquidity
ε_{it} = Error term

The second model tests the effect of ownership identities or the types of owners on firm performance by estimating the following panel data regression models, where we have introduced several types of large shareholders.

$$FP_{it} = \alpha + \beta1PO_{it} + \beta2DIO_{it} + \beta3FIO_{it} + \beta4NIO_{it} + \beta5IO_{it} + \beta6FA_{it} + \beta7FS_{it} + \beta8LEV_{it} + \beta9ATR_{it} + \beta10LIQ_{it} + \varepsilon_{it} \quad (3)$$

$$MP_{it} = \alpha + \beta1PO_{it} + \beta2DIO_{it} + \beta3FIO_{it} + \beta4NIO_{it} + \beta5IO_{it} + \beta6FA_{it} + \beta7FS_{it} + \beta8LEV_{it} + \beta9ATR_{it} + \beta10LIQ_{it} + \varepsilon_{it} \quad (4)$$

where,

FP_{it} = Financial performance represented by return on assets
MP_{it} = Market performance represented by market capitalization
PO_{it} = Promoters ownership holdings
DIO_{it} = Domestic institutional owners
FIO_{it} = Foreign institutional owners
NIO_{it} = Non-institutional owners
IO_{it} = Individual owners

FA_{it} = Firm age
FS_{it} = Firm size
LEV_{it} = Leverage
ATR_{it} = Assets turnover ratio
LIQ_{it} = Liquidity
ε_{it} = Error term

Table 3 is provided to highlight the summary of the variables used in the current study.

Table 3: Summary of the Variables

Variables	Definition	Symbol	Type
Return on assets	EBIT/total assets	ROA	Dependent
Market capitalisation	Natural log of market capitalisation	MC	Dependent
Ownership concentration	Percentage of shareholdings by the single largest and five largest shareholders	C1, C5	Independent
Promoters' ownership	Percentage of shareholdings by promoters	POWN	Independent
Domestic institutional ownership	Percentage of shareholdings by Indian institutional investors	DIO	Independent
Foreign institutional ownership	Percentage of shareholdings by foreign institutional investors	FIO	Independent
Non-institutional ownership	Percentage of shareholdings of non-institutional investors	NII	Independent
Individual ownership	Percentage of shareholdings of individual shareholders	II	Independent
Firm age	Natural Logarithm of years since firms' incorporation	FA	Control
Firm size	Natural logarithm of total assets	SZ	Control
Leverage	Total outsiders' debt to total assets	LEV	Control
Assets turnover ratio	Total net sales/total fixed assets	ATR	Control
Liquidity	Current ratio/current assets	LIQ	Control

5. Results and Discussions

The results of the study are also classified into two sub-sections. The first sub-section presents and discusses the univariate and multivariate results derived from the empirical tests which examined the relationship between the ownership concentration and firm performance. The next sub-section deals with the empirical results obtained from the tests conducted on the relationship between the ownership identities and firm performance.

5.1 Ownership Concentration and Performance

Literature focusing on the relationship between ownership concentration and firm performance has been very diverse. Some like Gorton and Schmid (2000), Earle et al. (2005), Hu and Izumida (2008), Desoky and Mousa (2013) noted that ownership concentration has a positive impact. Others like Demsetz and Villalonga (2001), Jiang (2004), Manawaduge et al. (2009), and Fauzi and Locke (2012) found that ownership concentration has a negative impact on firm performance. Both the groups were divergent in their findings. Therefore, in this study, we attempt to test the relationship between ownership concentration and firm performance, in the context of an emerging market like India, post the US financial crisis of 2008. This sub-section, therefore, presents the descriptive statistics, correlation matrix, static and dynamic panel data models results, which were derived from the model used to examine the relationship between ownership concentration and firm performance. Table 4 further illustrates.

Table 4: Descriptive Statistics

Variable	Mean	Minimum	Maximum	Standard Deviation	Total Observation
ROA	8.926	-47.11	60.42	9.254	546
MC	12.676	4.54	15.42	1.101	546
C1	0.403	0.04	0.90	0.218	546
C5	0.598	0.11	0.98	0.202	546
FA	3.603	1.79	4.79	0.642	546
FS	10.131	4.50	14.63	1.658	546
LEV	0.521	0.00	1.56	0.408	546
ATR	14.368	0.28	378.58	35.187	546
LIQ	1.969	0.26	17.80	2.004	546

The statistics given above are derived from the descriptive statistics of the dependent variables (ROA and MC), the independent variable (C1 and C5), and the control variables (FA, FS, LEV, ATR and LIQ). There is a total of 546 firm-year observations encompassing 91 Indian listed firms which are observed for six years, from FY 2009-10 to FY 2014-15. This offered a longitudinal dimension into understanding the data set.

Table 5 provides the statistics of the independent and dependent variables. Here it can be seen that the financial performance (ROA) and ownership concentration (L1 and L5) have declined consistently since FY 2009-10. This is a sign indicating the adverse effect of the crisis on the Indian corporate market. The average ownership holdings of the single largest and the five largest shareholders, are 40 per cent and 60 per cent, respectively. This outcome is similar to the concentration level of the Chinese listed firms noted by Wang, Guthrie and Xiao (2012). In developed countries like the USA and UK, the ownership structure is observed to be more or less dispersed, as compared to the European and Asian countries (Shleifer & Vishny, 1986). This was also noted by La Porta et al. (1998) who asserted that the high ownership concentration had become an alternative control mechanism due to low investors' protection rights in the developing countries.

Table 5: Year-wise Data of Dependent and Independent Variables

Variables/FY	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
ROA	10.00	9.58	8.68	8.33	8.26	8.34
MC	12.43	12.60	12.59	12.64	12.78	13.05
L1	40.85	41.36	41.34	39.92	39.70	39.65
L5	60.42	60.96	60.65	59.12	58.07	58.93

Table 6 presents the correlation matrix and the variance inflation factor value (VIF) of the independent and control variables. The correlation matrix table shows that no variables are having a high correlation coefficient, and this signifies that there is no collinearity problem. The ownership concentration variable of C1 shows a significant positive correlation with MC, and this implies that an increase in large owner's shareholdings enhances the MC. Next, we find that C5 displays a significant positive association with the ROA, and this signifies that that profitability has improved with an increase in the concentration level. Further, we find that firm size (SZ), leverage (LEV) and assets

Table 6: Correlation Matrix

Variables	ROA	MC	C1	C5	FA	FS	DR	ATR	LIQ	VIF
ROA	1.000									
MC	**0.179**	1.000								
C1	0.053	**0.121**	1.000							2.98
C5	0.104	0.055	**0.803**	1.000						2.88
FA	0.071	0.042	0.040	0.021	1.000					1.11
FS	**-0.469**	**0.496**	**0.174**	0.077	**0.099**	1.000				1.10
LEV	**-0.206**	-0.052	-0.019	-0.014	**0.097**	0.076	1.000			1.09
ATR	**-0.131**	-0.045	**0.165**	**0.093**	-0.057	**0.202**	**0.182**	1.000		1.08
LIQ	**0.177**	**0.115**	**0.153**	**0.168**	**0.148**	**0.123**	**-0.136**	0.032	1.000	1.06

Note: All correlations in bold are significant at $p < .05$

turnover ratio (ATR) also have a significant negative correlation whereas liquidity (LIQ) has a positive association with the ROA. In addition, firm size (SZ) and liquidity (LIQ) have a significant positive relationship with MC. Thus, it seems evident from the VIF values that there is no multicollinearity problem as the VIF values of the independent and control variables are under the recommended value of 10 (Kennedy, 2008).

Table 7 shows the Breusch-Pagan test, where we find the chi-square value to have a significant p-value, which signifies that the variables are not homoscedastic. To control the heteroskedasticity and autocorrelation problem, we then use the "clustered" function in the static models employed for this study.

Table 7: Breusch-Pagan Test for Heteroscedasticity

Variables: C1 C5 FA FS LEV ATR LIQ		
H0: Constant variance		
Chi-square value	97.51	P-value 0.000

Table 8 depicts eight models which comprise of four static models and four dynamic models. The static panel models are the fixed effect models, as confirmed by the specification tests as noted in Table 9. The four dynamic panel models comprise the two-step generalized method of moments (GMM). Here, the serial correlation test results such as the AR(1) and AR(2) show an insignificant p-value for all the GMM models. This indicate that there is no serial correlation problem. Subsequently,

Table 8: Static and Dynamic Panel Data Models

Models	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
DV	ROA	ROA	MC	MC	ROA	ROA	MC	MC
Methodology	FE	FE	FE	FE	GMM	GMM	GMM	GMM
Constant	37.265	37.880	5.707	5.656	9.131	11.715	-5.070	-5.499
	(3.44)***	(3.54)***	(4.48)***	(4.51)***	(1.41)*	(1.65)*	(-4.07)***	(-5.31)***
C1	-2.404		-1.831		-0.939		-0.668	
	(-0.52)		(-3.35)***		(-0.190		(-1.13)	
C5		-2.018		-1.081		0.079		-0.364
		(-0.84)		(-3.83)***		(0.07)		(-5.13)***
FA	-4.841	-4.944	1.446	1.422	-1.316	-1.132	1.043	1.023
	(-1.53)	(-1.56)	(3.88)***	(3.82)***	(-0.62)	(-0.56)	(4.97)***	(4.69)***
FS	-1.024	-1.026	0.252	0.256	-0.126	-0.458	-0.306	-0.337
	(-1.83)*	(-1.83)*	(3.84)***	(3.90)***	(-0.25)	(-0.85)	(-3.70)***	(-4.56)***
LEV	-2.021	-2.002	-0.007	0.001	-0.295	-0.452	-0.245	-0.261
	(-2.55)***	(-2.53)***	(-0.08)	(0.02)	(-0.46)	(-0.71)	(-2.34)***	(-2.82)***
ATR	0.025	0.026	-0.003	-0.002	-0.003	0.003	0.001	0.001
	(-1.54)	(1.53)	(-1.65)	(-1.40)	(0.16)	(0.14)	(-0.63)	(0.63)
LIQ	0.578	0.576	-0.008	-0.007	0.007	-0.032	0.009	0.013
	(2.59)***	(2.60)***	(-0.34)	(-0.27)	(0.02)	(-0.10)	(0.71)	(0.91)
R-squared	0.051	0.052	0.141	0.146				
F-test/Wald test	4.01***	4.09***	12.22***	12.87***	1819.27***	467.87***	626.23***	452.44***
AR(1) test (p-value)					0.095	0.096	0.106	0.101
AR(2) test (p-value)					0.529	0.541	0.218	0.503
Sargan test (chi^2 value)					13.492	12.719	43.061	42.518
Sargan test (p-value)					0.411	0.469	0.102	0.114

Note: ***, **, * refers to 1%, 5% and 10% level of significance. DV refers to dependent variable.

Table 9: Model Optimal Test

Models	F-test	LM test	Hausman test
Model 1	12.30***	549.22***	14.74**
Model 2	12.32***	544.23***	16.11***
Model 3	13.71***	578.34***	29.22***
Model 4	13.90***	580.34***	25.54***

Note: ***, **, * refers to 1%, 5% and 10% level of significance respectively.

the insignificant p-values of the Sargan test imply that the GMM models are free from the over-identification problem.

Table 9 presents the model specification tests which include the F-test, LM test and Hausman test. A significant F-test signifies that the fixed effect is better than the pooled OLS; a significant LM test also imply that the random effect is better than the pooled OLS, and finally, a significant Hausman test would indicate that the fixed effect is better than the random effect.

In this section, we report on both the static and dynamic panel models (Table 8) for robustness of the findings. In addition, the findings derived from the dynamic models are also considered. We find that both the ownership concentration variables (C1 and C5) have no significant impact on the financial performance (ROA) and this signifies that large owners do not influence the Indian firms' corporate financial performance. This result is very much, in line with the findings of Demsetz and Villalonga (2001), Jiang (2004), Demsetz and Lehn (1985) and Fauzi and Locke (2012). Nevertheless, variations noted in ownership concentration levels are observed to have a significant negative influence on market performance (MC), and this signifies that an increase in large ownership holdings has an adverse effect on market sentiments of Indian listed firms. The firm-specific variables, such as firm size and leverage, are noted to have a significant negative effect on market performance. Thus, our findings are consistent with Kapopoulos and Lazaretou (2007), Džanić (2012) and Muller-Kahle (2015).

5.2 Ownership Identities and Firm Performance

Earlier studies (Denis & McConnell, 2003; Boone, et al., 2011; Desoky & Mousa, 2013) have provided evidence to show that ownership identities have a significant influence on the firms' decision-making process, which affected firm performance. The ownership identities of the current study are categorised into five groups: promoters (POWN), domestic institutional owners (DIO), foreign institutional owners (FIO), non-institutional owners (NIO) and individual owners (IO). The promoters group includes the shareholdings of domestic and foreign promoters. The domestic institutional owners include the shareholdings of mutual funds, insurance companies, as well as banks and financial institutions from India. The foreign institutional owners include investments from banks, insurance companies, and financial institutions from outside India and the Non-institutional owners include investments from the various corporate houses. Finally, the individual investors include total investments from all the retail investors.

Table 10 presents the descriptive statistics of the dependent, independent and control variables. There is a total of 558 firm-year observations, which consist of 93 Indian listed firms observed for six years, from FY 2009-10 to FY 2014-15. The average promoters holding in the samples are very high with 50 per cent stakeholdings, which is similar to the study of Deb and Chaturvedula (2003), also in the Indian context. It is found that the average promoters' holding of the CNX 500 companies is around 52 per cent. In this study, the results show that the average foreign institutional shareholdings (FIO) is almost 20 per cent, and this figure seems to be better than the average shareholdings of

Table 10: Descriptive Statistics

Variables	Mean	Minimum	Maximum	Standard Deviation	Total Observation
ROA	8.98	-47.11	60.42	9.38	558
MC	12.662	4.54	15.42	1.157	558
POWN	0.502	0.01	0.90	0.207	558
DIO	0.12	0	0.39	0.08	558
FIO	0.19	0.01	0.80	0.124	558
NIO	0.145	0.01	0.50	0.088	558
IO	0.086	0.01	0.25	0.055	558
FA	3.572	1.79	4.79	0.631	558
SZ	10.13	4.50	14.63	1.64	558
LEV	0.53	0.01	5.08	0.40	558
ATR	14.11	0.12	378.58	34.85	558
LIQ	1.91	0.26	17.80	1.96	558

domestic institutional owners (DIO). The maximum foreign institutional equity investment is nearly 80 per cent whereas the maximum domestic institutional investment is 39 per cent, and this statistic suggests that the Indian listed firms are quite inclined towards foreign investments. The average non-institutional shareholding is only 15 per cent, with a maximum of 50 per cent. Additionally, Table 10 also indicates the average institutional equity investment to be 30 per cent, and this figure is better than the average non-institutional investments. The outcome of this table further demonstrates that the institutional equity investment plays a significant role in the equity ownership structure of the larger Indian firms. The average individual investor's shareholdings (II) in the Indian listed firms is 9 per cent, and this is considered low as the average individual shareholdings of the CNX 500 companies as reported by Deb and Chaturvedula (2003) was 35 per cent.

Table 11 highlights the year-wise data of the dependent and independent variables. Our results indicate that the ownership holdings of the promoters, domestic institutions, non-institutions and individual investors have shrunk continuously since FY 2009-10. This occurrence indicates that the crisis has a harmful effect on the investors' sentiments. Nonetheless, the investments from foreign institutions has increased steadily since FY 2009-10. This occurrence can be inferred as showing that the foreign institutions have shown a strong confidence in the Indian market.

Table 11: Year-wise Data of Dependent and Independent Variables

Variables/FY	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
ROA	10.00	9.58	8.68	8.33	8.26	8.34
MC	12.43	12.60	12.59	12.64	12.78	13.05
POWN	50.98	50.83	50.91	50.25	49.56	48.92
DIO	13.42	12.58	12.47	11.51	11.11	11.45
FIO	17.09	18.17	18.81	20.83	21.74	21.74
NIO	14.98	15.18	14.85	14.68	14.41	13.83
IO	9.01	8.99	8.80	8.69	8.43	8.18

Table 12 depicts the correlation coefficients and variance inflation factor (VIF) value of the independent and control variables. From the statistics shown, it is observed that foreign institutional ownership is negatively correlated with ROA whereas no other ownership identity

Table 12: Correlation Matrix

Variables	ROA	MC	POWN	DIO	FIO	NIO	IO	FA	FS	LEV	ATR	LIQ	VIF
ROA	1.000												
MC	**0.189**	1.000											
POWN	0.201	0.056	1.000										9.36
DIO	-0.068	0.051	**-0.431**	1.000									3.17
FIO	**-0.146**	-0.048	**-0.677**	**-0.146**	1.000								5.52
NIO	-0.056	-0.096	**-0.603**	**0.293**	**0.121**	1.000							3.56
IO	0.021	-0.241	**-0.444**	**0.286**	**0.087**	**0.691**	1.000						2.23
FA	**0.119**	0.109	-0.071	**0.438**	**-0.203**	**0.205**	**0.281**	1.000					1.40
FS	**-0.453**	0.498	**-0.089**	**0.130**	0.071	-0.066	**-0.233**	0.071	1.000				1.20
LEV	**-0.181**	-0.018	**-0.131**	**0.100**	0.016	**0.223**	**0.191**	**0.102**	0.056	1.000			1.14
ATR	**-0.125**	-0.038	0.029	**-0.133**	**0.167**	**-0.119**	**-0.104**	-0.043	**0.196**	**0.179**	1.000		1.17
LIQ	**0.181**	0.031	**0.101**	**0.111**	-0.083	**-0.165**	**-0.167**	**0.132**	**0.102**	**-0.155**	0.031	1.000	1.12

Note: All correlations in bold are significant at $p < .05$.

is found to be having a correlation with MC. Further, firm age and liquidity are found to have a positive correlation with ROA while firm size, leverage and asset turnover ratio are found to have a negative correlation with ROA. The correlation coefficients between the variables are not high. In other words, no coefficient has crossed the threshold limit of 0.8 (Kennedy, 2008) and this implies that there is no collinearity problem. Subsequently, there is also no multicollinearity problem within the variables as the VIF values of the variables are under the value of 10 (Kennedy, 2008).

Table 13 shows the Breusch-Pagan test which is used to check the heteroscedasticity problem among the independent and control variables. Here, we find that there is a heteroscedasticity problem with the data as the p value is very significant. In this regard, we used the "clustered" function, together with the static models, to filter the heteroscedasticity and autocorrelation problem.

Table 13: Breusch-Pagan Test for Heteroscedasticity

Variables: POWN, DIO, FIO, NIO, IO, FA, FS, LEV, ATR, LIQ		
H0: Constant variance		
Chi-square value	128.90	P-value 0.000

Table 14 presents the model optimal tests where it is confirmed that both the static models are supported by the fixed effect parameters. Further, the autocorrelation tests AR(1) and AR(2) show a higher p-value. This indicates that the GMM models have no autocorrelation problem. We also found no over-identification problem in the GMM models as the p-values of the Sargan test are highly insignificant. Both the F-test and the Wald test are highly significant, with a 1 per cent level of significance. This indicates that the overall model is fit.

Table 14: Model Optimal Test

Models	F-test	LM test	Hausman test
Model 1	14.49***	617.90***	19.15**
Model 2	26.62***	680.39***	510.58***

Note: ***, ** and * refers to 1%, 5% and 10% level of significance respectively.

Table 15 exhibits the four models consisting of two static panels and two dynamic panel models. Although we have reported the results derived from both the static and dynamic models (Table 15), our findings have been mostly based on the dynamic panel models.

Table 15: Static and Dynamic Panel Data Models

Models	Model 1	Model 2	Model 3	Model 4
DV	ROA	MC	ROA	MC
Methodology	FE	FE	GMM	GMM
Intercept	1.021	-0.981	-17.702	-2.228
	(0.07)	(-0.71)	(-0.95)	(-1.30)
POWN	36.529	8.362	33.429	0.724
	(4.99)***	(11.71)***	(2.41)***	(0.47)
DIO	34.655	5.728	25.011	0.575
	(3.96)***	(6.72)***	(2.01)**	(0.37)
FIO	38.668	10.203	23.174	2.369
	(5.72)***	(15.50)***	(3.20)***	(2.09)**
NIO	28.113	7.882	16.125	2.091
	(2.27)**	(6.53)***	(1.40)	(1.30)
IO	5.245	-3.893	22.802	-0.474
	(0.26)	(-2.02)*	(0.92)	(-0.17)
FA	-5.001	1.138	-1.243	0.255
	(-1.50)	(3.50)***	(-0.43)	(0.72)
FS	-0.941	0.186	0.056	0.186
	(-1.71)*	(3.48)***	(0.06)	(1.33)
DR	-1.786	-0.001	-0.452	-0.051
	(-2.35)***	(-0.01)	(-0.46)	(-0.57)
ATR	0.021	-0.002	-0.001	-0.001
	(1.34)	(-1.60)	(-0.02)	(-0.28)
LIQ	0.632	-0.008	0.199	0.022
	(2.75)***	(-0.39)	(1.16)	(1.65)*
R-squared	0.128	0.456		
F-Test/Wald test	6.69***	38.13***	223.71***	398.18***
AR(1) test (p-value)			0.247	0.142
AR(1) test (p-value)			0.902	0.185
Sargan test (chi^2 value)			9.546	52.151
Sargan test (p-value)			0.388	0.081

Note: DV refers to the dependent variables. ***, **, * refers to 1%, 5% and 10% level of significance.

We find that the promoters, domestic institutional owners and foreign institutional owners have a significant positive impact on the ROA. This indicates that the presence of the promoters, domestic institutions and foreign institutions in the firms enhance the financial performance of the Indian companies. The current result is very much similar to the findings of Boone et al. (2011), Alipour (2013) and Desoky and Mousa (2013). In this study, we also detect that foreign institutional ownership has a significant positive impact on market capitalisation. This shows that investments from foreign institutions have highly enhanced market performance of Indian companies. This result is fairly reminiscent of Javid and Iqbal (2008) and Boone et al. (2011).

5. Conclusion and Implications

Empirical works based on ownership structure and its impact on firm performance have been limited and inconsistent when observed from the perspective of an emerging economy like India. Hence, in this study, we attempt to test the impact of ownership structure on Indian firms' corporate performance, post the US financial crisis of 2008. In our study, it is found that Indian listed firms have high ownership concentrations. This observation was also indicated by La Porta et al. (1999) who mentioned that most developing economies possess companies with concentrated ownerships. Despite the fact that high ownership concentration prevails in the Indian context, there seem to be no significant impact on firms' financial performance (ROA) although it has a negative impact on the market performance (MC). Based on this, it is deduced that large shareholders do not enhance firm performance, post US financial crisis 2008.

Our second model tests the causal relationship between ownership identities and the listed firms' performance. It is observed that the promoters, foreign institutional ownership and domestic institutional ownership have significantly boosted the financial performance of Indian companies, post the US financial crisis. This indicates that owners have strongly monitored the management and decision-making process to make their firms more efficient and profitable. Subsequently, it is also noted that only foreign institutional investments have significantly affected the market capitalisation of the Indian companies, post the US financial crisis. In this regard, it is inferred that the confidence and continuous investments from foreign institutions had assisted in propelling the investors' sentiments in the Indian market.

From the results and findings generated, it is deduced that this study has made several contributions and implications. First, our study is based on the ownership structure in the Indian context, hence the outcome would be enriching the governance literature of the emerging markets. Further, the outcome would be beneficial to researchers, policymakers, managers and practitioners as they add to a better understanding of the corporate ownership structure in the Indian market. The findings of this study would also clarify the impact of ownership concentration and identities on the Indian listed firms' performance. The outcome generated may also ease policymakers need to formulate favourable policies, such as rewarding of tax incentives, hassle-free investment policy, insuring of investments, checking of fraudulent trading activities, proper monitoring of the listed firms' governance policies and ensuring the proper audit of firms' annual reports. These could induce investors' participation in the capital market. These results would be able to guide corporate managers in understanding the effect of ownership holdings on corporate performance, thereby motivating investors to better corporate performance. Finally, the equity investors would be able to understand the causes of the market performance variations; hence, they would be able to decide better on their investments or divestments.

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Inflation Hedging Properties of Different Asset Classes in Malaysia

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ABSTRACT

Manuscript type: Research paper
Research aims: The objective of this study is to examine the inflation hedging properties of various asset classes (stock, gold, real estate, Treasury bond and Treasury bill) in the Malaysian context.
Design/Methodology/Approach: This is an empirical analysis using quarterly data from the period of 1980 to 2016. The Autoregressive Distributed Lag (ARDL) bounds cointegration model is used for testing the long-run relationship while the error correction model (ECM) is used for testing the short-run dynamics.
Research findings: Our results show that stocks and government bonds in Malaysia can provide a complete hedge against inflation in the long-run while real estate shows partial hedging evidence. Gold and Treasury bills, however, are not inflation hedges. For the short-run, stocks, gold and real estate show evidence of rapid adjustment to changes in inflation while government securities indicate a mild adjustment.
Theoretical contributions/Originality: First, this study provides new evidence on inflation hedges from the perspective of an emerging market. Second, this study uses the ARDL and ECM approach to study the long-run and short-run dynamics of asset returns and inflation. This is in contrast to many previous studies that mainly used the Ordinary Least-Squares (OLS) analysis. Third, this study is important for the Malaysian market because previous studies in

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Malaysia had merely focussed on stock returns and inflation. This study broadens the scope by including different asset classes.
Practitioner/Policy implications: The implication to investors and fund managers is that they should consider stocks, real estate and Treasury bonds in their investment portfolios, given that these asset returns offer satisfactory protection against inflation.
Research limitations/Implications: The result discussed in this study may be specific to the data and methodology employed in the analysis; thus, it is not applicable to other periods nor other emerging markets. Future studies on inflation hedges may consider a comparative study of a cross-section of countries or use an expanded array of assets in the analysis.

Keywords: Fisher Effect, Inflation Hedges, ARDL Bounds Tests, Malaysia
JEL Classification: G12, G18

1. Introduction

One important question faced by investors is whether the return of their investments protect them against inflation. The issue of investment returns and inflation can be traced back to Fisher (1930) who proposed a theory of the relationship between inflation and interest rates. Fisher decomposed nominal interest rates into real rates and expected inflation. The expected real rate was determined by real factors such as capital productivity and investors' time and risk preferences. Therefore, these are independent of the monetary sectors. Real rate and expected inflation should be independent of each other, thereby resulting in a direct relationship between nominal rates and inflation. Over time, the enquiry on Fisher's hypothesis has been extended to include returns on various financial assets as well as physical assets such as stocks, bonds, bills, bank deposits, human capital, real estate and gold. The testable hypothesis of the theory is that asset returns and expected inflation should have a direct relationship. When there is a perfect correlation between the two, we can conclude that the asset is a complete hedge against inflation. Investors would be fully compensated for the upward movements in the general price level when there is a corresponding increase in the nominal asset returns. However, empirical studies looking at the relationship between nominal interest rates and inflation have yielded mixed results.

Arnold and Auer (2015) speculated that the lack of consensus in the findings may be due to the uniqueness of each study in terms of methodology and study samples. It was mentioned that to obtain a clear answer on inflation hedging, the process has to simultaneously, include all asset classes (stock, gold, real estate and fixed income securities) so as to allow a direct comparison of results which can then detect which asset can be the best hedge. Taking up this suggestion, the current study aims to examine the inflation hedging properties of various asset classes in Malaysia which include stocks, gold, real estate, Treasury bond and Treasury bill. The motivation for this study is that investors in various investable assets need to know if the return on their investments provides a hedge against inflation. There is a dearth of literature on this topic to help investors to understand the relationship between investment returns and inflation. This study fills that gap. A second motivation is drawn from the theoretical perspective in that this study may be considered a revisit of an old issue. Although the topic on inflation hedging has been studied for a long time, the findings are mixed. Due to the passage of time, it may be worth revisiting the issue to see if the Fisher relationship explains the current situation in Malaysia.

There are three main contributions of this study. First, this study provides new evidence on the issue of inflation hedging from the perspective of an emerging market, Malaysia, which is a relatively small emerging market. It has an economic and market environment that is different from developed markets where most studies have been conducted (for example, Kim & Ryoo, 2011; Beckmann & Czudaj, 2013; Tsong & Lee, 2013; Wang, Lee, & Thi, 2013). The focus on Malaysia will, therefore, offer a fresh insight into this topic. Second, this study uses the Autoregressive Distributed Lag (ARDL) and error correction model (ECM) approach to study the long-run and short-run dynamics of asset returns and inflation. This is unlike many previous studies which had mainly used the OLS analysis. Third, there is a relatively small number of studies (Gan, 1992; Ibrahim, 2011; Lee, 2014; Yeap & Lean, 2017) looking at inflation hedging in Malaysia and of those that do, the results have been mixed. Moreover, these studies mainly analysed a single asset return over a relatively short horizon. Our study uses an extended and updated dataset extracted from Malaysia, in comparison to previous studies. We choose to include all the available asset classes (stocks, gold, real estate, Treasury bond and Treasury bill) simultaneously, in order to allow a direct comparison of the results so as to identify which of these assets can be regarded to be the best inflation hedge.

The remainder of this paper is organised as follows: Section 2 discusses previous studies on asset returns as inflation hedges. Section 3 discusses the data and the ARDL methodology. Section 4 presents and discusses the results and Section 5 concludes the study.

2. Literature Review

2.1 Stock Returns

From a general economic perspective, stock returns and inflation should be positively related. This is because stock returns are derived from real economic activities whose growth should include elements of inflation. However, empirical studies seemed to show mixed results. For example, the early studies (Lintner, 1975; Jaffe & Mandelker, 1976; Bodie, 1976; Nelson, 1976; Fama & Schwert, 1977; Gultekin, 1983a) focussing on US stock returns and inflation showed results that were inconsistent with the Fisher hypothesis. These studies reported that stock returns were negatively correlated with expected and unexpected inflation. Fama (1981) rationalised the findings by proposing that inflation negatively affects stock returns via real economic activities. In the first instance, it is proposed that inflation and real economic activities are negatively related but in the second instance, it is proposed that real economic activities and stock returns are positively related. When both these propositions are true, inflation and stock prices would be negatively related. Geske and Roll (1983) discussed the negative relationship of the fiscal and monetary linkages between inflation and stock prices. They noted that when there is an economic slowdown, there will also be a decrease in government revenues. This would result in an increase in the fiscal deficit. To address this deficit, the central bank acts by increasing the money supply, hence, inflation.

Interestingly, Gultekin (1983a) and Gultekin (1983b) yielded opposing results. Using the monthly data gathered from across 26 international markets, Gultekin (1983a) found a negative relationship between stock returns and inflation. The finding was consistent with many other studies of around the same time. In a subsequent study, Gultekin (1983b) used the semi-annual and annual data of the DJIA and S&P 500 indices to examine the same phenomenon. The results generated were consistent with stock returns being effective inflation hedges. This outcome was verified by many subsequent studies such as Boudoukh and Richardson (1993) who focussed on the US and UK, Solnik and Solnik (1997) who looked at the US, several European markets and Japan, Anari and Kolari (2001) who studied the US and major world markets, Engsted and Tanggaard (2002) who studied the US and Denmark, and Kim and Ryoo (2011) who also focussed on the US. The results drawn from all these studies seemed quite robust when compared to data taken from different markets and also when different methodologies were applied. Most studies have been using the cointegration, VAR and causality analysis apart from the usual OLS analysis. Anari and Kolari's (2001) study found that inflation has a negative short-run effect on stock returns but a positive long-run relation. There was also some disagreement with regard to the impact of data frequency on inflation hedges. For instance, Boudoukh and Richardson (1993) observed that longer frequency leads to better hedging quality whereas Engsted and Tanggaard (2002) detected contradicting results.

Alagidede and Panagiotidis (2010) studied several African markets by using the OLS and cointegration techniques. They noted that, in general, stocks do provide an inflation hedge. In the context of Asian markets, Zhao (1999) found a negative relationship between stock returns and inflation in China. In the Malaysian context, Gan (1992) and Ibrahim (2011) discovered contradicting results. While Gan found a negative impact of expected inflation on real stock returns, Ibrahim's (2011) finding confirmed Fisher's hypothesis with respect to the Malaysian stock return for the pre-Asian financial crisis period (1988-1996) but not for the post-crisis period. Using quarterly data, Rushdi, Kim and Silvapulle (2012) found that Australian stocks served as an effective hedging instrument against expected inflation. The study by Pimentel and Choudhry (2014) which looked at the Brazil market also found a positive relationship between stock returns and inflation. Looking at Pakistan, Tiwari, Dar, Bhanja, Arouri and Teulon (2015) and Shahbaz, Islam and Rehman (2016) confirmed that stock is a good hedge against inflation, both in the long-run and short-run.

2.2 *Gold*

Gold is a special asset in the sense that it has its own value. This makes gold stand apart from other financial assets analysed in this study. The value of gold is in its price; it is not dependent on its expected cash flows. Gold analysts argue that gold prices should move in a positive manner with inflation. The examination of gold returns in relation to inflation had only been a recent study when compared to other financial assets. Earlier studies looking at gold include Chua and Woodward (1982) who used the monthly and semi-annual data of five developed markets including the US and the UK. They found mixed outcomes. Brown and Howe (1987) also used the monthly data of the US market and they too discovered that gold did not provide protection against inflation. Mahdavi and Zhou (1997), Tully and Lucey (2007) and Wang, Lee and Thi (2011) also documented the insignificant long-run relationship between gold returns and the US inflation. They asserted that the rigidity between the consumer price index and the price of gold affected the inflation hedging ability of gold in the long-run. However, there were studies that documented differing results. Ghosh, Levin, Macmillan and Wright (2004), Levin, Montagnoli and Wright (2006), McCown and Zimmerman (2006), Worthington and Pahlavani (2007), Joy (2011) and Beckmann and Czudaj (2013) all revealed that there was a long-run positive relationship between gold price and inflation in the US market. This outcome was confirmed by Wang et al. (2013) and Bampinas and Panagiotidis (2015).

However, when focussing on the Japan market, Wang et al. (2013) found that the gold returns were unable to hedge against inflation. Looking at the Pakistan market, Shahbaz, Tahir, Ali and Rehman (2014) observed that gold was a good hedge against inflation in the short-run and long-run. The outcome was different for Malaysia where Ghazali, Lean and Bahari (2015) documented no significant relationship between gold returns and inflation. In a recent study, Aye, Carcel, Gil-Alana and Gupta (2017) examined the inflation ability of gold in the UK. They used annual data collected over the period of 1257-2016. Using the fractional integration approach, they found that gold price and inflation moved together in the long-run. This means that gold has an inflation hedging ability.

2.3 *Real Estate*

Real estate is often regarded as a good protection against inflation. In general, many prior studies support the Fisher hypothesis which states that real estate returns move together with inflation. Some early evidence was provided by Fama and Schwert (1977) who found that the US residential real estate provided a complete hedge against inflation. Similarly, Ibbotson and Siegel (1984), Miles and Mahoney (1997) and Anari and Kolari (2002) also confirmed the hedging capabilities of real estate. The same outcome was noted in the UK where Limmack and

Ward (1988) and later, Blake, Goodwin, McIntosh and Simmons (2010) revealed that real estate acted as a hedge against inflation.

Nonetheless, the US and UK markets are not the only markets where the inflation hedging ability of real estate had been detected. Chen and Foo (2006) investigated the international real estate markets of Hong Kong, Tokyo, Singapore, Taipei and London. They found that the inflation hedging features of real estate exist but the degree varied significantly across the different markets. Surprisingly, China's real estate does not seem to provide a hedge against inflation as uncovered by Chu and Sing (2004) and Zhou and Clements (2010). In the context of Taiwan, Fang, Wang and Nguyen (2008) used monthly data to examine Taiwan's real estate prices over the period of 1991-2006. They found a negative relationship between house prices and inflation. Gunasekarage, Power and Ting Zhou (2008) focussed on New Zealand and Lee (2014) examined Malaysia. Both studies found that real estate does provide an effective hedge against inflation. However, in a recent study, Yeap and Lean (2017) found that housing investment in Malaysia does not provide an inflation hedge to investors. These inconsistent results between Lee (2014) and Yeap and Lean (2017) may be attributed to the different methodologies used although their study periods overlapped significantly. Lee (2014) employed the Fama and Schwert model and the dynamic OLS to analyse house price data over the period of 1999-2012. In contrast, Yeap and Lean (2017) adopted the NARDL approach to examine house price data over the period of 1999-2015. Most of these studies suggest that housing assets investment cannot hedge against inflation in the short-run, therefore, it is important to revisit the linkage between house prices and inflation by increasing the study period (data of a longer period) and using a different methodological approach.

2.4 Fixed Income Securities

Studies on fixed income securities and inflation are largely limited to Treasury bill and Treasury bond. In general, earlier studies found only limited support for the Fisher hypothesis for Treasury bill rates. Fama (1975) examined 1 to 6 months US Treasury bill rates and inflation. His findings confirmed the Fisher hypothesis for the short-run. Mishkin (1992) and Fahmy and Kandil (2003) also found evidence to support that Treasury bill rates are inconsistent with the short-run Fisher relationship. However, they found a long-run relation between interest rates and inflation. Meanwhile, Lee, Clark and Ahn (1998) detected evidence of the Fisher effect, both in the short-run and long-run, for the US Treasury bill. In a recent study, Tsong and Lee (2013) disclosed evidence supporting the Fisher hypothesis in six OECD markets (Australia, Belgium, Canada, Sweden, the US and UK). Their upper quantiles cointegration showed that the nominal 3-month Treasury bill rate responded directly to changes in inflation.

Turning to bonds, Fama and Schwert (1977) were also able to present evidence in support of the Fisher hypothesis. Likewise, Smirlock (1986) found a significant positive response of long-term bonds to inflation. In another study, Engsted and Tanggaard (2002) observed that the relationship between US bond returns and inflation was positive; it became stronger as the horizon increased. From their study investigating the US government inflation-indexed bonds and inflation for the period of August 1997 to July 2001, Laatsch and Klein (2003) also noted that changes in nominal interest rates were significantly related to changes in expected inflation. However, a contrasting outcome was provided by Al-Khazali (1999) who found that yields on long-term government bond and inflation were not cointegrated in nine Pacific-Basin countries, over the period of 1980-1994.

3. Data and Methodology

3.1 Data and Summary Statistics

This study uses quarterly data covering the period of 1980-2016. The following asset classes were included: stocks, gold, real estate, bonds and bills. All assets were taken from the data series beginning 1980 except Treasury bonds and gold because data for the Treasury bond yields were only available from 1996 while gold price was only available from 2002. All data were obtained from Datastream (Thomson Reuters), with the exception of gold price and “all house price index”. The gold price was obtained from the Malaysian Central Bank’s website.

The variable names and their explanations are listed in Table 1. A nominal asset returns (nar) is the change in the price of investment asset from t to t-1, expressed in percentage. The FBMKLCI which is the Malaysian equity index, representing a well-diversified equity portfolio, is used to measure the nominal stock returns (nsr). With regards to gold, this study uses the selling price of one troy ounce of domestic gold bullion, known as Kijang Emas, to represent gold price. The “all house

Table 1: Definition of Variables and Descriptive Statistics

Name of variable	Definition	Computation	Data available from	Mean (%)	Std. Dev.	CV
Nominal stock returns (*nsr*)	FBMKLCI index	$lnsr_t - lnsr_{t-1}$ *100, where *lnsr* is the natural logarithm of nominal stock price.	1980 Q1 to 2016 Q4	1.415	14.534	10.271
Nominal gold returns (*ngr*)	One troy ounce of Kijang Emas	$lgp_t - lgp_{t-1}$ *100, where *lgp* is the natural logarithm of gold price.	2002 Q1 to 2016 Q4	2.561	6.825	2.665
Nominal real estate returns (*nrer*)	All House Price index	$lhpi_t - lhpi_{t-1}$ *100, where *lhpi* is the natural logarithm of house price index.	1980 Q1 to 2016 Q4	1.078	1.431	1.327
Treasury bond yield (*tby*)	Government 20 years bond	Three-month bond yield measured in percentage.	1996 Q1 to 2016 Q4	1.362	0.338	0.248
Treasury bill rate (*tbr*)	Government Treasury bill	Three-month bill rate measured in percentage.	1980 Q1 to 2016 Q4	1.030	0.400	0.388
Inflation (π)	Consumer Price Index	$lcpi_t - lcpi_{t-1}$ *100, where *lcpi* is the logarithm of consumer price index.	1980 Q1 to 2016 Q4	0.717	0.747	–

Note: Std. Dev. and CV refer to standard deviation and coefficient of variation, respectively.

price index" published by the National Property Information Centre (NAPIC) is used to represent the real estate asset price. Treasury bond yields (tby) measured in percentage is used and proxied by the 20-year Malaysia government bonds. The return to Treasury bill is measured by the 3-month to maturity of Malaysia Treasury bill rate (tbr). Finally, the domestic consumer price index (CPI) is used to represent inflation. CPI is the most frequently used indicator of inflation. In this study, the rate of inflation is measured as the percentage change in the CPI.

Table 1 presents the summary statistics of the asset series for the whole sample. The asset with the highest mean return is gold, with 2.561 per cent per quarter. This is followed by stocks, bonds, real estate and bills. The standard deviation shows that the nominal stock returns are the most volatile, followed by gold, real estate and government securities. It is quite surprising that the ordering of the means is inconsistent with their respective standard deviations. For example, while stocks understandably have the highest standard deviation, returns were overshadowed by gold. Real estate also seemed to be performing poorly throughout the study period when compared to government bonds. The last column in Table 1 shows the coefficient of variation (CV) which measures the amount of volatility per unit return. The CV ranked the assets in the following sequence: stocks, gold, real estate, bonds and bills. It should also be noted that Table 1 emphasises that all the asset returns were greater than the mean inflation rate,[1] which indicates that these assets do protect investors against inflation.

3.2 Empirical Model

According to Rushdi et al. (2012), the Fisher equation that is applied to different asset returns can be written as follows:

$$nar_t = \alpha + \beta_{\pi t} + \varepsilon_t \quad (1)$$

where α is the intercept, ε_t is the error term at time t, nar represents nominal asset returns earned by holding an investment asset at time t, and

[1] The fact that inflation rate is low in Malaysia does not invalidate the study because we are testing a theoretical relationship; and inflation, no matter how small, represents an erosion of returns to investors. It should be noted that other studies showing low inflation rates include Lee and Lee (2014), showing the monthly inflation of 0.19% in the UK, 0.14% in France, 0.16% in Germany; and Conlon, Lucey and Uddin (2018) showing the monthly inflation of 0.3% in the US and 0.2% in Switzerland and Japan.

π_t is the rate of inflation in period t. The nar is proxied by stock returns, gold returns, real estate returns, and Treasury bond yields and bill rates. The Fisher hypothesis postulates that in equation (1), $\beta = 1$ which implies that investment assets can be used as a hedge against inflation.

This study adopts the Autoregressive Distributed Lag (ARDL) bounds testing model for analysis. It is appropriate for small sample testing (Pesaran, Shin, & Smith, 2001). The ARDL approach is applicable to a set of time series that are integrated at I(1) and/or I(0). Once the cointegration relation is confirmed, the long-run and short-run effect can be estimated by the single equation model. The ARDL bounds testing approach helps to estimate the long-run and short-run relationship between contemporaneous series. In order to estimate equation (1), we apply the ARDL approach by using the specific model of:

$$\Delta nar_t = c_0 + \delta_1 nar_{t-1} + \delta_2 \pi_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta nar_{t-i} + \sum_{j=1}^{q} \psi_j \Delta \pi_{t-j} + \varphi DUM_1 + \theta DUM_2 + \varepsilon_t \tag{2}$$

where c_0 is the constant, ε_t is the error term, Δ denotes the first difference operator of the respective variable, nar_t is nominal asset return (i.e. *nsr*, *ngr*, *nrer*, *tby* and *tbr*) and π is inflation. The inclusion of the dummy variable is based on the information provided by the Bai and Perron (1998) procedure which enabled us to search for a maximum of five structural breaks. Dummy variable DUM_1 is the Asian financial crisis period and DUM_2 is the global financial crisis period. The ARDL bounds testing is based on the joint *F*-test for cointegration analysis. In order to find out whether there exists a cointegration between nominal asset returns and inflation in the long-run, we test the null hypothesis of no cointegration among the variables as H_0: $\delta_1 = \delta_2 = 0$ and the alternative hypothesis as H_1: $\delta_1 \neq \delta_2 \neq 0$. Pesaran et al. (2001) reported two sets of critical values for a given significance level. One set of critical value assumes that all variables included in the ARDL model are I(0) while the other set of assumed variables are I(1). If computed that *F*-statistic is greater than the upper bound critical value, then the null hypothesis is rejected. If the *F*-statistic is lower than the lower bound critical value, the null hypothesis of no cointegration cannot be rejected. If the null hypothesis is rejected, we can conclude that a long-run relationship exists between nominal asset returns and inflation. The Schwarz Bayesian criterion is used to identify the optimal lag order of the model. If equation (2) estimates reject the null hypothesis of no cointegration, the following unrestricted error correction model is estimated:

$$\Delta nar_t = c_0 + \sum_{i=1}^{p1} \xi_1 \Delta nar_{t-i} + \sum_{j=1}^{q1} \omega_1 \Delta \pi_{t-i} + \gamma ECM_{t-1} + \varphi DUM_1 + \theta DUM_2 + \varepsilon_t \quad (3)$$

where ξ and ω are short-run dynamic multipliers, and ECM_{t-1} is the lagged error-correction term resulting from the long-run equilibrium relationship and γ is a parameter indicating the speed of adjustment needed to restore the long-run equilibrium, after a short-run shock. It shows how quickly variables converge to equilibrium but it must have a statistically significant coefficient with a negative sign.

4. Empirical Results

4.1 Unit Root Tests

Although the ARDL bounds testing method does not require the series to be strictly integrated at I(0) or I(1), the stationary of the series cannot go beyond I(1). As a result, the pre-testing of unit root results can be used to confirm the appropriateness of using the ARDL model. To test for the stationary and the order of integration of all series, the ADF and breakpoint unit root test is conducted. Perron and Vogelsang (1992) had mentioned that biases in the traditional unit root test could be reduced by considering an endogenous structural break. Thus, we apply Perron and Vogelsang (1992) and Bai and Perron (1998) tests to test for the presence of a unit root with structural breaks so as to identify the dates of the endogenous structural breaks in our series. The dates of the endogenous breaks obtained from the said tests are, in general, associated with the Asian and/or the Global financial crisis periods. Therefore, we further divide the whole sample period into two sub-periods: Period 1 (1980 Q1 to 1998 Q4) inclusive of the Asian financial crisis and Period 2 (1999 Q1 to 2016 Q4) with the Global financial crisis.

Table 2 presents the results of the unit root with break-point tests for the whole sample period. First, these tests are applied to the level of the variables, then on the first difference of the variables. The results show that all level series are not stationary but their first differences are stationary which suggest that all series are I(1). This indicates that all series have a unique order of integration, that is I(1). Therefore, none of the variables in this study are I(2). This confirms the appropriateness of using the ARDL analysis.

Table 2: Results of Unit Root Tests

Variable	Level		First difference		Bai and Perron test	
	ADF	PV with break test	ADF	PV with break test	Break date 1	Break date 2
Stock price	-1.856	-3.026 (1998 Q4)	-7.742***	-13.199*** (1997 Q1)	1998 Q3	2007 Q1
Gold price	-1.807	-2.749 (2007 Q2)	-9.499***	-12.240*** (2013 Q3)	2007 Q3	2010 Q2
House price	-2.056	-1.167 (2009 Q2)	-11.304***	-27.091*** (2009 Q4)	1998 Q3	2010 Q2
Bond yield	-1.396	-3.054 (2005 Q1)	-7.763***	-9.309*** (2006 Q4)	1999 Q3	2002 Q3
Bill rate	-2.550	-3.188 (1999 Q2)	-6.351***	-12.895*** (1994 Q1)	1999 Q2	2005 Q4
CPI	-2.239	-3.423 (1998 Q3)	-9.256***	-10.747*** (2008 Q3)	1998 Q1	2007 Q3

Note: The null hypothesis in that series is non-stationary. *** indicates the rejection of null-unit root hypothesis at the 1% level. ADF and PV refer to augmented Dickey–Fuller unit root test and Perron-Vogelsang test, respectively.

4.2 ARDL Bounds Testing

In this section, we examine the ARDL bounds testing for the co-integration between each of the nominal asset returns (i.e. nsr, ngr, nrer, tby and tbr) and inflation. Table 3 presents the results of the ARDL bound tests. The critical values of test statistics suggested by Pesaran et al. (2001), at different levels of significance, are shown in Panel D whereas Panel A shows the results for the whole sample. The ARDL computed F-statistics for each paired-series, except Treasury bill rates and inflation, are greater than the 1% upper bound critical value. Therefore, the null hypothesis of no cointegration can be rejected. Panel B of Table 3 reports the first sub-period (1980-1998) result which indicated the presence of cointegration between stock returns and inflation and between real estate returns and inflation. There is no cointegration between Treasury bill and inflation. In this sub-period, data for Treasury bond and gold prices are not available. Panel C shows the results for sub-period 2 (1999-2016) which highlighted that the computed F-statistics of all the paired series are above the upper critical value of the bounds test, at least at the 5% significance level. Hence, we can conclude that cointegration is present between the nominal asset returns of all asset classes and inflation.

4.3 Estimation of Long-run Parameters

Following the ARDL cointegration technique performed for the long-run estimates as mentioned above, the next step is to estimate equation (2). Table 4 presents the results. The estimated equations also include two dummy variables, DUM_1 (1997 Q1–1998 Q2) and DUM_2 (2007 Q1–2008 Q2) to account for the presence of the Asian financial crisis and the Global financial crisis, respectively. To check the robustness of the ARDL model, residual and stability diagnostic tests are applied to each paired series. The residual diagnostic tests consist of Lagrange multiplier (LM) and heteroscedasticity tests while the stability diagnostic tests consist of the Ramsey test and the cumulative sum test for parameter stability (CUSUM). The p-values of the tests indicate no evidence of serial correlation and heteroscedasticity. Further, the p-value of Ramsey's test show no evidence of misspecification of the model. Pesaran et al. (2001) had stated that it is important to ascertain the constancy of the long-run multipliers by testing the error-correction model for the stability of its parameters. To test for the stability of the long-run and short-

Table 3: Results of ARDL Bounds Testing for Cointegration

Series	ARDL cointegration F-statistics of bound test	Lags	R-square	F-statistics	Outcome
Panel A: Whole sample (1980 Q1 to 2016 Q4)					
Nominal stock return and inflation	66.550***	1,0	0.486	33.424	Cointegrated
Nominal real estate return and inflation	47.163***	1,1	0.407	19.249	Cointegrated
Treasury bond yield and inflation[1]	9.096***	2,1	0.303	5.392	Cointegrated
Treasury bill rate and inflation	4.198	1,1	0.090	2.762	No cointegration
Panel B: Period 1(1980 Q1 to 1998 Q4)					
Nominal stock return and inflation	36.872***	1,0	0.482	21.173	Cointegrated
Nominal real estate return and inflation	24.272***	1,0	0.396	16.181	Cointegrated
Treasury bill rate and inflation	3.123	1,1	0.091	1.735	No cointegration
Panel C: Period 2 (1999 Q1 to 2016 Q4)					
Nominal stock return and inflation	31.970***	1,0	0.484	21.322	Cointegrated
Nominal gold return and inflation	23.571***	1,0	0.485	12.479	Cointegrated
Nominal real estate return and inflation	22.363***	1,0	0.405	15.459	Cointegrated
Treasury bond yield and inflation	12.513***	2,1	0.346	6.996	Cointegrated
Treasury bill rate and inflation	19.133***	1,0	0.362	12.846	Cointegrated
Panel D: Critical value bounds generated by Pesaran et al. (2001)					
Significance level	*10%*	*5%*	*1%*		
Lower Bounds, I(0)	4.04	4.94	6.84		
Upper Bounds, I(1)	4.78	5.73	7.84		

Notes: *** depicts significance at the 1% level. The critical values for unrestricted intercept and no trend (Case III) are obtained from Pesaran et al. (2001). H_0: no long-run relationship exists, and H_1: long-run relationship exists. In period 1, for pair series of gold and inflation, and Treasury bond yield and inflation, the result is not shown because data are available only from 2002 and 1990, respectively.

[1] The data series starts in 1996 Q1 to 2016 Q4.

Table 4: Long-run ARDL Estimates

	$\beta_1(\pi)$	DUM$_1$	DUM$_2$	Wald test (H_0: $\beta_1 = 1$)	Residual diagnostics test	Stability diagnostics test		
					LM test	Heteros' test	Ramsey test	CUSUM
Panel A: Whole sample (1980 Q1 to 2016 Q4)								
nsr and π	2.867** (1.991)	-12.981*** (-2.869)	-1.141 (-0.243)	1.297	0.027 [0.870]	1.402 [0.200]	0.392 [0.695]	stable
nrer and π	0.520** (1.987)	-0.665 (-0.957)	-0.497 (-0.757)	-1.834*	1.622 [0.134]	1.155 [0.334]	0.386 [0.699]	stable
tby and π	0.695** (2.067)	0.521 (1.263)	-0.239 (-0.620)	-0.907	1.955 [0.177]	2.044 [0.070]	0.686 [0.494]	stable
tbr and π[a]	–	–	–	–	–	–	–	–
Panel B: Period 1 (1980 Q1 to 1998 Q4)								
nsr and π	1.255*** (2.966)	-3.457*** (-3.401)	–	0.602	0.629 [0.430]	0.612 [0.655]	1.323 [0.190]	stable
nrer and π	0.644** (2.303)	-0.364 (-0.517)	–	-1.276	0.479 [0.490]	1.112 [0.366]	0.694 [0.489]	stable
tbr and π[a]	–	–	–	–	–	–	–	–
Panel C: Period 2 (1999Q1 to 2016Q4)								
nsr and π	1.017*** (2.746)	–	-0.738 (-0.975)	0.046	0.381 [0.538]	0.801 [0.497]	0.435 [0.664]	stable
ngr and π	0.506 (0.305)	–	-0.954 (-0.345)	–	0.170 [0.681]	0.784 [0.436]	0.772 [0.443]	stable
nrer and π	0.601*** (2.675)	–	-0.679 (-1.152)	-1.773*	0.700 [0.405]	0.411 [0.745]	0.038 [0.970]	stable
tby and π	0.614*** (2.596)	–	-0.225 (-0.769)	-1.632	0.614 [0.762]	1.569 [0.157]	0.644 [0.521]	stable
tbr and π	0.074 (0.123)	–	0.037 (0.486)	–	0.839 [0.436]	2.383 [0.769]	1.546 [0.126]	stable

Notes: *, ** and *** represent significance at the 10%, 5% and 1% levels, respectively.
[a] Since Table 3 indicates no cointegration is observed between *tbr* and π, therefore there is no ARDL long-run estimation. Numbers in parentheses are *t*-statistics while those in square brackets are *p*-values. LM is the Lagrange Multiplier test for first order autocorrelation. Heteros' test refers to the Breusch-Pagan-Godfrey test for heteroskedasticity test. CUSUM refers to cumulative sum test for parameter stability.

run coefficients estimated by the ARDL model, the cumulative sum (CUSUM) test is engaged. The plots of CUSUM (not shown) are noted to be well within the 5% critical bounds of parameter stability. This implies that all coefficients in the error correction model are stable.

Table 4 shows that for an asset to be an inflation hedge, β_1 has to be positive. Whether or not it is considered a complete or partial hedge, it is necessary to look at the Wald test. If the Wald test is insignificantly different from unity, the asset is considered a complete hedge against inflation (Arnold & Auer, 2015). If it is just different from unity, then it is considered a partial hedge.

Panel A of Table 4 shows the results for the whole sample. Here, only three assets are tested for their relationship with inflation: stocks, real estate and bonds. Gold is not included because the data are only available in the second sub-period. Bill rate is not tested because it is found to be not cointegrated with inflation (see Table 3). All the three assets, i.e. stocks, real estate and bonds, are found to have positive coefficients for inflation (β_1). This verifies that the three assets are inflation hedges. For stocks and bonds, the Wald test indicates that their β_1 are insignificantly different from 1. This means that both are considered to provide a complete hedge against inflation. As for real estate, β_1 is significantly different from unity at the 10% level; therefore, it is considered a partial hedge.

Panel B of Table 4 shows the results for the first sub-period, 1980-1998. Due to the unavailability of data for gold and bonds and also the absence of cointegration for Treasury bill, only two assets, stocks and real estate, are reported here. The results show that both assets have positive coefficients. The Wald test shows that they are not distinguishable from unity, therefore, these assets are perfect hedges against inflation.

Panel C of Table 4 presents the results of the second sub-period, 1999-2016 which shows that only three assets are positively related with inflation: stocks, real estate and Treasury bond. The Wald test indicates that stocks and bond are a complete hedge against inflation whereas real estate is a partial hedge. Overall, the paired series between stock returns and inflation has the highest coefficient when compared to other paired series for the whole period and the sub-periods. Both gold and Treasury bill are observed to be insignificantly related with inflation, hence they are noted as unable to provide inflation protection to investors.

4.4 Estimation of Short-Run Model Parameters

The previous section has discussed the presence of cointegration which indicates the existence of a long-run relationship. This section supplements the long-run analysis with the error correction analysis (ECM) which looks at the short-run dynamics. Table 5 presents the results of the estimated ECM analysis. It should, however, be noted that only assets that indicate the existence of cointegration is estimated. The lagged error correction term (ECM_{t-1}) shows the speed of adjustment for re-establishing the equilibrium in the dynamic setting. Results in Table 5 further indicate that for all assets, the coefficient of ECM_{t-1} shows the expected negative sign which is significant at the 1% level. This applies to the whole period as well as the sub-periods. A negative coefficient for ECM_{t-1} indicates a convergence to long-run equilibrium when there is a shock in the system. The larger the coefficient, the quicker the correction. Looking at the size of the coefficients for the whole sample, it is seen that stock has the largest coefficient of -0.980, followed by real estate with -0.802 and Treasury bond with -0.124. This means that for stocks, a shock to the system in one period will result in the correction of about 98 per cent in the following quarter.

The short-run results presented in Table 5 show that the findings are consistent with the results obtained for the long-run. The short-run coefficient for changes in inflation is positive for stocks, real estate and bonds, for all periods. This outcome is consistent with the property of inflation hedges. The coefficient for the Treasury bill is weak while the coefficient for gold is insignificant. Our short-run results are consistent with Shahbaz et al.'s (2016) findings of the stock market in Pakistan, with Akturk's (2016) findings of the Turkish market which showed stock returns to be a good hedge against inflation in the short-run, with the findings of Katrakilidis and Trachanas (2012) who reported that when inflation rises, the house prices in Greece reacted positively in the short-run and also the findings of Lee (2014) who mentioned that house assets hedge against inflation in the short-run for the Malaysian market.

4.5 Discussion of Results

4.5.1 Stocks

Of special interest is that our results highlighted that stocks provide a complete hedge against inflation. This result can be considered credible because the results are strongly validated for the whole period as

Table 5: Estimated Short-Run Coefficient from Error-Correction Model

	Constant		ECM_{t-1}		$\Delta\pi$		Δtby(-1)		DUM_1		DUM_2		R-square	DW
Panel A: Whole sample (1980 Q1 to 2016 Q4)														
nsr and π	0.461	(0.452)	-0.980***	(-11.612)	2.596**	(2.193)	–		-17.209**	(-2.591)	-9.339	(-1.070)	0.110	1.998
nrer and π	0.805**	(5.544)	-0.830***	(-9.765)	0.352**	(2.665)	–		-0.242	(-0.237)	0.083	(0.180)	0.100	2.131
tby and π	0.104***	(3.414)	-0.124***	(-4.294)	0.029*	(1.868)	-0.377***	(-3.713)	0.125	(1.403)	-0.029	(-0.329)	0.876	2.104
Panel B: Period 1 (1980 Q1 to 1998 Q4)														
nsr and π	-0.246	(-0.977)	-0.996***	(-8.639)	0.528*	(1.678)	–		-4.093*	(-1.872)	–		0.208	2.029
nrer and π	0.634***	(3.154)	-0.869***	(-7.362)	0.434**	(2.073)	–		-0.167	(-0.146)	–		0.112	1.993
Panel C: Period 2 (1999 Q1 to 2016 Q4)														
nsr and π	0.181	(0.828)	-0.937***	(-7.964)	0.883***	(3.899)	–		–		-0.289	(-0.382)	0.125	2.081
ngr and π	2.397**	(2.560)	-0.967***	(-6.861)	0.010	(0.860)	–		–		-1.342	(-0.495)	0.010	1.965
nrer and π	0.829***	(4.369)	-0.804***	(-6.651)	0.532***	(4.368)	–		–		-0.119	(-0.138)	0.145	2.063
tby and π	0.126***	(4.083)	-0.145***	(-5.103)	0.028**	(2.074)	-0.253***	(-2.670)	–		-0.025	(-0.319)	0.863	2.205
tbr and π	0.252***	(6.163)	-0.381***	(-6.545)	0.016*	(1.843)	–		–		0.020	(0.709)	0.672	1.969

Note: ECM is the coefficient on the error correction term. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. DW denotes Durbin-Watson statistics. Numbers in parentheses are *t*-statistics.

well as the two sub-periods. Our result clearly demonstrate that in both the long-run analysis and the short-run test, there is a rapid one-period adjustment occurring in the error correction model. Theoretically, this result is a testimony that the Fisher relationship holds in the context of Malaysia, at least during our study period. From the practical perspective, the finding which shows that stock returns are an inflation hedge is seen as a timely welcome for investors and fund managers. It is comforting to note that their investments would be fully protected against the erosion in purchasing power, thereby protecting real returns.

Our result which notes that stocks can provide a complete hedge against inflation is consistent with many previous studies. For example, Anari and Kolari (2001), Engsted and Tanggaard (2002), and Kim and Ryoo (2011) who observed the US market had reported positive relations exist between stock returns and inflation in the long-run. Our result is also consistent with the outcomes of Ibrahim (2011). The positive relations between stock returns and inflation may be explained as follows. First, the stock prices are driven by a company's future earnings potential which includes inflation expectations together with other elements. Second, equities represent claims against real assets whose values are expected to keep pace with changes in purchasing power (Arnold & Auer, 2015). Third, during the study period, Malaysia was having a relatively stable inflation rate, hence inflation expectations became more accurate, potentially leading to a better hedging performance.

4.5.2 Real Estate

Our results establish that real estate returns provide a partial hedge against inflation. Arnold and Auer (2015) had also stated that even if an asset does not provide a complete hedge, a stable and positive relation with inflation could still make the asset valuable. Real estate is a tangible asset, the increase in the cost of building new houses due to inflationary pressures will result in an increase in the price of existing houses. Consequently, inflation should be positively related to house prices. In the context of Malaysia, real estate has been one of the favourite investment avenues among high net worth individuals. Based on the house price reports, average house price has been on the rise continuously since 2010, at an annual rate of about 10 per cent (global property guide). It is, therefore important for real estate investors to understand their investment behaviour towards inflation. Our results which show that real estate prices are positively related with inflation implies that real returns from real estates are not adversely affected by inflation.

Our result showing that real estate acted as a partial inflation hedge is consistent with Anari and Kolari's (2002) outcomes in the US market, Blake et al.'s (2010) results in the UK market and Lee's (2014) findings for the Malaysian market. However, our result is inconsistent with the findings of Yeap and Lean (2017), possibly due to the difference in the study period and the methodology used. Our data ranges from 1980 to 2016, a much longer series than Yeap and Lean's (2017) study; we use the ARDL model whereas Yeap and Lean used the NARDL approach.

4.5.3 Gold

In this study, we use the price of the official gold bullion, the Kijang Emas which is issued by the central bank of Malaysia. First issued in 2001, the coin has a purity of 99.99 per cent fine gold and it comes in various denominations. Malaysian bullion coins can be a great way to build a saving because they are considered good, legal tender and they often feature very detailed and visually appealing designs. Maybank is the only distributor for the local gold bullion, on behalf of the central bank. It is possible that the limited supply chain has resulted in an inefficient market which caused the gold price to be unable to respond to the change in inflation.

Our study showing the insignificant relationship between gold returns and inflation is somewhat unexpected because most previous studies had found a positive relationship. Nevertheless, our result is consistent with Mahdavi and Zhou (1997), Tully and Lucy (2007), Wang et al. (2011), Ghazali et al. (2015) and Van Hoang, Lahiani and Heller (2016). It is deduced that the insignificant relationship suggests that gold prices in Malaysia are inefficient for processing relevant information, including inflation. The inefficiency of the gold prices in Malaysia and many other developing countries has also been documented in Ntim, English, Nwachukwu and Wang (2015).

4.5.4 Government Bond

Government bonds are long-term securities issued by the Government of Malaysia for financing development expenditures. These securities carry maturities of 3 to 20 years and denominations are RM10 million onwards. The securities are issued through competitive auctions. Since these are long-term risk-free securities, it is expected that the yields should be protected against inflation. This is indeed shown by our results, thereby supporting the Fisher relation.

Our result on bond yield and inflation is consistent with many previous studies such as Fama and Schwert (1977), Engsted and Tanggaard (2002) and Laatsch and Klein (2003) who had examined government bonds in the US. The positive relationship shown between bond prices and inflation as noted in our study is explained by the expectation theory of term structure of interest rate. This theory posits that future interest rate is dependent on expected inflation. Another explanation is that long-term sovereign bonds are traded in the international capital markets which are highly efficient in incorporating and reflecting all relevant information, including inflation expectations.

4.5.5 Treasury Bill

Treasury bill is a short-term government security issued by the central bank of Malaysia with maturities of less than one year, for working capital. Bills are sold at a discount and payable at face value on maturity. It is a risk-free security and is actively traded in the secondary market. Theoretically, the nominal returns should be strongly related to inflation. It is, therefore quite surprising to see that our results show that Treasury bill and inflation are not cointegrated, therefore unrelated.

Our result showing the lack of Treasury bill returns as inflation hedge is consistent with MacDonald and Murphy (1989), Lee et al. (1998), Engsted and Tanggaard (2002), and Fahmy and Kandil (2003). The insignificant relationship could be attributed to the quarterly data of the 3-month Treasury bill we used which has a relatively short maturity period. Therefore, price changes are relatively small as returns approached the yield of maturity, hence there is no relationship between Treasury bills and inflation.

5. Conclusion

This study revisits the Fisher (1930) hypothesis which states that the real rate of return and expected inflation should be independent of each other, thereby resulting in a direct relationship between nominal rates of return and inflation. From the practical perspective, this study has examined the inflation hedging ability of different asset classes which include stock, gold, real estate, Treasury bond and Treasury bill, in the Malaysian context. The bounds testing approach is used to analyse the long-run and short-run relation between asset returns and inflation. The ARDL model is used to take into account the long- and short-run dynamics of the relationship between nominal asset returns and inflation. The ARDL bounds approach has an advantage over other cointegration methods in that it has high statistical power even in small samples (Pesaran et al., 2001). For this study, we used quarterly data that spanned over a 27-year period, 1980 to 2016.

The ARDL bounds test results for each of the paired series show that stock, real estate and Treasury bond are cointegrated with inflation, indicating the existence of a long-run relationship. The Fisher hypothesis is therefore supported. On the practical side, we find that stocks provide a good hedge against inflation, both in the long-run and short-run. This indicates that the Malaysian stock market is efficient in impounding information on inflation expectations into current stock prices. Our results also indicate that real estate and Treasury bond can hedge against inflation to some extent. Our results showing the long-term relationships of these assets and inflation are corroborated by the short-term analysis when using the ECM. Results for gold and Treasury bill show that they do not provide a hedge against inflation. Treasury bill is not cointegrated with inflation while gold tend to show signs of cointegration. The long-run regression shows an insignificant relationship.

This study should interest academics as well as practitioners. From the academic perspective, it provides new evidence on the long-studied Fisher hypothesis. It is interesting to note that the hypothesis is able to withstand the test using new methodology and data. Although not all assets analysed in this study indicate the presence of the Fisher relation, yet in general, the data and methodology employed may be reliably used to make such inferences. From the practical perspective, this study provide important information on the relationship between asset returns and inflation in Malaysia, thereby helping investors and fund managers to manage their asset allocations so that portfolios are free from inflation risks. For example, investors and fund managers who are interested in providing protection to inflation should consider using stocks, real estate and Treasury bond in their investment portfolios. However, our results must be taken with caution. Just like any empirical study, the result discussed in this study is subjected to the data and methodology employed in the analysis and may not be applicable to other periods nor other emerging markets. Future research on inflation hedges may consider a comparative study of a cross-section of countries and use an expanded array of assets in the analysis.

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Sustaining Lake Toba's Tourism: Role of Creative Industry, Green Tourism Marketing and Tourism Experience

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ABSTRACT

Manuscript type: Research paper.
Research aims: This study aims to investigate the role of creative industry, green tourism marketing and tourist experience in building tourists' satisfaction.
Design/Methodology/Approach: Data were collected from 200 tourists who visited Lake Toba, Indonesia; and then analysed using structural equation modelling.
Research findings: The findings indicate that green tourism marketing and creative industry are positively related to tourism experience. This study, however, does not find substantial evidence to support the direct relationship between green tourism marketing and creative industry with tourism satisfaction. Instead the relationship is mediated by tourism experience.
Theoretical contribution/Originality: The findings indicate that green tourism marketing and creative industry are positively related to tourism experience. This study, however, does not find substantial evidence to support the direct relationship between green tourism marketing and creative industry with tourism satisfaction. Instead the relationship is mediated by tourism experience.

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Practitioner/Policy implications: This study provides insights for marketers and policy makers to better understand how tourism in Lake Toba can be sustained. It specifically highlights the role of creative tourism and green tourism marketing in creating exciting tourism experience and tourism satisfaction. This outcome is expected to facilitate tourism operators in sustaining their businesses and for policy makers to consider this as a strategy for decision-making.
Research limitation: Since this study focusses on the Lake Toba tourism industry only, the generalisability of the findings may be biased. Therefore, future studies should incorporate a larger and more diverse set of samples.

Keywords: Tourism Satisfaction, Tourism Experience, Creative Industries, Green Tourism Marketing, Developing Country, Indonesia
JEL Classification: M3

1. Introduction

The economic impact of tourism appears to have escalated over the last ten years, as has been noted by the World Travel and Tourism Council (2018). It was reported that the tourism industry had supported more than 292 million jobs, and it had contributed to more than 10 per cent of the world's economy. Likewise, the tourism sector had been the backbone of Indonesia's economy for many years (Ministry of Tourism of the Republic of Indonesia, 2017). This industry had contributed to about 7.7 per cent of the country's GDP, an increase of 4.03 per cent from 2016 (World Travel and Tourism Council, 2018). It was also stated that the annual growth of foreign tourism in Indonesia had reached 15.54 per cent. In terms of employment opportunities, tourism had provided job prospects for about 11.7 million workers in 2016, accounting for 10 per cent of the total employment in Indonesia (Badan Pusat Statistik, 2017). The employment rate of Indonesia is expected to grow simultaneously with the tourism industry development. One of the steps taken by the Indonesian government in promoting tourism worldwide is through the "wonderful Indonesia" programmes. These programmes are anticipated to create more future opportunities for the country's tourism sector.

Considering the potential growth of Indonesia's tourism industry, it is important for the tourism operators and policy makers to understand the behaviour and the level of tourism satisfaction. This element has been found to have an impact on the visitors' intention to revisit a destination (Chen & Tsai, 2007). Such efforts in studying visitors' satisfaction may help to sustain the future growth of the country's tourism. Although the tourism industry has been highlighted to be a fast-growing sector in many developing countries, its fast developments may not necessarily consider the sustainability issues. These issues, if not duly addressed, could impact both the environment and local communities, thereby curbing the future competitiveness of the industry (Cucculelli & Goffi, 2016). This is because tourism activities exploit natural resources within the surroundings. Practical evidence (Aguiló, Alegre, & Sard, 2005) indicates that having a sustainable tourism development not only prevents further deterioration; it could also contribute towards tourists' appreciation of the destinations visited. In relation to these arguments, the concept of green tourism, eco-friendly and preserved nature are highlighted as imperatives for sustainable tourism, especially tourism that is heavily dependent on the environment (Petrevska & Cingoski, 2017). Without the green tourism approach, many tourism spots would lose their core values over time (Tang et al., 2017; Meler & Ham, 2012; Xu, Cui, Sofield, & Li 2014). Evidently, green tourism widens the prospects of the tourism sector. In his study, Beaumont (2011) asserted that tourists with a higher level of eco-awareness, tend to travel more frequently; they also play a significant role in the market which stresses on the importance of green tourism. Within the literature of green tourism (Choi, Parsa, Sigala, & Putrevu, 2009; Kim, Njite, & Hancer, 2013), a fair amount of research has been examining green consumer behaviour and the marketing of tourism products. Many studies have highlighted the contributions of sustainability from the perspective of green tourism marketing and some scholars (e.g. Hall, 2016; Lee, 2011) claimed that sustainable tourism is not confined to eco-friendly environments and the preservation of resources only, but also to other cultural, economic and social aspects.

Of late, the integration of creative industry into the tourism sector has led to the emergence of creative tourism, which provides immense opportunities for tourism operators to gain a competitive advantage (Rogerson & Visser 2014; Tafel-Viia, Viia, Terk, & Lassur, 2014; Waitt & Gibson 2014). Unlike the common approach of visiting tourists' sites, creative tourism allows tourists to be involved in the activities of the attraction sites; it grants tourists the opportunity to participate in various events such as a performance or an interactive experience, both of which are expected to appeal to their satisfaction. The concept of creative tourism has been embraced in some developing countries, such as Asia, because it is seen as a contribution towards sustainable tourism (Richards, 2016; Maryunani & Mirzanti, 2015). Yet, despite its emerging interest, there is a lack of studies focussing on how creative tourism affects the tourists' experience and satisfaction.

Motivated by this gap, the current study aims to examine the impact of green tourism marketing and creative industry towards tourism experience and satisfaction. This paper uses the Lake Toba tourists as samples to gather data for this study. Lake Toba is the largest natural lake in Indonesia. It is located in the middle of the northern part of Sumatera and is well known as the largest volcanic lake in the world. The Lake Toba region is one of the most well developed and well promoted area; it has been marketed by the Indonesian government as one of the most desirable tourism destinations throughout the world (Ratman, 2016). The main attraction of Lake Toba is the National Geopark of Danau Toba. Due to this, it is important for the Indonesian government to secure tourism sustainability in this particular region.

The rest of the discussion will be organised as follows. Section 2 discusses past literature on green tourism and creative tourism. It also highlights the hypotheses development. Section 3 explains the methodology employed while Section 4 reports on the results. Section 5 discusses the findings and Section 6 concludes the study by highlighting the impact of this study on theory and practice.

2. Literature Review and Hypotheses Development

2.1 Green Tourism Marketing

Green tourism is defined as the responsible way of travelling to natural areas in which tourists try to conserve the environment, as a means of maintaining sustainability of the environment (Lee, Honda, Ren, & Lo, 2016). Green tourism is commonly associated with exotic, undisturbed and remote natural habitats such as rivers, parks, jungles, and other green spaces (Font & Tribe, 2001). A properly developed green tourism destination can offer exciting experiences, which are seen as "rewarding", "enriching" and a "form of learning". The expansion of green tourism has been cultivated by developing countries since these countries possess tourism destinations that are susceptible to development (Sasidharan, Sirakaya, & Kerstetter, 2002). Indonesia, for instance, hosts about 50 national parks, ranging from rain forests, endemic species, mountains, seas and rivers. Of these 50 national parks, six have been recognised as World Network of Biosphere Reserves. The diverse destinations of natural attractions in Indonesia serve as opportunities for the country to posit itself as a "green tourism" destination. Despite this, it is reported that the unavailable information and promotion about environmentally friendly and green destinations to tourists, is part of the problem in attracting the market segment.

Green tourism marketing could be referred to as the process of developing tourism products or services and promoting them in a way that does not result in any negative impact on the environment (Aggrawal, 2010). Similarly, the concept was defined by Ashrafi (2014) as an organisation's effort at designing, promoting, pricing and distributing products which are aligned with environmentally friendly practices. Therefore, green marketing can be used as a tool for sustainable growth. Dragićević, Jovičić, Blešić, Stankov and Bošković (2012) suggested that the concept of green tourism marketing entails:

1. *Core Resources*
   These components involve the advantages of tourism destination, such as nature management or cultural heritage preservation.
2. *Attractor*
   This component is related to the attraction of tourism destination from core resources, such as food attraction or festivals.
3. *Supporting factor*
   This component is related to the government's support as well as the event organiser of the tourism destination. Supporting factors play a role in improving tourism management.
4. *Amplifying determinant*
   This component is related to the superstructure and infrastructure, such as hotels, and security.

Green tourism marketing has been highlighted as an influential marketing strategy that boosts tourism purchasing behaviours, especially for tourists who value "sustainable environment". Literature (Delafrooz, Taleghani, & Nouri, 2014; Delmas, Nairn-Birch, & Balzarova, 2012; Furqan, Som, & Hussin, 2010) seems to emphasise that many successful tourism operators such as leading hotel chains in developed countries are able to differentiate their products and services from competitors by repositioning themselves as "green". It was reported by Hsieh (2012) and Chan (2013) that hotel operators that are developing green marketing strategies to satisfy the needs of the environmentally conscious tourists, are on the increase. Their strategies include making use of ecolabels, certifications, awards and green alliances, as part of their green marketing campaigns. It was further indicated that rising consumers' concerns on environmental awareness has perhaps contributed to the movement towards the green marketing strategy. It appears that a successfully developed green tourism infrastructure might facilitate the tourism operators in creating a "green" image on aspects such as quality and attractiveness, which influence tourists' experiences. A positive image is created not only to increase the number of visits but also to provide a valuable experience to tourists. Based on these arguments, this study postulates that:

H_1: Green tourism marketing is positively related to tourism experiences.

H_2: Green tourism marketing is positively related to tourism satisfaction.

H_3: Tourism experiences mediate the relationship between green tourism marketing and tourism satisfaction.

2.2 *Creative Industry*

The tourism industry has always been associated with the consumption of culture, where people travel to learn more about others' cultures and civilisations. This suggests that culture provides the attraction that would help to generate tourism. Similarly, tourism would provide funding to support culture. This tourism trend, however, has been criticised, as it attracts large crowds whose visits might lead to the deterioration of the cultural sites. Such a problem has driven the emergence of a new niche tourism industry, termed as creative tourism (Fahmi, Koster, & van Dijk, 2016). The development of creative tourism is partly driven by the influence of the creative industry.

A report from the Organisation for Economic Co-operation and Development (OECD, 2014) noted that there was a correlation between tourism activities and the presence of creative industry in tourism sites. This was also endorsed by Cruz (2014) who said that there is a positive relationship between creative industry and tourism. Creative industry has become the key source to breaking today's lock-in economic development. Today, the synergy between creative industry and tourism activities is getting the primary attention of various parties. There seems to be an urgent need to improve the social awareness of what creative industry can do for the local economy. In Indonesia, the term creative industry has been recognised since 2007, when the government started to realise the country's potential in culture and ideas, having a large pool of creative and artistic talents (Windarti, 2016). The term, creative industry, was then defined as those industries which have their origin in individual creativity, skill and talent, and which have the potential for wealth and job creation, through the generation and exploitation of intellectual property. Integrating creative industry into the tourism sector has propagated various tourism products and services which allow tourists to participate in different activities, such as crafts, arts, culinary and other creative activities. The presence of the creative industry in tourism can stimulate tourism growth in particular areas by creating a better tourism experience. Since the creative industry offers tourists the opportunity to learn new experiences and new skills, as well as the occasion to establish a close link with the local population and the cultural heritage of the specific destination, it is expected to be more fulfilling, thereby offering them new and memorable experiences (Wurzburger, Aageson, Pattakos, & Pratt, 2010). Nonetheless, weaving creative industry into tourism requires efforts, such as the active participation and interaction of tourists instead of their mere presence of just "being there" (Jelincic & Zuvela 2012; Richards, 2013).

Clearly, the concept of creative industry can cross the limits of the traditional tourism model; it can specifically benefit the tourism sector by providing tourists with the distinctive value of tourism; it revitalises local tourism products; it provides tourists with a more satisfying experience through creative technology and by constructing a more enjoyable atmosphere for tourists. All of these advantages will not only boost the tourists' experiences but also increase their satisfaction with the tourism destination. Korez-Vide (2013) had stressed that todays' tourists appear to want to become a part of the local community; they want to experience the local cultures, and they want to have an experience in living like the locals. With such an increasing interests for intangible experiences, this new tourism product, it is argued, will be able to satisfy the higher levels of the self-actualisation desires of tourists. Based on this, it is postulated that:

H_4: Creative industry is positively related to tourism experience.
H_5: Creative industry is positively related to tourism satisfaction.
H_6: Tourism experience mediates the relationship between creative industry and tourism satisfaction.

2.3 Tourism Experience and Satisfaction

Tourism satisfaction has received considerable attention within the tourism literature. The notion of tourism satisfaction is defined as "tourists' perceptions on the products and services offered". It refers to the positive perception one feels; it is the satisfaction one has with the products, upon having used these products and services. In contrast, tourists will have a negative perception and feel unsatisfied if the reality they feel is below their expectations, upon consuming the products/ services. Three important dimensions are used to evaluate the level of customer or visitor satisfaction in consuming a service: (1) service satisfaction, (2) product satisfaction, and (3) price satisfaction (Kotler & Keller, 2012). Various studies (Baker & Crompton, 2000; Chi & Qu, 2008; Gallarza & Saura, 2006; Williams & Soutar, 2009; Neal, Uysal, & Sirgy, 2007; Sirgy, Kruger, Lee, & Yu, 2011) have indicated that tourism satisfaction is important for sustaining the destination. These studies have established that satisfied tourists were more likely to repurchase the holiday package; they were also more likely to recommend such holiday packages to others. Tourists' positive holiday experiences will be translated into how they evaluate their satisfaction level. Tourism experiences can thus be referred to, "as the 'subjective mental state' perceived or felt by tourists during a service encounter" (Otto & Ritchie, 1996, p. 166). The product of experience is highly valued by consumers because it can satisfy their spirit and offer them a memorable activity (Binkhorst, 2005; Murray, Foley, & Lynch, 2010). A successful tourism experience will linger in the visitor's mind. Therefore, it is not merely a tourism trip but also the experience felt by tourists that will encourage the creation of tourism experience. Many previous researchers (Larsen, 2007; Poria, Butler, & Airey, 2003; Uriely, Yonay, & Simchai, 2002; Wickens, 2002) believed that tourism experience is subjective. In the green tourism context, for instance, tourists' interactions with the natural environment and amazing landscapes may provide joy to tourists, thereby resulting in an increased appreciation of the holiday destination (Poudel & Nyaupane, 2013; Chen, Chen, & Lee, 2011) and the reverse occurs for a negative experience. Based on this argument, it is postulated that:

H_7: Tourism experience is positively related to tourism satisfaction.

Following the outcomes noted in current literature, a research framework hypothesising green tourism marketing and creative indus-

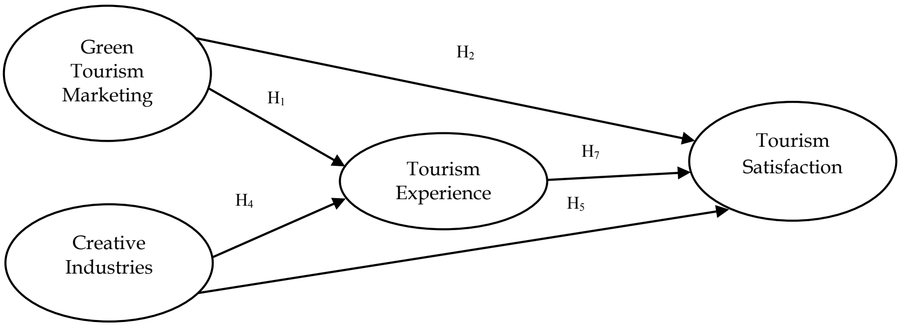

Figure 1: Research Framework

Note: H_3 and H_6 are the mediating effects.

try as predictors to tourism experience and satisfaction was developed. Tourism experience is also expected to mediate the relationship between green tourism marketing and creative industry with tourism satisfaction. Figure 1 illustrates.

3. Research Methodology

This study is quantitative in approach, it uses the questionnaire survey to collect data from tourists who had visited Lake Toba for their destination. The constructs for the questionnaire are adapted from previous literature and then tailored to the context of this study. Following Dragićević et al. (2012), this study defines green tourism marketing as promotional activities of tourism products/services in a way that does not result in any negative impact on the environment. The concept of green tourism is measured based on four aspects: core resources, attractor, supporting factor and amplifying determinant. Thirteen items are used to measure this construct. Seven items are based on the Ministry of Trade of the Republic of Indonesia's (2009) idea of creative industry. This concept assesses the extent tourism operators are able to project tourism destinations as a creative tourism spot. Tourism experience is then assessed based on tourists' experience during their stay at the tourism destination. This study assess the tourism experience based on six components, which include: lifestyle, cultural heritage, landscape, art, tradition and culture, and interactions with the local community. These items are adapted from Murray et al. (2010). Tourism satisfaction is based on the satisfaction level perceived by the tourists upon the consumption of the product/service provided. This evaluation is based on three aspects: service, tourism product and price.

The focus of this study is given to Lake Toba in Indonesia because it is the government's focus for preserving the natural and cultural creativity of the surrounding communities. Lake Toba has also been promoted as a geopark tourist area, and has been prioritised by the Indonesian government (Ministry of Tourism of the Republic of Indonesia, 2015) for development and promotion. Using a purposive sampling method, we distributed 220 questionnaires to the tourists at different destination spots, hotels and restaurants at the Lake. As we expected that there would be overseas respondents, we prepared questionnaires in Bahasa and English. Consent are taken before we distribute the questionnaires. The survey is distributed at different times of the day over two weeks, during public holidays in Indonesia. The selected resort hotels had similar quality ratings. Of these 220 questionnaires, 200 were returned. Table 1 illustrates further.

Table 1: Respondents' Profile

Characteristics	Number of Participants	Percentage (%)
Based on Origin		
North Sumatera	176	88
Outside North Sumatera	0	0
Foreign Countries	24	12
Sex		
Male	136	68
Female	64	32

As can be seen, 88 per cent of the respondents are from North Sumatera whilst only 12 per cent are from foreign countries, such as India, the Netherlands, Australia and Singapore. This figure indicates that most of the tourists who visited Lake Toba are local tourists. As expected, majority of the respondents are males (68%). Although the tourism products offered by the Lake Toba destination are not specifically designed for any particular gender, the nature around the Samosir Island is more popular among males, especially those who like to camp. Looking at the products and services, it appears that the

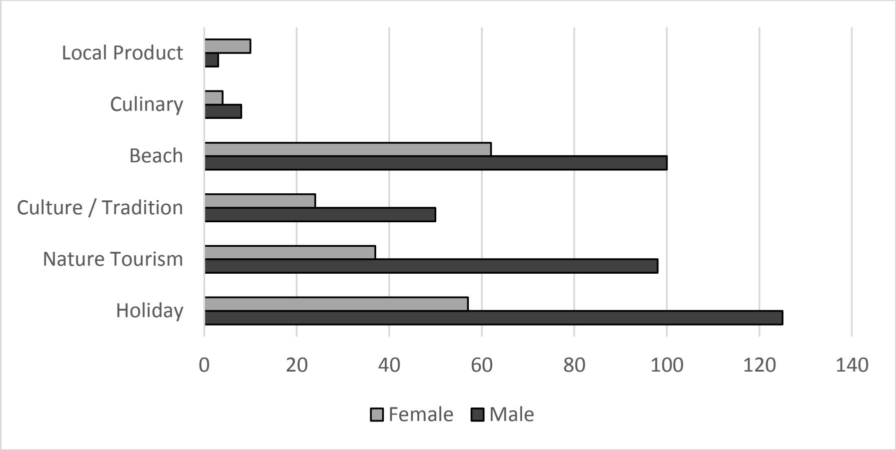

Figure 2: Tourism Purpose

tourists are more interested in Lake Toba as a holiday destination. They appear to choose the destination due to its nature and beaches, as compared to its creative industry. Only a few respondents take the tour for culinary purposes or for the local products. The main purpose of their visit is to relax, obtain the tourism experience and rebuild their memory with friends (Figure 2).

4. Result and Discussion

4.1 Confirmatory Factor Analysis Model Evaluation

This study performs a confirmatory factor analysis (CFA) to validate the psychometric properties of the measurements. This is done by examining the convergent validity, and discriminant validity. The convergent validity is assessed through the factor loadings, composite reliability and average variance extracted. Table 2 illustrates.

As indicated in Table 2, all the items have factor loadings of more than 0.6 (Chin, 1998). The composite reliability for all the constructs is above the recommended value (0.902 – 0.949) and the AVE values for all constructs are above 0.5 (Hair, Hult, Ringle, & Sarstedt, 2016). This study also assesses the discriminant validity based on Fornell and Larcker's (1981) criterion. The results of the discriminant validity test are presented in Table 3.

Table 2: Convergent Validity

Variable/Construct	Factor Loadings	Composite Reliability	Average Variance Extracted
Green Tourism Marketing		0.949	0.590
Core Resource 1	0.740		
Core Resource 2	0.724		
Core Resource 3	0.783		
Attractor 1	0.711		
Attractor 2	0.881		
Attractor 3	0.814		
Attractor 4	0.735		
Supporting Factor 1	0.808		
Supporting Factor 2	0.762		
Supporting Factor 3	0.762		
Amplifier 1	0.725		
Amplifier 2	0.821		
Amplifier 3	0.695		
Creative Industries		0.902	0.570
Local Product	0.763		
Souvenir	0.713		
Central Market	0.632		
Cultural Value Product	0.808		
Unique Advertisement	0.838		
Product Development	0.759		
Musical Imbued Product	0.752		
Tourism Experience		0.922	0.502
Lifestyle 1	0.729		
Lifestyle 2	0.685		
Heritage 1	0.870		
Heritage 2	0.679		
Scenery 1	0.705		
Scenery 2	0.602		
Cultural 1	0.613		
Cultural 2	0.648		
Tradition 1	0.717		
Tradition 2	0.645		
Local Interaction 1	0.915		
Local Interaction 2	0.618		

Table 2: (continued)

Variable/Construct	Factor Loadings	Composite Reliability	Average Variance Extracted
Tourism Satisfaction		0.928	0.566
Overall Satisfaction 1	0.671		
Overall Satisfaction 2	0.663		
Overall Satisfaction 3	0.835		
Cost-Benefit Satisfaction 1	0.856		
Cost-Benefit Satisfaction 2	0.880		
Cost-Benefit Satisfaction 3	0.689		
Service Satisfaction 1	0.716		
Service Satisfaction 2	0.610		
Service Satisfaction 3	0.893		
Service Satisfaction 4	0.643		

Table 3: Discriminant Validity

Variables	Green Tourism Marketing	Creative Industries	Tourism Experience	Tourism Satisfaction
Green Tourism Marketing	**0.768**			
Creative Industry	0.195	**0.755**		
Tourism Experience	0.491	0.421	**0.708**	
Tourism Satisfaction	0.501	0.681	0.401	**0.753**

As shown in Table 3, all the constructs appear to have the square root of the AVE that is higher than the correlations with other variables. This highlights the achievement of the discriminant validity (Fornell & Larcker, 1981). In total, the measurement model demonstrates the adequate convergent and discriminant validity.

4.2 Structural Model Analysis

Assuming that the measurement model satisfies the psychometric assessment, a structural model is constructed. Table 4 and Figure 3 present the results of the hypotheses testing. The examination of the hypotheses is based on the t-value, where a value greater than 1.96, represents

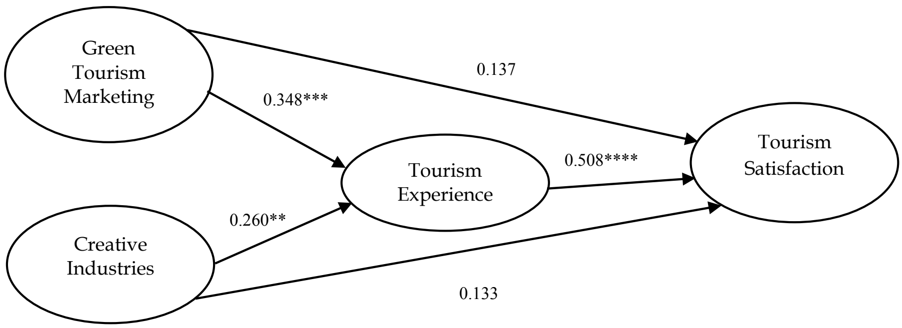

Figure 3: Structural Model Analysis

Table 4: Hypothesis Testing

Hypo-theses	Path	Path Coefficient	p-value	Decision
H_1	Green tourism marketing → tourism experience	0.348	0.000	Accept
H_2	Green tourism marketing → tourism satisfaction	0.137	0.112	Reject
H_3	*Green tourism marketing → tourism experience → tourism satisfaction	0.177*	0.002	Accept
H_4	Creative industry → tourism experience	0.260	0.002	Accept
H_5	Creative industry → tourism satisfaction	0.133	0.110	Reject
H_6	*Creative industry → tourism experience → tourism satisfaction	0.132*	0.008	Accept
H_7	Tourism experience → tourism satisfaction	0.508	0.000	Accept

Note: *Indirect effect, generated from PLS report.

a significant path. The results indicate that green tourism marketing affects tourism experiences ($\beta = 0.348$, $p < 0.001$), hence supporting H_1. The effect of creative industry on tourism experience is found to be positively significant ($\beta = 0.26$, $p < 0.05$). Therefore, H_4 is also supported. Surprisingly, in this study, green tourism marketing ($\beta = 0.137$, p =

0.112) and creative industry (β = 0.133, p = 0.11) are found to have no significant effect on tourism satisfaction. Therefore, H_2 and H_5 are not supported. As expected, tourism experience has a significant effect on tourism satisfaction (β = 0.508, $p < 0.001$), thereby supporting H_7. While the direct effect of green tourism marketing and creative industry on tourism satisfaction are insubstantial, the effect of these two dimensions on tourism satisfaction, through tourism experiences, appeared to have a significant effect, thereby supporting H_3 and H_6.

5. Discussion

This study has investigated the relationship among green tourism marketing, creative industry, tourism experience and tourism satisfaction. The outcome derived from this study demonstrates that green tourism marketing and creative industry serve as crucial factors in arousing tourism experience. Yet, the direct impact of these two dimensions on tourism satisfaction is not substantial. These two dimensions would only affect tourism satisfaction, with the existence of tourism experience. The role of tourism experience as a mediator, in this study, facilitates in explaining how tourism operators could use tourism experience as a tool to cultivate tourism satisfaction.

In this study, green tourism marketing is found to have a significant effect on tourism experience, in the context of Lake Toba as a destination. The findings indicate that the Lake Toba tourists can be influenced by green tourism marketing. Thus, efforts should be concentrated to bring forth green tourism marketing so as to promote better tourism experience. Tourists who are more sensitive to environmental issues have their own notion of enjoying tourism by maintaining natural preservation. It is important to classify them as an important tourism market (Beaumont, 2011). This is also argued by Lee et al. (2016) who asserted that green tourism could serve as a stimulation to tourists because they are given an environmental-friendly vacation. The findings of this study are consistent with those of previous studies. The current study shows that there is a positive and significant effect of green tourism on tourism experience. The existence of green tourism has further stimulated tourists' experience. The preservation of nature and its authentic natural values can make tourism experience more exciting. Green tourism marketing, therefore, would be able to enhance tourism satisfaction, but only if its practices succeed in promoting better tourism experience.

In line with previous studies (Christian & Elena, 2015; Cruz, 2014), this study finds that the presence of creative industry encourages the creation of better tourism experience. The presence of creative industry in Lake Toba is a supporting factor in creating better tourism experience. The use of technology and culture in presenting creative tourism will encourage better tourism experience. The result of this study also indicates that authentic tourism experiences, which are developed outside the regular tourism product offerings, are valuable. The opportunities offered to tourists to experience the landscape, the local community, the local culture and food enhances tourists experiences. Nonetheless, this study also found that the creative industry alone, does not promote tourism satisfaction, in the context of Lake Toba. It appears that creative industry or creative tourism needs to create tourism experience which can then enhance tourism satisfaction. This shows that tourists' evaluation on their tourism and travel acitivites, are entirely based on their tourism experiences. Satisfaction, either based on tourism products, services, or the amount of money spent to get the tourism experience, is evaluated as interesting tourism experience sources.

Tourism experience is the biggest contributor for achieving tourism satisfaction. Previous research had applied various approaches to evaluate tourism experience, such as by using the emotional approach (Prayag, Hosany, Muskat, & Del Chiappa, 2017), visitors' activities (Armario, 2008), and tourism experience sources (Murray et. al., 2010). These approaches connect tourism experience and tourism satisfaction. In accordance with previous research, tourism experience has a positive effect on tourism satisfaction. The experience felt by the visitors would be evaluated by their own consideration. Lovelock and Wirtz (2011) had explained that satisfaction would be experienced when what is felt by people is in accordance with what they expect. In the tourism context, visitors would be satisfied in their tourism experience when what they get is equal to or more than that of their tourism expectations, whether in terms of service, product, or expenses.

6. Conclusion and Implications

The findings gained from this study will be able to contribute to the body of literature on tourism in a number of ways. First, this study extends the knowledge on how green tourism marketing and creative industry are related to tourism satisfaction in the context of Lake Toba, Indonesia. Although extensive literature has provided evidence on how green tourism marketing can help to sustain the tourism industry, it is not clear how the integration of creative industry into the tourism sector would benefit the operators. The findings generated from the current study show that many tourists who visited Lake Toba tend to report a higher level of satisfaction with the products and services offered when the holiday package is able to promote a good and memorable tourism experience. Thus, it would seem practical for Indonesia, as a developing country, to make attempts to integrate the concept of creative industry into its tourism sector as one contribution towards sustainable tourism. There is evidence drawn from this study to show that tourism satisfaction can only be achieved by improving the overall tourism experience. The key factor in creating tourism satisfaction is by creating exciting tourism experiences for visitors.

The results of this study imply that marketers involved in promoting Lake Toba as a holiday destination need to consider the strategic role of tourism experience in arousing tourism satisfaction. They also need to strategically enhance their green marketing communications. Similarly, the marketing strategy needs to translate the promotion as a positive tourism experience so that maximum benefits can be reaped. It is only through this approach that the sustainability of Lake Toba as a holiday destination can be assured. Green marketing strategies can be improved and accomplished by continually modifying them according to the needs of potential tourists. The outcome of this study indicates that tourism operators need to be creative in finding ways of designing innovative products which can be offered to prospective visitors so as to enable them to experience the local culture, local foods and the local community. This is important for the tourism operators as they match tourists' needs with products/services offered, thereby enabling visitors to have enjoyable and memorable vacations.

Despite the fact that the current study has provided some useful insights into the role of creative industry and green tourism marketing on tourism experience and satisfaction in the context of Lake Toba, Indonesia, there are also some limitations that need to be addressed. The first of these is the generalisability of the results which has focused on tourists who visited Lake Toba. Future research may need to consider gathering data from several other holiday destinations in other countries, for the sake of comparison. The second limitation is that the survey is confined to only a few variables. Thus, it would be interesting for future research to incorporate more variables that are related to sustainable tourism industry within the Asian context.

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Investigating the Strategies for Supply Chain Agility and Competitiveness

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ABSTRACT

Manuscript type: Research paper
Research aims: This study explores the strategies that enable firms to establish supply chain agility and competitiveness in Australian manufacturing firms.
Design/Methodology/Approach: Using a case study approach, interviews are conducted with eight Australian manufacturing firms. Underpinned by the dynamic capability perspective, data are then thematically analysed to derive the findings.
Research findings: Agility strategies are based on collaborative efforts, requiring information sharing among firms in the supply chain and diversifying core competencies in a strategic manner to remain competitive.
Theoretical contribution/Originality: This study shows how dynamic capabilities foster competitive advantage. It identifies both the strategic and operational agility which enable firms to respond to market changes and to remain competitive.
Practitioner/Policy implication: The manufacturing industry in Australia is undergoing a transition where Australian manufacturers

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need to transform and be more agile by leveraging their competencies and supply chains collectively.
Research limitation/implications: The results are based on a cross-sectional study of firms identified from the Australian manufacturing industry.

Keywords: Agility, Australian Manufacturing, Operations, Strategy, Supply Chains
JEL Classification: I3, M14

1. Introduction

The manufacturing industry plays a significant role in the Australian economy, contributing 6 per cent of the nation's gross domestic product, and accounting for 32.2 per cent of total exports (Office of the Chief Economist, 2016). According to the Australian and New Zealand Standard Industrial Classification (ANZSIC), the manufacturing industry includes diverse sectors, ranging from low value-added commodity products to high precision products such as automotive, medical devices and pharmaceuticals (Australian Bureau of Statistics, 2016). The manufacturing industry is a significant component in the value chains of other Australian industries such as services, transport, infrastructure and agribusiness (Commonwealth Scientific and Industrial Research Organisation, 2011; 2012). Australia's manufacturing competitiveness index ranking moved from 21 in 2017 to 19 in 2018 (International Institute for Management Development, 2018), which indicates industry progression. However, after two years of expansion, the industry reported its lowest performance in the manufacturing index in December 2018 (The Australian Industry Group, 2018). The low performance pointed to the declining activities of the industry (Scutt, 2019), particularly in the manufacturing of chemical and metal products as well as machinery and equipment (Manufacturers' Monthly, 2019). This declining trend is the result of high input costs such as energy and labour (Manufacturers' Monthly, 2019), fierce competition and disruptive new technologies experienced by the industry (Lannin, 2018). For Australian manufacturing to remain competitive, businesses should transform to meet these changing needs (Lannin, 2018) and develop a more agile approach.

Research (Carvalho, Azevedo, & Cruz-Machado, 2012; Chen, 2018; Wu, Tseng, Chiu, & Lim, 2017; Yusuf et al., 2014) has highlighted the significance of agile supply chains for competitiveness. The capability of a firm to be responsive and versatile in adjusting its supply chain to rapid market changes is important. This is termed as supply chain agility. Even though there are earlier studies (e.g., Christopher, 2000; van Hoek, Harrison, & Christopher, 2001; Yusuf et al., 2014) highlighting the characteristics of supply chain agility, the concept is still evolving, as noted by Aslam, Blome, Roscoe and Azhar (2018) and Gligor, Holcomb and Stank (2013).

This study investigates the strategies that successful manufacturing firms adopt to instil supply chain agility in their organisations and supply chain operations. It answers the research question, 'What strategies are evident in manufacturing firms for ensuring supply chain agility, and how do they facilitate a competitive advantage?' Based on interviews conducted with managers in eight Australian manufacturing firms, our findings highlight the need for Australian manufacturers to embrace market challenges, detect changes in supply and demand, reconfigure resources, and exploit knowledge for their own advantage.

The rest of this paper is structured as follows. Section 2 and Section 3 discuss literature on the supply chain agility and theoretical background of this study respectively. Section 4 describes the methodology approach, whilst Section 5 provides the analysis of the study's results. Section 6 discusses the empirical results and Section 7 concludes by looking at the limitations and implications.

2. Literature Review

2.1 The Importance of Agility

Literature that focusses on manufacturing and supply chain management has highlighted that the concept of agility is common in today's competitive market because it is relevant to the achievement of competitiveness in current turbulent market conditions (Tse, Zhang, Akhtar, & MacBryde, 2016; Wu et al., 2017). The concept of agility first originated from the manufacturing system, and it was later expanded from the organisational level to the supply chain level. The first reference made to the term agility appeared in 1991 in the report '21st Century Manufacturing Enterprise Strategy' (Castro, Putnik, & Shah, 2012). The report described agility as a solution that US manufacturers can offer to the next generation of competition. Agility enables a firm to respond to the changing demands by fulfilling them and producing highly customised products (Nagel, 1992). Agile manufacturing expands the focus of the industry to go beyond flexibility, as seen in the mix and volume of production (Christopher, 2000; Rimienė, 2011). Agility has become a customer-oriented management approach which demonstrates both reactive and proactive measures in meeting customer needs. It occurs with firms adjusting their processes, products or services, and the volume of production (Castro et al., 2012). Organisations that practise agile manufacturing can achieve multiple objectives, such as cost reduction, quality enhancement, flexibility, shorter delivery times, better services and a leading-edge technological production (Eshlaghy, Mashayekhi, Rajabzadeh, & Razavian, 2010; Vázquez-Bustelo, Avella, & Fernández, 2007). Consequently, agile manufacturing strengthens the organisations' operational, market and financial performance (Vázquez-Bustelo et al., 2007).

Realising the benefits of agile manufacturing, the concept was later expanded to encompass the entire business (Christopher, 2000). The concept of agility has been defined by Dove (1994) as the ability to adapt to environmental changes. He espoused that agility is a change proficiency of organisations. Clearly, an agile organisation incorporates this proficiency into all its processes to achieve responsiveness in strategies, technologies, personnel, business processes and facilities (Tseng & Lin, 2011). Agility improves responsiveness by combining flexible organisational structures and human skills (Christopher, 2011). The level of agility which an organisation can attain is limited by the ability of the other parties whom the firm engages with (Kumar & Ramakrishna, 2011; Swafford, Ghosh, & Murthy, 2006), and the type of environment in which the firm operates (Wu et al., 2017). The parties that a firm engages with can comprise the supply chain partners which enable the firm to be agile in its supply chain (van Hoek et al., 2001). The scope of agility, therefore, should be extended beyond the firm to also consider the ability of the supply chain partners in creating an agile supply chain as a whole (Braunscheidel & Suresh, 2009; Lee, 2004).

2.2 Agility in Supply Chains

The concept of agile supply chains was introduced in 1996 (Dove, 1996) to mean all the parties are integrated and coordinated, enabling the firm to identify and to respond to market changes quickly and accurately (Christopher, 2000). With the use of information technology, firms have access to demand information quickly and can adjust production plans and inventories while coordinating with suppliers to procure the required materials for timely production (Christopher, 2000; van Hoek et al., 2001).

The concept of agile supply chains has appeared in the literature via different terminologies such as 'supply chain agility', 'agility in supply chains' and 'agile supply chains'. These terminologies have slight variations depending on the level of the supply chain they represent. For example, the term 'agile supply chains' reflects the composition of a supply chain to enable agility whereas 'supply chain agility' and 'agility in supply chains' refer to the capability of firms in the supply chain to be agile, and to make the supply chain partner-firms agile in turn. Following the studies of Blome, Schoenherr and Rexhausen (2013), Braunscheidel and Suresh (2009), Gligor, Esmark and Holcomb (2015) and Yang (2014), this study adopts the term and concept of 'supply chain agility' as the ability of a firm to adjust its supply chain to rapidly respond to market changes.

The most frequently cited elements noted in the literature that examines agility are: customer sensitivity, network integration, process integration and leveraging the impact of people and information (Christopher, 2000; van Hoek et al., 2001; Yusuf et al., 2014). Customer sensitivity and network integration are about detecting market changes (Christopher, 2000; van Hoek et al., 2001). Firms detect market changes in real time, and they become sensitive to such changes (Chen, 2018; Yang, 2014). Information integration enabled through ICT furnishes real time access to information (Kim & Chai, 2017). The shared information is demand-related and operations-related, such as inventory, planning and procurement, all of which enable knowledge exploitation. Information integration increases visibility among the supply chain partners; it enables joint planning between firms and the supply chain partners to streamline processes, to reconfigure resources within the chain, and to respond to changes accordingly (Braunscheidel & Suresh, 2009; Dubey et al., 2018).

Research has focused on the physical elements that foster agility (e.g., Braunscheidel & Suresh 2009; Christopher, 2000; van Hoek et al., 2001; Yang, 2014; Yusuf et al., 2014) but only a few studies have examined the underlying aspects which enable these elements (e.g., Aslam, et al., 2018; Gligor et al., 2013). Gligor et al. (2013) identified agility as being developed through combining the cognitive and physical capabilities of the firms. Cognitive capabilities are the alertness (the ability to quickly detect the changes in markets), accessibility (the ability to access relevant data) and decisiveness (the ability to make decisions) which enable firms to process information, and to determine the actions needed. Swiftness (the ability to implement those decisions quickly) and flexibility (the ability to adjust operations and procedures along with the changing needs) are the physical components which permit firms to implement actions (Gligor et al., 2013). Firms' market sensing ability can increase their supply chain agility (Aslam, et al., 2018).

2.3 Characteristics of Agility in Supply Chains

Supply chain agility focusses on increasing firms' responsiveness towards market changes (Qrunfleh & Tarafdar, 2013; Tse et al., 2016; Wieland, 2013). This takes place when firms identify and anticipate market changes and then react ahead of their competitors. However, the critique is that agility is mainly about responsiveness and a measure of reaction time (Swafford, Ghosh, & Murthy, 2008). Several published studies (Carvalho et al., 2012; Lee, 2004; Van Oosterhout, Waarts, & van Hillegersberg, 2006; Wu et al., 2017) describe agile supply chains as being responsive to unpredictable changes in market conditions. Other studies (Fayezi, Zutshi, & O'Loughlin 2015; Li, Chung, Goldsby, & Holsapple, 2008) stress the importance of proactive actions in exploring opportunities, instead of just being reactive to market changes.

Even though addressing market changes is the main concern of firms and their supply chain, there have been some inconsistencies in the definition of the type of market changes involving agility. To date, the discussion of supply chain agility has largely concentrated on demand variations only (e.g., Blome et al., 2013; Braunscheidel & Suresh, 2009; Charles, Lauras, & Wassenhove, 2010; Khan & Pillania, 2008). Realistically, agility enables firms to overcome both the demand and supply variations. This was verified by Li et al. (2008) and Li, Goldsby and Holsapple (2009) who identified three types of market variations for supply chain agility that can cause demand and supply changes. These occur due to changes in business environments, such as technology, political, social and demographic related factors; changes in available demand and supply, and sudden one-off incidents. Based on these factors, it can be deduced that supply chain agility embraces opportunities and challenges arising from various market changes.

The important features of supply chain agility in responding to changes are the response speed and the ability to develop appropriate solutions to address the changes (Swafford et al., 2008). Hence, supply chain agility is about responding in a flexible and timely manner. Supply chains minimise the risk of losses, thereby making firms more competitive (Swafford et al., 2008). Importantly, supply chain agility reflects features of a dynamic capability which involves various processes that can detect changes and reconfigure resources (Carvalho et al., 2012).

Based on the different definitions of agility and supply chain agility, it can be established that agility is a requirement for addressing dynamic markets. It is particularly relevant for the manufacturing industry. Firms develop agile capabilities while working with other partners in the supply chain in order to form an agile supply chain. This notion of agility has been investigated in previous studies (e.g., Braunscheidel & Suresh 2009; Christopher, 2000; Gligor et al., 2013; Swafford et al., 2008) and termed as supply chain agility. Because of the firm's ability to address market changes by manipulating resources, it would appear that supply chain agility is also the firm's capability to be dynamic and to influence other partner firms into altering their operations. The dynamic nature of the supply chain agility is becoming more apparent today; hence this study is relevant and contributes to the field by examining Australian manufacturing firms. It appears that Australian manufacturers are currently embracing various efforts, initiatives and programmes in being competitive and in coping with the changes which are affecting both the industry and the market.

3. Theoretical Underpinning

The dynamic capability perspective explains how firms achieve competitive advantage (Helfat & Peteraf, 2009). Dynamic capability is relevant for supply chain issues in the changing market (Beske, 2012; Defee & Fugate, 2010). This theory explains how firms attain competitive advantage by responding to environmental changes (Teece, 2007). Thus, dynamic capability serves as the underpinning theory for the current study.

3.1 Dynamic Capability Perspective

Dynamic capability refers to the firm's ability to accommodate the changing environmental conditions, thereby developing a competitive advantage by finding the means to create, maintain and renew its competitive bases (Easterby-Smith, Lyles, & Peteraf, 2009). The concept of dynamic capability originated from Teece, Pisano and Shuen (1997) who established that a firm's competitive advantage is fostered through firm-specific resources or competencies in situations where technology and market forces are rapidly changing (Katkalo, Pitelis, & Teece, 2010; Wang & Ahmed, 2007).

A firm's dynamic capability is grouped into three categories: managerial and organisational processes, position, and paths (Teece et al., 1997). Managerial and organisational processes refer to the way things are done in the firm, such as routines or practices. These processes have three roles: 1) coordinate and integrate internal and external activities, 2) organisational and individual level of learning and identifying the need for changes, and 3) accomplish changes to organisational structures and assets (Teece et al., 1997). Position refers to the specific assets which the firm possesses. The firm's assets comprise technology and other supporting elements that enable producing and delivering new products and services. These supporting elements include the firm's financial position, reputation, organisational structure, institutional setting and marketing conditions. Paths refer to the strategic alternatives which are available to the firm. A firm's future position is dependent on its current position and the opportunities available. Furthermore, previous paths taken by the firm are also a determining factor for the firm's present position; these also affect the firm's future. Today's world has become digitally based, hence technological opportunities can also influence industrial activities. This implies that firms need to adopt strategic alternatives for their operations to adapt to changing times. Such a process involves assessing the firm's capacity to reconfigure and to transform (Teece et al., 1997). Learning mechanisms can alter the path which firms undertake (Eisenhardt & Martin, 2000). Accordingly, a firm's competitive advantage is vested in its managerial and organisational processes; these are influenced by the firm's asset position and the paths it undertakes. This implies that the dynamic capabilities lie within the managerial and organisational processes of coordination, integration, learning and reconfiguration (Teece et al., 1997). These capabilities modify the organisation's position to become more competitive while leading it towards new positions and new paths. Accordingly, Teece et al. (1997) assumed that organisational and managerial processes are the core elements of a firm's dynamic capability.

Teece (2007) subsequently identified particular types of dynamic capabilities that enable firms to evolve according to market changes. These include sensing (opportunity identification), seizing (investment in opportunities), and managing transformation (resource reconfiguration).

The sensing and seizing capabilities drive the firms towards new positions and paths, which thereby improve the firm's performance and enhance its competitive advantage. Additionally, the capability of resource reconfiguration modifies the assets of the firm, thereby giving rise to the firm's competitive advantage while also developing new positions and paths for the firm.

Another perspective of a firm's dynamic capability is its composition of adaptive, absorptive and innovative capabilities (Wang & Ahmed, 2007). Adaptive capability refers to the firm's ability to adapt to the changing environment by flexibly aligning its internal organisational resources with external market requirements. Absorptive capability refers to the firm's attainment of external knowledge and transforming it for internal use. Innovative capability refers to the firm's ability to develop new products or markets by linking its resources and capabilities (Wang & Ahmed, 2007). The combination of the absorptive and innovative capabilities form the firm's sensing and seizing abilities while its adaptive capability serves as the firm's ability to reconfigure resources. This view is in line with the dynamic capabilities of sensing, seizing and reconfiguration.

Dynamic capabilities rest on the assumption that competencies provide a competitive advantage and rents, only if they are based on difficult-to-imitate routines, skills and assets (Teece et al., 1997). Competencies are organisational resources which result from repetitive or quasi-repetitive activities (Katkalo et al., 2010). In fact, organisational or managerial processes and routines derive competencies which can alter resources to address market changes. Imitation is the action of replication by competitors. Replication tries to transfer or deploy competencies from one setting to another. The dynamic capability view thus holds that difficult-to-replicate competencies increase a firm's competitive advantage. The replication of competencies or capabilities can be quite difficult when the processes are routine-based, especially if the tacit component is high. These routines develop the firm's dynamic capabilities, and so change the way the firm operates (Helfat & Winter, 2011).

Difficult to replicate, routine-based dynamic capabilities imply that firms must build them internally (Katkalo et al., 2010), and the recurrent use will improve the capabilities of the firms over time (Helfat & Winter, 2011). In dynamic market conditions, firms frequently utilise dynamic capabilities to alter assets, skills and competencies in order to develop and maintain a distinctive resource base within the company, aligning it with market changes (Teece, 2007). In this regard, firms need to continuously improve the capabilities of changing their distinctive resources. Notably, the dynamic capabilities of firms will continually improve the firms' existing capabilities, otherwise, leading to new capabilities. Therefore, the dynamic capability view explains how firms sustain their capabilities-based competitive advantage, under environmental changes (Helfat & Peteraf, 2009).

With the shift in market competition and moving from a firm level to the supply chain level, researchers have applied this theory to explain how firms establish competitive advantage in the supply chain (Defee & Fugate, 2010). This refers to the inter- and intra-organisational competencies which create new static capabilities or modify firms' existing capabilities across supply chain partners (Defee & Fugate, 2010).

3.2 Dynamic Capabilities for Agility in Supply Chains

Supply chain agility is a firm's ability to respond to market changes by adjusting operations and coordinating with supply chain partners. Researchers (Aslam et al., 2018; Blome et al., 2013; Chiang, Kocabasoglu-Hillmer, & Suresh, 2012; Gligor & Holcomb, 2012b) have acknowledged this as a dynamic capability. In supply chain agility, information sharing is a vital component (Dubey et al., 2018; Kim & Chai, 2017). Through shared information, firms are able to capture the market changes in a timely manner. Firms demonstrate the 'sensing' capability to search out opportunities and threats by detecting the changes in demand, supply as well as other environmental factors. This awareness of market changes, especially with regards to the market and customer, enables the firms to embrace market opportunities and challenges through integrating processes.

Additionally, integration of functional areas within the firm and with supply chain partners are key attributes of agility (Braunscheidel & Suresh, 2009). The process integration can be accomplished through cooperation and coordination with supply chain partners (Chen, 2018; Christopher, 2000; Yusuf et al., 2014). Learning also plays a significant role in integration since past experience is influential in deciding how to integrate processes with evolving opportunities and threats (Braunscheidel & Suresh, 2009). In doing so, firms can embrace market changes by working together with supply chain partners to develop new solutions through knowledge exploitation (Chen, 2018; Rasli & Mohd, 2008).

Another characteristic is the reconfiguration of resources where firms modify supply chain structures, resources and adapt to changes rapidly, in a timely manner, both upstream and downstream (Carvalho et al., 2012; Swafford et al., 2008). These adjustments include supplier quantities, delivery times, reduced production schedules and batch sizes, and product development (Carvalho et al., 2012; Swafford et al., 2008). Reconfiguration indicates the firms' transforming behaviour and adapting capability.

Therefore, supply chain agility comprises the managerial and organisational processes supportive of dynamic capabilities such as, coordination and integration, learning and reconfiguration; and also demonstrates the sensing, seizing and reconfiguring abilities. These attributes reinforce supply chain agility as a dynamic capability, and they appropriately explain how agility influences the competitive advantage of supply chains.

4. Methodology

This is an exploratory qualitative study that uses the case study method. According to Yin (2018), three to six cases are considered adequate for an in-depth case study analysis without leading to data overload. Primary data are gathered from interviews and supplemented with publicly available documents, annual reports and information available on websites.

Semi-structured face-to-face interviews as well as telephone interviews are conducted with eight managers who held senior appointments in high-performing manufacturing firms in Australia. These managers are contacted through purposive sampling based on a database of manufacturers. Purposive sampling allows the researchers to select the most suitable respondents to answer the research questions (Bryman, 2008). As senior managers, they are deemed knowledgeable about the supply chain operations and issues related to their company's industry. The interviewees' profile is provided in the Appendix.

Interviewing is the most common method for data collection in qualitative research (Bluhm, Harman, Lee, & Mitchell, 2011). This study adopts a semi-structured interview protocol because it offers the opportunity to further probe the issues under investigation. The face-to-face interviews took place at the premises of the respective organisations. Each interview lasted approximately an hour and are audio recorded with the consent of the interviewee.

In addition to the interviews, data are also obtained from the corporate websites and publicly available sources such as company brochures. Collecting data from multiple sources helped in triangulation and improved the accuracy of the data (Creswell, 2014). Data are analysed using the thematic analysis approach (Gioia, Corley, & Hamilton, 2012).

Analysis of data involved three steps: 1) coding of raw data into first order codes and then labelling these with appropriate names; 2) consolidating these codes into second order conceptual categories according to their similarities and differences; and 3) consolidating the conceptual categories into third order theoretical dimensions. In the first step, codes are identified based on the data. Coding is done for each case and new codes are developed as new meaningful segments emerged. These codes represent various activities that the firms took to maintain their supply chain agility. The codes are labelled to best represent the data. For example, "adjust operations in line with market changes", "adjust operations in line with future expected changes", "adjust operations to supply changes", "receive information about supply changes", "receive information about customer demand", "business process integration to update supply and demand information", etc. The data obtained from the secondary sources are also similarly coded. In the second step, similar codes are grouped into second order conceptual categories. For example, the first order codes "adjust operations in line with market changes", "adjust operations in line with future expected changes" and, "adjust operations to supply changes" were combined into the second order category labelled "adjust processes to respond to changes". The second order conceptual categories are compared with literature to arrive at the third order theoretical dimensions (e.g., the second order category, "adjust processes to respond to changes" was combined with the category, "strategic changes" to develop the theoretical dimension, "reconfiguring resources and strategies").

5. Findings

Due to the need for commercial confidentiality, the companies are described anonymously. The eight Australian companies are referred to as Firm A to Firm H.

5.1 The Companies and Their Operations

Firm A is an Australian industrial firm which offers building products for residential and commercial constructions. These products include plasterboards, fibre cement, bricks and pavers, concrete panels, walling solutions, roof tiles and glass. The firm was founded in 1885 but it entered into building products in 1942. Currently, it employs 4,282 employees, has an annual revenue of AUD2.6 billion and operates in China, Thailand and Malaysia.

Firm B is one of Australia's largest meat processing companies, with an annual revenue in excess of AUD1.3 billion. The company began its operations in South Australia in 1988. Presently, it has four plants operating – two in South Australia and one each in New South Wales and Queensland. Firm B employs approximately 2,000 people. It processes 120,000 lambs and sheep and 5,000 cattle per week. The majority of products are exported to 80 countries.

Firm C is a manufacturer for plastic moulding and plastic products. It was established in 1989 as a privately-owned business. The manufacturing plant is in South Australia, with an annual revenue of over AUD11 million, employing about 60 staff. The company mainly supplies its products to automobile manufacturers within Australia. Due to the downturn of the automotive industry, the company is now planning to diversify into other industries.

Firm D operates in the printing support services. It is a subsidiary of a large global technology provider in the printing industry. The European-based parent company develops all the necessary technologies and complimentary components for commercial and packaging printing needs. The Australian strategic partnership offers printing products, services and consumables to the Australian market, including ink, paper and printing plates. The company operates with a network across all the six states of Australia.

Firm E is a contract food manufacturer of ultra-high temperature (UHT) liquid cheese, and a variety of dairy and tomato-based sauces. It started as a small business in 1991, serving three Mexican restaurants. It has grown to become a leading food manufacturer that serves industrial manufacturers, quick-service restaurants, food services, contract packing, as well as export and retail in Australia. The firm currently employs around 20 staff. The company has acquired the state-of-the-art food processing and packaging technologies. It also offers business solutions to customers by providing innovative product ideas through recipe development.

Firm F is a packaging manufacturer. It started operations in the 1920s with a cardboard manufacturing plant in Melbourne. After acquiring several other packaging companies over time, Firm F has grown to become one of the main packaging solution providers in Australia. At present, the company has three plants operating in Melbourne, Sydney and Auckland respectively. It currently employs around 600 staff. The product range it offers includes folding cartons, self-adhesives, paper cups, flexible materials such as films and foils, packing systems and digital solutions. The company serves a wide variety of markets including pharmaceuticals, health care, food and beverage, confectioneries, wines, cosmetics, technological and fast-moving consumer goods.

Firm G operates in the measurement and scientific equipment industry in Australia. It is headquartered in North America. The firm offers innovative technologies in analytical instruments, laboratory products and services, and specialty diagnosis and life sciences solutions for customers in research, as well as clinical and applied markets. It also serves a wide range of industries such as oil and gas, mining, energy, aerospace and defence, steel, aluminium, plastics, rubber, and non-woven manufacturers, construction, transportation and pharmaceuticals, to name a few.

Firm H is a motor vehicle manufacturer in Australia. It is a fully-owned subsidiary of a North American transportation company. It manufactures trains, rail transportation systems, controlling and signalling systems, and light rail vehicles. It operates in 22 locations in Australia with 1,100 employees. The firm has built strong long-term partnerships with 1,500 Australian suppliers.

5.2 Strategies for Supply Chain Agility

Upon a thorough analysis of the data, the responses drawn from the managers regarding the strategies used for supply chain agility are clustered into four main themes: 1) embracing market challenges, 2) detecting changes in supply and demand, 3) reconfiguring resources and strategies, and 4) exploiting knowledge.

5.2.1 Embracing Market Challenges

Firm A is a building product manufacturer. It captures market information and trends, and responds to these changes accordingly. Home units have gained popularity over recent years and this has led to some changes desired for the materials needed in the building industry. The firm has addressed this challenge by introducing new designs and speeding up or slowing down the operations, as a reactive strategy towards meeting market demand fluctuations. This flexibility has enabled Firm A to market and sell the building materials more effectively:

> While detached housing will remain a core part of our market, we are increasing our exposure to multi-residential through products and systems in our portfolio and through the recent acquisition of XXX Products Group. (Annual report, Firm A)

Firm B is a meat producer. It faces heavy competition, not only domestically, but also internationally, from imported meats offered by China. The market structure for the lamb industry had changed significantly over the past two decades; shifting from wool production to meat production. Establishing their produce as a niche premium product, Firm B currently faces supply shortage and also competition from China and New Zealand. Firm B has identified the issue and noted that to keep abreast with market challenges, it requires a global strategy, by investing and acquiring two large distribution businesses within Australia and in the US (which represents around 75 per cent of their business portfolio). Doing so would allow Firm B to identify the market changes directly, through their customers in those markets. Their current strategy is to collaborate with industry associations so as to develop quality products which are targeted at the high-end sector. Firm B believes that adopting a value chain approach will enable the firm to become a preferred supplier for premium meat products:

> We identify market changes through direct contact with our customers in those markets. In that sense, we are linked to the Australian market and to the American market which is about 60-75 per cent of our business. So, we have very good contacts there … We've got to turn around from supply chain to a value chain and focus on our meat consumers and customers. That's how we keep up with market information by making sure that we are a preferred supplier for premium products. (Supply Chain Coordinator, Firm B)

Firm C is an industrial product manufacturer. It relies on its immediate customers for market needs since forecasting the demand for such products can be challenging. While Firm C carries out a make to order strategy, it also maintains competitiveness by building on existing customer relationships as well as developing new product lines to establish its superior quality. Although the current clientele helps Firm C to sustain its business, there are other avenues to seek new customers from different markets and diversify its moulding and plastic production to other sectors too:

> We have been developing a strategy to diversify our products and going to different market sectors. We are currently in the process of creating new markets for ourselves. (Purchasing Manager, Firm C)

Firm D is a manufacturer for the print media industry. It has adopted various mechanisms to identify current market challenges and new opportunities. The sales and product management team of Firm D actively participates in industry forums where the team can obtain direct feedback from customers. The firm also works closely with their suppliers in the designing and developing of new products, besides making joint decisions on the pricing, cost and availability. Firm D's response to market developments and changes is based on the advice of suppliers, who inform them about new product trends. Since the print market has been declining both globally and locally, the parent company of Firm D in Europe has taken a proactive role in controlling the selection of suppliers. Performance is regularly measured against its budgets and profit statements monthly:

> The changes on the supplier side is notified to us by our manufacturing and product development unit of the parent [company]. We are driven by them and told about the changes. The parent company has the global market perspective. There is an element of the local market perspective and we do have an influence there. We listen to our customers. We look where our customers' markets are going and we are able to tailor to that extent. (Parts and Logistics Manager, Firm D)

Firm E predominantly serves large multinational firms who provide market knowledge through their extensive market research. To respond to market changes, the manager interviewed explained:

> Automation has to improve. You must have the latest technology…. We can produce all sorts of different products in these lines. That's one of the changes that we did to respond to market change or demand from the market.

Driven by innovation and sustainability, the firm also recently acquired the latest food processing and packaging technology and the relevant equipment to provide their customers with the competitive edge to stay ahead. The information on the firm's website also highlights how with flexible manufacturing, they can produce most liquid products and stay competitive.

The market trends for Firm F are determined by their account executives who regularly communicate with customers. The firm has a network of contacts in the industry to advise the management on changes happening to the raw materials, technology advancement, or purchasing transactions. New products are developed and tested before being introduced into the production lines, based on customer demand. What gives Firm F a competitive edge is its ability to customise products to suit customer needs:

> We are driven by the customers. We might give them advice on what they can use to achieve their end…. If you can provide a customer with a solution to their problem very fast, then they are going to be happy. So, you receive more work and receive increased quantities…. It increases your volume which gives you better buying terms with the mills. So, it is pretty much beneficial. (Senior procurement manager, Firm F)

Firm G captures the market trends internally from its employees, and externally from its suppliers, customers and other external organisations. Its ability to detect the declining trend of the mining industry, one of its major customer segments, has strengthened Firm G's ability to generate revenue from its existing business whilst exploring opportunities for new products and markets:

> In the example of our minerals market being lower or being heading into a trough or a downturn, what we needed to do is to look at the existing mineral business and try to generate some revenue from the existing mineral business. But the other strategy that was put in place was to look at what they called a 'XXX markets'. So, we were looking for opportunities to apply some of our technology to other areas, like for example, YYY cement…. It has been put into new product development so that we can develop some of our own markets even in a situation when there is a downturn in one of our major areas. (Sourcing manager, Firm G)

Firm H identifies the social and environmental needs of its clientele and proactively incorporates changes noted from emerging trends into their designs of trains, trams and rail systems. These include the consideration of urbanisation and population growth. Firm H develops customised mobility solutions in the bid to support mass transportation, and to reduce the social problems caused by such trends. Thus, Firm H is also involved in R&D on eco-friendly technologies, in response to the increasing public awareness of pollution and energy efficiency:

> Our Eco4 is making sure that in all of our technologies, we are efficient in energy, ecology and economy. How we identify market trends is we are basically very much in touch with the government and political figures within the region. And we also keep tabs on the major trends such as urbanisation, population growth, pollution and energy consumption and of course, constantly what we do is the evolution of mobility. So, what we do is we make sure that we are very much in touch with what the regions' needs are and that we tailor our trains and trams and all our products to accompany that and to mould to the infrastructure currently in place. We are very well in tune with the region's needs. We work very closely with our customers to determine what those needs are and then we tailor our products to suit in that respect. (Head of Communications, Firm H)

5.2.2 Detecting Changes in Supply and Demand

The ability of firms to keep abreast with demand and supply lies in the mutually beneficial relationships established with their supply chain partners. The responses from the managers interviewed tended to revolve around this aspect and how they have optimised the collaborative relations for business success. This is especially true when the manufacturing industry is facing high volatility, demand fluctuations and unpredictable market trends.

Firm D believes in the frequent communication with suppliers and customers in order to detect market requirements:

> We discuss reasonably openly what we are doing, where we are headed in terms of diversifying the company away from automotive. That's a problem for us long-term. They are supplying what we are making. There are some strategies in place there. We share with our customers and suppliers. So, they know the direction the company is going. (Parts and Logistics Manager, Firm D)

Firm E on the other hand, operates in the dairy industry which is volatile with highly fluctuating export commodity prices:

> You only get two weeks' notice from suppliers. Unfortunately, our customers are not flexible in absorbing these kinds of costs. So, the challenge is always to be able to foresee, which is very difficult…. We work very closely with customers. I think we work more closely with customers than our suppliers. We are trying to improve that system. What we do is, we are trying to follow-up with our clients in different directions…. You need to have an operational level where you connect with them on a monthly or weekly basis and make sure that your supply chain is always demand and supply managed properly. I think a lot of businesses fail there. We are practising just-in-time (JIT) manufacturing systems and managing JIT is very difficult. (General Manager, Firm E)

Firm G is able to identify with the changes in their suppliers' and customers' respective industries based on the close relationships established. As a subsidiary of a multinational company, it receives information about the changes in the supplier and customer market from other subsidiaries:

> We also keep in touch with a lot of our suppliers and who are also part of that market, and that we get a lot of information from those suppliers about their industry and the other customers in the industry, also the other suppliers to them in the industry. So, in that way we have an unbelievably good network for obtaining information about market trends…. There's also information from within our company that we get from other parts of the world. So, for example, the price for iron ore, the price of gold, the price of zinc and all the copper, all of those commodities are information that tell us about the market changes or we also get a summary and background information from within our organisation. (Sourcing Manager, Firm G).

5.2.3 Reconfiguring Supply Chain Resources and Strategies

Another approach to agility is the firm's ability to reconfigure the supply chain resources and strategies. The findings of this study indicated that manufacturers worked closely with their customers and suppliers to structure the inter-organisational strategies, practices and processes into collaborative-synchronised processes, and also for restructuring their internal manufacturing activities at the same time. Faced with unexpected events, challenges or situations, these firms have implemented various solutions or strategies to remain competitive. For example, the changes in foreign exchange have led Firm G to reconsider its strategy and supply structure:

> Foreign exchange would be an indication of a market change for us. In other words, it would be more difficult for us to make savings, bringing in materials from other countries when the dollar is very low. Because we would have to pay the difference and purchase those items in the currency which might be very high. So, in those cases, for us sourcing locally might be a better option than sourcing from overseas. And the reverse is also true. When the dollar is strong, then we make a lot of savings when we source products and materials from other countries where their currency is weaker. (Sourcing Manager, Firm G)

Operating in the food industry, Firm B currently faces pressure from European customers to implement traceability systems to meet food safety requirements within these markets. The manager highlighted the need to monitor all livestock in the system. At present, European customers expect a moderate level of traceability and animal rights. However, in realising the importance of animal rights throughout the system, the firm has taken steps to influence all its suppliers and producers to voluntarily adopt the animal traceability system individually at their respective places. The firm has also taken actions to proactively plan for possible future market requirements:

> The Europeans are putting pressure on us to do this although the European community currently accepts our traceability. But we are aware that this is impending, and we are trying to get producers and our suppliers to consider adopting voluntarily individual animal traceability systems. We are aware of how things can be changed [in future] and we are trying to get our supply chains to adopt systems to make sure that we are proactive rather than reactive. (Supply Chain Coordinator, Frim B)

Firm A identifies the changes in the building industry via a 1-year, 2-year and 5-year timeframe. The firm proactively develops the ability to meet industry changes by examining the government and industry forecast on the numbers and type of constructions as well as the places of construction. In doing that, it reconfigures the supply chain by adjusting the capacities of the factories, logistics and warehouses, in addition to relocating warehouses within the proximity of emerging markets:

> When the market changes and there is a new housing sub division in another part of Sydney, we change our supply chain a bit. Maybe open another warehouse close to that new housing sub division…. So, we can supply easier to customers. (Group Supply Chain Manager, Firm A)

5.2.4 Exploiting Knowledge

It is widely believed that information integration across partner firms supports supply chain operations, thereby enabling appropriate performance improvements (Dubey et al., 2018). Knowledge exploitation can only succeed with the right conditions and partnerships (Yli-Renko, Autio, & Sapienza, 2001). For example, integrating a manufacturer's production schedule with the procurement plans of its customers or buying firms, can be helpful for the purpose of adapting changes to product specifications. This allows customers to receive timely status updates on the delivery of their orders, so they can plan their marketing activities. Based on this, it seems evident that knowledge shared among firms can increase stability in manufacturing, procurement, sales and distribution within the supply chain. The ability of firms to exploit knowledge requires the effective coordination of information transfer, collaborative communication and supporting technologies among the firms in the supply chain. Consequently, this could enable joint activity development, work processes, and coordinated decision-making.

The manager in Firm D explained the importance of establishing relationships with supply chain partners:

> Being able to build relationships is critical. That's probably number one, I think. If you don't have those relationships in place, people don't understand where you are coming from. You also have got to be able to react and reorganise your business to respond. So you need sort of, I suppose, managerial capabilities to be able to redirect people and resources. (Parts and Logistics Manager, Firm D)

Knowledge can also be sourced externally. For example, Firm D obtains knowledge from industry forums to identify new market developments:

> Our sales and product management team actively take part in industry forums where we get direct feedback from our customers who are also in those industry forums. (Parts and Logistics Manager, Firm D)

In the case of Firm B, food industry exhibitions in Europe and China, and other international forums are seen as a source of vital market information. Moreover, the firm maintains regular communications with its distributors and retailers. Currently, Firm B is undertaking various research projects, working together with an Australian university, the Sheep Meat Council of Australia, Livestock Australia as well as the Sheep Cooperative Research Centre, as a strategy to gather information for new markets for lamb products and also for quality assurance. Firm B is targeting other new high-end market segments through its high-quality premium products:

> We have a large marketing team and we have distributors and businesses in America and across Australia. We talk directly to our valuable consumers in Europe. So they feed us their information and they get reported and we discuss the process in that context. Also, we collaborate very strongly with the meat industry partners through Meat and livestock of Australia and the Sheep CRC. At the meetings with those organisations, we discuss these issues and consider potential responses there. (Supply Chain Coordinator, Firm B)

Similarly, Firm C has also developed a strategy to diversify its products to cater to new markets. It received government funding to develop new products which will be suitable in meeting new market trends:

> We are currently in the process of creating new markets for ourselves. We also approach the government and there are various government funding streams available for R&D. They see the value of what we are doing. (Purchasing Manager, Firm C)

As a part of a multi-national corporation, Firm H acquires market change knowledge from the other subsidiaries:

> We learn a lot from the colleagues overseas in Europe, Middle-East and Asia. We are in-tune with them. Australia is part of Asia-Pacific which obviously includes South-East Asia, India, China and Singapore. We work together on finding bids, tenders and we utilise each other's technology and learn from one another. If

> something happens in Europe now, it might happen in Australia in 2 to 3 years' time. So we can lean on our colleagues there to find a solution. We don't have to create it every time from scratch. Because major trends like overpopulation, urbanisation, energy consumption; all these things are common in the industry across the world. These are not new things for Australia. We have been able to leverage all this information and work together to deliver solutions for customers. This is how we respond to market trends by leaning on the information from colleagues, by learning from our history and also by anticipating what will happen in the next five years, ten years, and twenty years. (Head of Communications, Firm H)

Our findings reveal that the social interactions and network ties formed by these firms give rise to greater knowledge acquisition and exploitation, which in turn can lead to competitive advantage for firms and their supply chains.

6. Discussion

This study is an inquiry into the strategies adopted by eight Australian firms in strengthening their supply chain agility in the manufacturing industry. From the interviews conducted, it is observed that one common feature of supply chain agility stood out prominently among the firms. This feature is the firms' respective efforts in cultivating their commitment to respond to market changes as well as the close participation of their supply chain partners. The firms' ability to embrace market challenges was facilitated by the willingness of their customers and their suppliers to firstly, share current market information; secondly, collaborate on innovative new products; and thirdly, jointly determine new market opportunities. This study also establishes that the firms constantly obtain market information from their customers and suppliers to maintain their agility. These firms adopt various mechanisms to facilitate information sharing with others, such as working closely with supply chain partners and developing strategies to be responsive to the market changes. The findings derived from this study, therefore, indicate that supply chain agility is a collaborative effort of all parties involved in the chain. This supports the findings noted in literature where cooperation among firms is an attribute of the supply chain agility (Chen, 2018; Yusuf et al., 2014).

Strategic directions could be shared between the firms and their suppliers and customers, thereby enabling the firms to reconfigure their resources, as well as to respond to market changes collectively, as a supply chain.

The communication between organisations occurs through meetings, personal visits and joint productions and planning. Studies (Dubey et al., 2018; Yusuf et al., 2014) looking at supply chain agility have shown how firms integrate business processes and share data using advanced information technologies. It was observed in this study that some firms appeared to have access to their supply chain partners' databases, with the use of advanced technologies. Such an integration is viable only through long-term relationships based on trust.

Our results further indicated that some firms maintained close contacts with industry associations. This was one strategy for the firms to identify market changes early; hence their ability to develop new products that fulfilled market needs. Industry bodies are a good source of market information and new knowledge, enabling these firms to respond to market changes in a timely basis.

Another characteristic found to be linked to agility is proactiveness. The managers anticipate future market changes and prepare for these changes. This is relevant for unexpected changes and uncontrollable events, such as natural disasters and regulatory requirements. Additionally, the firms also create plans for impending market changes by predicting demand and supply, based on the information they had received from their customers and suppliers. This finding is consistent with Fayezi et al. (2015), Gligor & Holcomb (2012a) and Li et al. (2008; 2009) who espoused that supply chain agility comprises proactive and reactive forms.

Another important finding derived from this study is that firms' responses to market changes can be traced to the firm's core competencies. For example, Firms A and C introduce new products based on their core technology for new markets, while Firm B acquire other businesses to strengthen its core competencies. In contrast, Firm E upgrade its technology to improve its core competencies to respond to market changes. These findings reflect that the agile strategies revolve around the core competencies of the focal company.

The findings also reveal that firms reconfigure their resources in the supply chain; this also served as the major feature of the supply chain agility (Charles et al., 2010; Li et al., 2008; Yusuf et al., 2014). The firms' efforts in reconfiguring also altered their strategies when responding to market changes. It seems that on the one hand, firms reconfigure supply chains through strategies such as market diversification and vertical integration. On the other hand, firms appear to redesign their supply network structures in terms of activities such as geographically distributed suppliers. Both strategies and network design allow for resource reconfiguration. Vertical integration enable firms to have a higher level of control over their supply chains, and appear as a form of entering into strategic partnerships with suppliers or acquiring distribution channels.

The essence of supply chain agility, according to Gligor et al. (2013), is that it is an organisational level capability which allows for flexibility in responding to changing market conditions in a timely manner. The strategies identified in this study demonstrate the capabilities of coordination and integration for embracing market challenges, and for detecting supply and demand changes. Furthermore, these strategies provide the sensing capability. Firms are able to make transformations during market changes through reconfiguring resources and the respective strategies. Our findings also showed that the inter-organisational relationships provided firms access to market information ahead of their competitors. These capabilities are routine-based and involved tacit components. Consequently, the capabilities derived from agile strategies can lead to the competitive advantage of the firms collectively.

Additionally, the findings derived from the current study provide insights which widen the concept of supply chain agility. The findings reveal that firms responded to market challenges through long-term strategies such as new acquisitions, product or market diversification and new product development. These aspects bring a strategic perspective to responsiveness that exploits the opportunities arising in uncertain markets. Therefore, supply chain agility represents an additional aspect of strategic responsiveness in competitive markets.

The findings also emphasise that for firms to be agile, they need to develop the ability to respond to sudden unexpected changes in markets. The managers interviewed stated that having realised the difficulties experienced during the previous periods of sudden changes, they resorted to modifying the supply chain structure to increase flexibility, which maintained continuous and undisrupted operations during the time. Lee (2004) and Li et al. (2009) have previously recognised this aspect of supply chain agility, particularly among those organisations which had responded quickly to the sudden changes in demand and supply. Developing a scale to measure the supply chain agility, Li et al. (2009) was able to determine three levels of agility – strategic, operational and episodic. Nonetheless, existing studies are mostly confined to operational agility, which is about demand and supply changes. On the other hand, the findings from this study highlight the strategic aspect of agility embraced by the firms in our sample.

7. Conclusion and Further Research Direction

In conclusion, we establish that the agile strategies implemented by the eight firms include: embracing market challenges, detecting changes in demand and supply, reconfiguring resources and strategies, and exploiting knowledge. The findings of this study indicate that firms enhanced their competitiveness by implementing these specific strategies. They develop dynamic capabilities through unique inter-organisational relationships, which in turn provided the impetus for the supply chain agility.

7.1 Practical Implications

The managers whom we interviewed represent the eight firms selected for this study. Based on our findings, it is considered that these firms are performing well in their industries and our findings also verify that agile strategies enable these firms to be competitive in current turbulent markets. Since supply chain agility is regarded as a collective effort, managers should ensure that other firms are also committed towards responding to market changes. An important aspect in that regard is to develop close relationships with other firms because such collaborations can facilitate information sharing in a timely manner.

Since timely information is crucial, it is inevitable for all firms involved to adopt advanced ICT which facilitate the sharing of real time market data. Our findings have also indicated that not all firms had embraced such technologies. The availability of accurate and real time information is necessary for firms to respond to the demand and supply changes, especially if the firms operate in highly volatile consumer markets. Based on this, there is a need for mangers to advocate for advanced systems that are appropriate for streamlining the key partners in the supply chain.

Additionally, such relationships with industry partners are a good source of information indicating the market directions, where new knowledge can be gained about developing new products and accessing new markets. Manufacturers can increase their competitiveness through relationships with industry bodies and supply chain partners. The ability to leverage relationships and access information will undoubtedly, support the need to meet market changes, to adopt mechanisms to speed-up information sharing, and to strategically respond to changes by reconfiguring their supply chains.

7.2 Theoretical Implications

This study contributes to the literature by providing empirical evidence regarding the strategies which firms used to enable supply chain agility. This study also expands the concept of supply chain agility to cover 'the abilities required for responding to strategic opportunities and sudden market changes' in addition to the operational level application used by previous studies. Accordingly, this study offers insights from the Australian perspective by extending the concept of supply chain agility; hence, it also contributes to the theoretical perspective.

7.3 Limitations and Further Research

In this study, eight firms are purposively selected based on their success and reputation in the industry. We recognise this as a limitation, where only high performing firms were selected. A comparison of high and poor performing firms could validate the results of our study. Additionally, with eight case studies, our findings cannot be generalised; nevertheless, they have theoretical transferability to other similar contexts. This study provides an understanding of the strategies used by firms to enhance their supply chain agility and its impact on competitiveness. Future research in this area could employ a large-scale quantitative study so as to provide a good representation of the sub-sectors in the manufacturing industry.

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Appendix: The Interviewee's Profiles

Firm	Interviewee profile
Firm A	Group Supply Chain Manager
Firm B	Supply Chain Coordinator
Firm C	Purchasing Manager
Firm D	Parts and Logistics Manager
Firm E	General Manager
Firm F	Senior Procurement Manager
Firm G	Sourcing Manager
Firm H	Head of Communications