UNIVERSITY OF CAPE COAST

MANAGEMENT ACCOUNTING PRACTICES AND SUSTAINABILITY

PERFORMANCE OF MANUFACTURING FIRMS IN GHANA

JOHN KWAME AKUMA

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MANAGEMENT ACCOUNTING PRACTICES AND SUSTAINABILITY

PERFORMANCE OF MANUFACTURING FIRMS IN GHANA

BY

JOHN KWAME AKUMA

Thesis submitted to the Department of Accounting of the School of Business,

College of Humanities and Legal Studies, University of Cape Coast, in partial

fulfilment of the requirements for the Award of Doctor of Philosophy Degree

in Business Administration

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DECLARATION

Candidate's Declaration

I want to emphatically state that this thesis has been solely conducted by me and no portion of it has been issued for another degree in this university or elsewhere.

Candidate's Signature…………………………..   Date……………………

Candidate's ID Number: SB/BUA/19/0034

Name: John Kwame Akuma

Supervisors' Declaration

We want to emphatically state that this thesis was conducted and presented under our supervision in conformity with the rules, regulations and guidelines on supervision of thesis approved by the School of Business, University of Cape Coast.

Signature of Principal Supervisor……………………….........

Date……..…………………………….

Name: Rev. Dr. George Tackie

Signature of Co-Supervisor………………………….............

Date…………………………………………

Name: Dr. Anthony Adu - Asare Idun

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ABSTRACT

This study was designed to assess the relationship between Management Accounting Practices (MAPs) and sustainability performance (SsP) of manufacturing firms in Ghana. The study also investigated the moderating roles of IT adoption, CG and OC in the link between MAPs and SsP. The positivist philosophical paradigm, quantitative research approach, explanatory research design, and cross-sectional study design were employed for the study. Questionnaire was designed to obtain data from managers of 266 manufacturing firms and Smart PLS-SEM was used to analyse the data. The study found significant positive relationships between CS and FP, DSS and EP, DSS and SP, PMS and EP, PMS and SP, as well as SMAP and EP. All other individual first order direct relationships were not significant. Secondly, the study also found a significant positive moderating role of IT adoption in the link between PMS and FP. Thirdly, CG was found to have a positive significant moderating effect in the connection between PMS and EP. Fourthly, CG was found to have a negative significant moderating effect in the link between DSS and EP. However, OC played no moderating role in the MAPs and SsP nexus. The study concludes that, manufacturing firms should implement CS (like variable costing), DSS (like customer profitability analysis), PMS (like variance analysis, and ratio analyses) and SMAP to boost their SsP. They must also implement IT adoption skills and PMS to enhance their FP. Last but not least, they should resource their audit committees as well as implement PMS to boost EP.

KEY WORDS

Management Accounting Practices

Costing System

Budgeting System

Decision Support System

Performance Management System

Strategic Management Accounting

Sustainability Performance

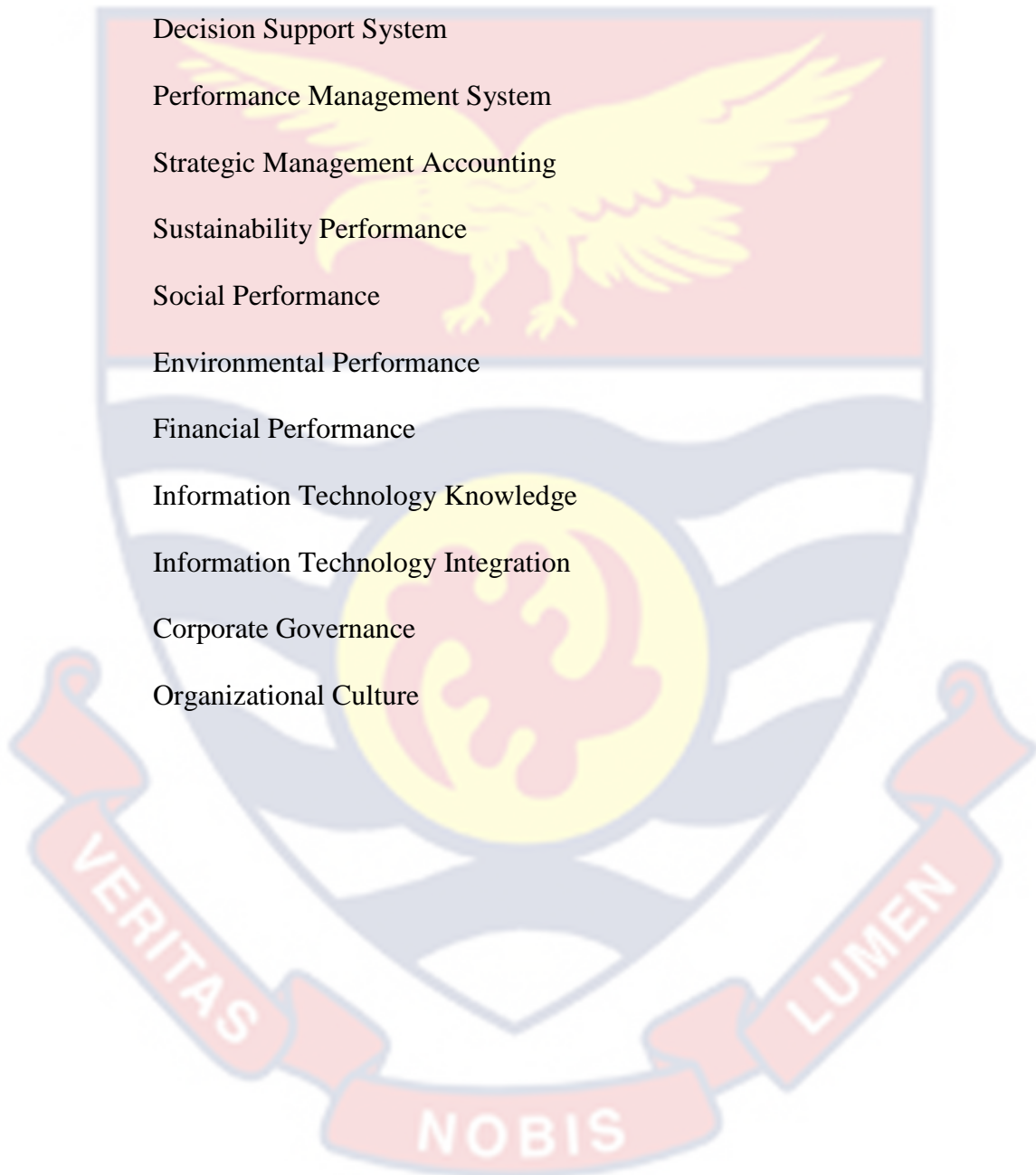Social Performance

Environmental Performance

Financial Performance

Information Technology Knowledge

Information Technology Integration

Corporate Governance

Organizational Culture

ACKNOWLEDGEMENT

I greatly appreciate the time and effort put in by my advisors, Dr George Tackie and Dr Anthony Adu - Asare Idun, for reading this thesis and offering insightful comments. Furthermore, I want to express my sincere gratitude to Mr. Derick Akude, a course mate of mine for teaching me how to use the Smart PLS SEM to analyse my data. I cannot take his motivation to finish this thesis for granted.

My next appreciation goes to my research assistants, Joyce Osafo Yayra, James Okyere, Rexford Tsumesi, Sena Kwadjo Bortsi and Francis Samuel Koku for the regular follow ups they did to get the questionnaires filled. To all others whose names could not be mentioned, I say Jehovah God should bless you all.
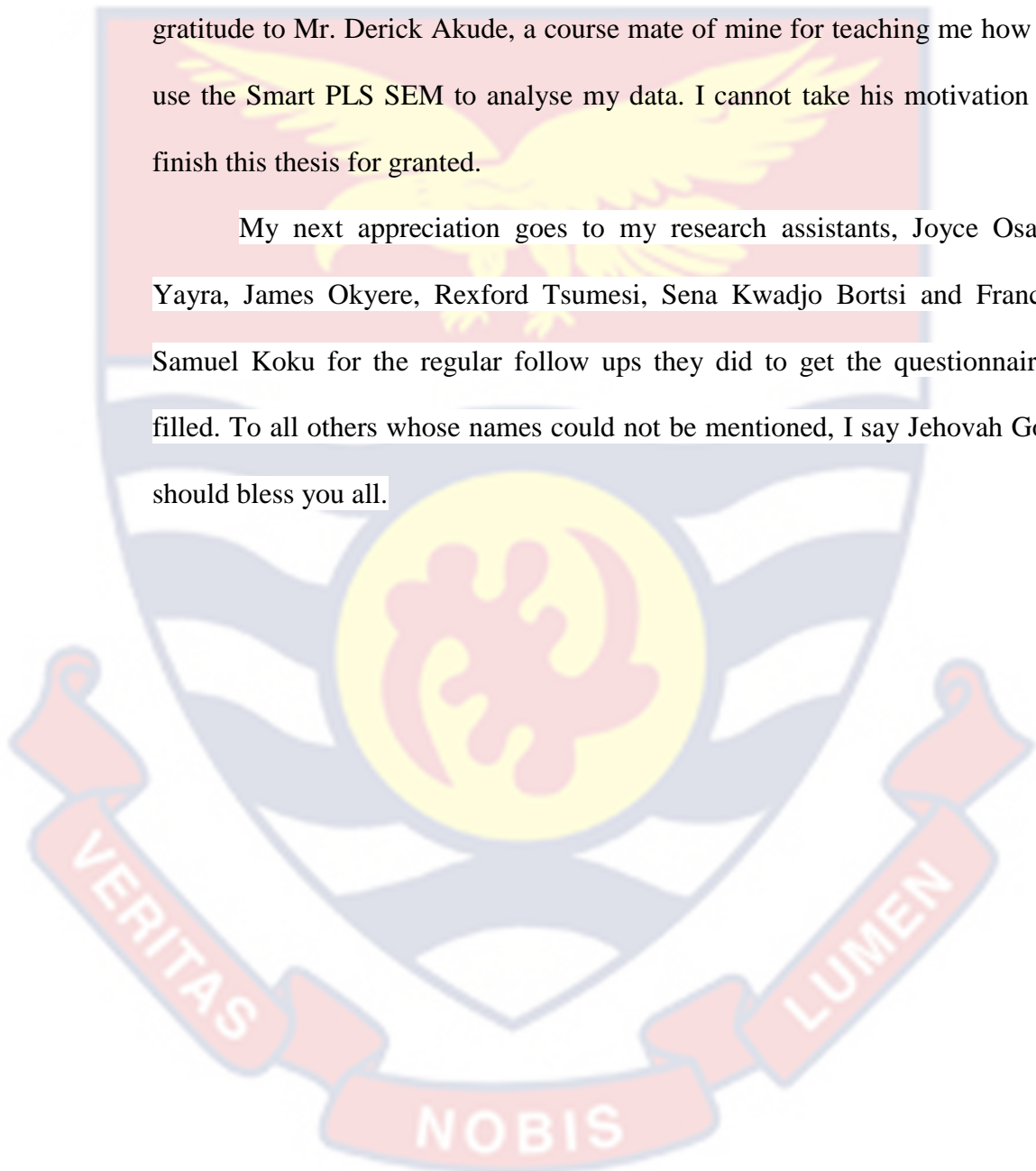
DEDICATION

In honour of my mother, Mrs. Lilian Abla Akuma, who always pushed me to be greater than she was, and my wife, Matilda Asam, who gave me the drive to finish my thesis, I offer my sincerest gratitude. This work is dedicated to my daughter, Yvonne Akuma - Anim, for assisting me with valuable information technology skills.

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LIST OF ACRONYMS

MAPs	Management Accounting Practices
CS	Costing System
BS	Budgeting System
PMS	Performance Management System
DSS	Decision Support System
SMAP	Strategic Management Accounting Practices
SsP	Sustainability Performance
SP	Social Performance
FP	Financial Performance
EP	Environmental Performance
ITK	Information Technology Knowledge
ITI	Information Technology Integration
IT	Information Technology Adoption
CG	Corporate Governance
OC	Organizational Culture
GDP	Gross Domestic Product
VIF	Variance Inflation Factor
SDG	Sustainable Development Goals

CHAPTER ONE

INTRODUCTION

Introduction

This research sought to assess the impact of Management Accounting Practices (MAPs) on the sustainability performance (SsP) of manufacturing firms in Ghana. The study also looked at the moderating roles of Information Technology Integration (ITI), Information Technology Knowledge (ITK), Corporate Governance (CG) and Organizational Culture (OC) in the connection between MAPs and sustainability performance of manufacturing firms in Ghana. This chapter captures detailed discussions on the background of the study, the personal philosophies of the researcher, the problem statement, the justification of choosing the manufacturing sector, objectives of the study, significance of the study as well as how the chapters have been organised.

Background of the study

The Sustainable Development Goals (SDGs) are a set of seventeen (17) globally interconnected goals that have been approved by the United Nations in 2015 as a universal call to end poverty, disease, and discrimination, conserve the environment, and guarantee that by 2030, all humans on the planet will live in peace and prosperity. The 17 integrated goals seek to ensure that developments in each country result in social, economic, and environmental sustainability. As a result, all governments around the world are implementing various policies to move their jurisdictions toward the realisation of these SDGs, which must be reached by 2030. Some of these

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goals relate to economic performance, social performance, and environmental performance.

For instance, goal 8 relates to economic performance as it encourages leaders to promote sustainable economic growth, productive employment and dignified work for all people living on this planet. Goals 1, 2, 3 and 4 relate to social performance as they motivate world leaders to implement measures that will reduce poverty as well as improve good health and quality education. Goals 13 and 15 on the other hand relate to environmental performance as they encourage world leaders to implement policies that will combat the adverse impact of climate change as well as protect the land and forest.

It is worthy to note that, the manufacturing sector in every country can contribute immensely towards the achievement of some of the SDGs. For instance, if manufacturing firms in every country is growing and expanding, many school graduates will be gainfully employed and their standard of living will improve. This will help to reduce poverty and hunger, as advocated by SDG 1 and 2. Again, the improvement of the manufacturing sector across the globe will imply that, leadership of every country will generate a lot of tax revenue from corporate taxes and can be used to provide quality social and economic facilities in many remote localities and these can help in the attainment of good health and education for all human beings in the world, as advocated by SDG 3.

The above analyses clearly show that, managers of manufacturing firms across the globe have a big role to play in the realisastion of the SDGs. According to Erin et al. (2022), the worldwide projection of the sustainable development goals (SDGs) has brought a huge pressure on management of

many firms as to the required measures they have to put in place to help their various counties achieve the specific standards contained in the SDG document. They argue that, lack of management commitment is one of the reasons that accounts for the difficulty in achieving the SDGs by many countries across the world. Garcia et al. (2022) also suggest that management of manufacturing firms can help in early attainment of the SDGs if they engage top quality auditing firms to examine their financial statements. This is because, these top notch auditing firms are more likely to compel the firms to report on their SDG-related performances than other firms that engage below average auditing firms. Besides, these firms that make use of very high standard auditing firms that ensure higher quality financial reports are more likely to put careful measures in place to deal with the attainment of the targets in the SDG document.

Management members of manufacturing firms in every country should therefore understand that, they have a big contribution to offer towards the achievement of the SDGs. They need to implement appropriate internal practices that will go a long way to contribute towards the attainment of the SDGs. Sinha et al. (2022) reports that policy makers like managers of manufacturing firms can contribute in the attainment of SDGs 8, 9 and 13 after the Covid-19 period if they implement appropriate technological innovations like information technology innovations to interact with their stakeholders.

There can never be enough emphasis placed on the manufacturing sector's importance to the improvement of every economy. The manufacturing sector in most countries is referred to as the engine of growth.

Firms in the sector produce different varieties of goods to satisfy local and international demand (Adu-Gyamfi & Chipwere, 2020). Through manufacturing, many goods can be produced and exported to improve the value of the local currency and provide sustainable jobs for the teeming youth. Notwithstanding the fact that the manufacturing sector continuously helps in job creation and general economic development, most of these firms in developing countries are not performing to expectations due to certain peculiar factors.

Manufacturing firms worldwide are not performing well due to many challenges including; intensive competition from business rivals, non-performing management, inappropriate technology, globalisation and capital constraints (Fasesin et al., 2015; Messner, 2016). According to Addo (2017), manufacturing firms in Ghana have not been performing well over the years due to inappropriate management practices, shortage of risk capital, excessive borrowing costs, lack of proper education and technology, lack of effective management of relationships with customers and suppliers and a hostile legal and regulatory framework. Alhassan (2021) elaborated on this idea by noting that manufacturing enterprises in Ghana are not performing to expectation due to high rent prices, massive imports of substitutes, inadequate skilled labour, and weak regulatory environment.

According to the *institutional theory* of organizations, if a firm is not performing well, one of the reasons may be due to inappropriate deployment of its management accounting practices (MAPs). The theory explains that institutions like manufacturing firms that want to perform well must adopt appropriate MAPs (Meyer & Rowan, 1977; Burns & Scapens, 2000). MAPs

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refer to the routine activities of organisations where employees are tasked to generate quantitative and qualitative information from internal and external sources to aid management in taking quality decisions that will bring numerous benrfits to the firm (Burns & Scapens, 2000). These MAPs include relevant costing systems as well as analysis of actions of competitors. For instance, if institutions are able to reduce their operational costs, all things being equal, their performance should improve. The implication of this theory is that, appropriate implementation of MAPs can help to boost the sustainability performance of manufacturing firms as well as increase the contribution of the sector to the nation's GDP.

Notwithstanding the fact that, many academic scholars have conducted various researches to look at the implications of MAPs on the success of firms (Senftlechner & Hiebl, 2015; Mbawuni & Anerte, 2014; Shahzadi et al., 2018; Adu-Gyamfi & Chipwere, 2020;), their studies did not cover strategic management accounting practices (SMAP) as suggested by Ma et al. (2022). Ma et al. (2022) suggests that, contemporary scholarly works on the implication of MAPs on the success of firms should focus on SMAP, which has to do with a firm analysing what its competitors are doing before taking decisions. This is the first lacuna that this particular research is positioned to deal with. Apart from this lacuna, the above scholars focused their attention mainly on financial success of organisations. This study will look at performance from social, financial and environmental angles. In this thesis, social performance (SP) is operationalised to mean how MAPs of manufacturing firms in Ghana help to better the lives of human beings living in society, in terms of jobs and consumption of quality goods. Environmental

performance (EP) in this study means how MAPs of manufacturing firms in Ghana help to protect the land and vegetation while financial performance (FP) refers to how MAPs of Ghanaian manufacturing firms help to improve their sales, profits and growth rate. This present thesis aims at expanding the scope of performance, by looking at sustainability performance (SsP) which incorporates financial, social and environmental success of manufacturing firms in Ghana.

Another gap that this study intends to deal with is the appropriate moderators that can strengthen the connection between MAPs and success of manufacturing firms in Ghana. According to the ***contingency theory***, MAPs will enhance performance of firms only if the right internal and external conditions are in place (Fieldler, 1964). The internal environment includes a firm's technology or IT system, CG and OC systems. The resource based view (RBV) theory also posits that, the success of the connection between MAPs and performance of firms depends on how the firm deploys its internal intangible resources (Wernerfelt, 1986; Barney, 1991). The intangible resources of firms are assets that cannot be seen nor touched and these are very difficult to be imitated by competitors. These resources include the IT adoption, CG and OC practices which must be heterogeneous (different from firm to firm) and immobile in the short term. IT adoption in this study has to do with the process by which manufacturing firms in Ghana incorporates new technological innovations in their daily operations in order to deal effectively with its stakeholders. This inclues the extent to which manufacturing firms in Ghana use of excel, softwares and whatzup platforms to deal with stakeholders including suppliers and customers. Corporate governance in this

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thesis incorporates the rules, regulations, procedures and practices by which manufacturing institutions in Ghana are controlled and directed. This includes the availability of audit committees as well as females on the board. Last but not least, organisational culture (OC) in this study is operationalised to maen the values, attitudes and believes of Ghanaian manufacturing firms and how these are imbibed into their emplyees. These include team work and involvement.

It must be noted that, though several studies exist on the direct implication of IT systems on the success of firms (Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), the moderating implication of IT systems on the connection between MAPs and success of business organisations as recommended by the contingency and RBV theories has not been done. Again, even though studies exist on the direct implication of CG on the success of firms (Krechovska & Prochazkova, 2014; Terjesen et al., 2015; Sarpong-Danquah et al., 2018; Naciti, 2019; Coleman & Wu, 2020; Puni & Anlesinya, 2020). the moderating implication of CG systems on the connection between MAPs and success of business institutions as recommended by the contingency and RBV theories has not been examined. Finally, nothwithstanding the fact that studies exist on the direct implication of OC on the success of business institutions (Denison, 1990; Bakhsh et al.,2018; Adebayo et al., 2020; Le at al., 2020), the moderating implication of OC systems on the connection between MAPs and success of business organisations as recommended by the contingency and RBV theories has not been examined. This thesis is designed to do justice to this lacuna.

In summary, the gaps that this study seeks to fill are three. Firstly, Strategic Management Accounting Practices (SMAP) will be analysed as one of the MAPs of the manufacturing firms and their impact on SsP. Secondly, performance will be looked at as a holistic concept which goes beyond financial performance. The study will focus on Sustainability Performance (SsP) which comprises FP, SP and EP. Finally, the moderating roles of IT adoption, CG and OC in the link between MAPs and SsP as recommended by the contingency and RBV theories will be examined.

Personal philosophies

My personal philosophies that guide this research are two. In the first place, I believe strongly that we must leave the world in a better place than we came to meet it. Secondly, we must invest our resources, however small they are, to improve our society. Managers of firms, especially manufacturing firms must implement sound MAPs, CG practices, IT systems and organisational cultural practices that will help to boost their sustainability performance. This will help to expand their operations so that more people can be employed to enhance the standard of living of the populace.

Overview of the manufacturing sector in Ghana

Agriculture, industry, and services are the three pillars on which the Ghanaian economy rests. The industry is broken down into sub-sectors, one of which is manufacturing. In 2003, when Ghana's last industrial census was taken, the country was home to some 26,000 factories employing around 243,500 people. A little more than half of the enterprises, or 55%, were microbusinesses with fewer than 4 employees, 40% of small businesses with between 5 and 19 employees, 5% of medium businesses with between 20 and

99 employees, and only 1% large businesses. Most of the nation's manufacturing companies are located in the Greater Accra and Ashanti regions. According to data from the industrial census, nearly half of manufacturing workers in 2003 were either trainees or unskilled labourers. Professionals and managers comprised around 5% of the workforce, while skilled labourers comprised about 40%.

Machines are used in manufacturing to convert raw resources into final goods (Kayanula & Quartey, 2000; Church, 2019). Companies that transform raw resources into finished items, including drinks, pharmaceuticals, paint, and water, and are members of the AGI), are the focus of this scholarly study. The manufacturing sector is crucial to the industrial economy of both advanced and emerging economies. The outputs of these businesses can be used as either a finished good for sale to consumers or as a commodity used as an intermediary step in manufacturing.

Justification for selecting manufacturing firms in Ghana

Business institutions in Ghana can be grouped into four categories: micro, small, medium, and large bisnesses. In Ghana, small and medium-sized businesses (SMEs) account for around 85% of the country's manufacturing jobs. They also comprise around 70% of Ghana's GDP and 92% of the country's enterprises (Abor & Quartey, 2010). We can conclude that manufacturing firms of all sizes are essential to Ghana's economy and rapid development. As soon as this industry grows, it will provide a wealth of employment opportunities for recent graduates while also generating tax income that can be used to bolster the nation's deteriorating physical infrastructure. Because of this, Ghanaians should expect a marked

improvement in their living conditions as a whole. Consequently, studies that help expand Ghana's industrial sector are valuable. This is due to the fact that a successful enterprise of this kind has the potential to greatly offer support to the improvement of economic and welfare of human beings in the country, hence reducing unemployment.

Any privately held company that employs few people and generates relatively little sales qualifies as a small-scale organisation (Payton, 2011). According to the Ghana Statistical Service, small businesses employ fewer than ten people, while medium-sized and large businesses employ ten or more people (GSS). As defined by Ghana's National Board for Small Scale Industries (NBSSI), a small business employs up to nine employees and has equipments that value up to ten million Ghanaian cedis.

This study will adopt a more recent definition proposed by the *Regional Project on Enterprise Development Ghana; a manufacturing survey paper*. The survey document has grouped business institutions into (i) micro-enterprise, which has less than 5 workers; (ii) small enterprise, which has between 5 - 29 workers; (iii) medium enterprise, which has 30 – 99 workers; (iv) large enterprise, which has 100 and more workers (Teal, 2002). This study will focus on medium and large manufacturing institutions that are formally registered with the Association of Ghana Industries (AGI).

Problem statement

The COVID -19 pandemic that broke out in 2019 and its spread across many countries across the globe has the potential to adversely influence the success of many manufacturing firms into the foreseeable future. For instance, Atayah et al. (2021) showed in a study that this disease continues to negatively

affect the performance of many firms in Germany, Korea, Russia, Mexico, Saudi Arabia and the UK. Some scholars conclude in their studies that the poor performance of firms due to the pandemic was worsened by weak internal control mechanisms. Golubeva (2021), for instance, suggests in his study that weak internal control factors including poor management accounting practices, poor corporate governance practices and poor financing decisions accounted for the poor performance of firms globally during and after the covid era.

Ghana's successive administrations strongly believe that manufacturing is the main driver of real economic growth. This is because as more factories are established, school leavers get jobs, and the government will get more tax revenue to embark on more infrastructure projects. In line with this reasoning, all the political parties in Ghana have in their manifestoes policies that will support entrepreneurs in diverse ways to engage in manufacturing businesses in all the districts across the country. Once the manufacturing sector is developed, school leavers will be gainfully employed and this will improve their standards of living. Government will also generate a lot of money from corporate taxes that can be used to improve the infrastructure situation in the country. Again, as the manufacturing firms process our primary products into finished goods for export, more foreign exchange will be mobilised to strengthen our local currency. Besides, firms in Ghana will be able to successfully compete with those in the West Africa sub-region and Africa as a whole.

Despite the beneficial role the manufacturing sector plays to uplift the Ghanaian economy, the Association of Ghana Industries (AGI) in its 2018

annual report stated that most Ghanaian manufacturing companies are underperforming due to stiff competition, technological challenges, unstable power supply, and overall high operating costs. Abor and Quartey (2010) concludes that huge operating cost is the main stumbling block that impedes the expected success of manufacturing concerns in Ghana. It is therefore, not surprising that over the years, the support manufacturing institutions in Ghana offer to push Ghana's GDP has been erratic as well as not predictable as can be shown in Table 1 below.

Table 1: Contribution of Ghana's Manufacturing sector to GDP

Year	Percentage (%) to GDP
2000	9
2001	9
2002	9
2003	8.9
2004	8.7
2005	8.6
2006	9.7
2007	8.5
2008	7.5
2009	6.7
2010	6.3
2011	6.4
2012	5.6
2013	13.5
2014	11
2015	11
2016	10
2017	10
2018	10
2019	10
2020	10.9
2021	10.7

Source: World Development Indicators (2000 to 2021)

Meanwhile, these firms can expand as well as improve upon their performance tremendously if they adopt appropriate management accounting practices (Abor & Quartey, 2010). The ***institutional theory*** of organisations suggests that institutions like manufacturing firms must adopt appropriate

MAPs to enhance their performance (Meyer & Rowan, 1972; Burns & Scapens, 2000). The implication of this theory is that, relevant implementation of MAPs will boost the success of manufacturing institutions as well increase the contribution of the sector to GDP. Thus, the poor success of the manufacturing sector in Ghana could be due to the type of MAPs they have in place.

Though the institutional theory has been successfully used by many scholars to show how management accounting practices (MAPs) influence performance of firms (Ahmad et al., 2018; Ahinful & Touringana, 2019; Amir et al., 2020; Adu-Gyamfi & Chipwere, 2020; Afifa & Salah, 2021; Ogundajo & Nyikyaa, 2021), most of these studies focused their attention mainly on traditional MAPs like CS and BS, to the neglet of strategic MAPs as suggested by Ma et al. (2022). According to Ma et al. (2022), current studies on MAPs must include SMAP where firms must continuously gather data on activities of competitors and use them to as guide in taking quality decisions. This is the first gap that this study purports to fill. Apart from this all important gap, the above scholars also looked at limited areas of business performance, mainly financial performance. This study will however, broaden the scope of performance, by looking at sustainability performance which comprises financial, social and environmental success of manufacturing institutions in Ghana.

The next gap that this study wants fill is the appropriate moderators that can strengthen the connection between MAPs and the success of manufacturing institutions in Ghana. According to Agustia et al. (2022) a moderating variable is a construct that strengthens or weakens the connection

between the independent and dependent variables. The contingency theory justifies the use of these moderators. According to this theory, MAPs will enhance performance of firms only if the right internal and external conditions are in place (Fieldler, 1964; Otley, 1980; Ng et al., 2013; Otley, 2016; Hall, 2016; Ruiz & Collazzo, 2021). The internal environment includes a firm's technology or IT system, CG and OC systems. The RBV theory also states that, the success of the connection between MAPs and success of firms depends on how internal intangible resources are deployed by a firm (Wernerfelt, 1986; Barney, 1991). The intangible assets of firms are resources that cannot be seen and touched. They are unique to a firm and very difficult to be copied by competitors. These include the IT system, CG and OC practices which must be heterogeneous (different from firm to firm) and immobile within a short period of time.

It must be pointed out to readers that, though several studies exist on the direct effect of IT systems on success of business institutions (Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), the moderating implication of IT systems on the connection between MAPs and success of business institutions as recommended by the contingency and RBV theories has not been done. Again, even though studies exist on the direct effect of CG on the success of business institutions (Krechovska & Prochazkova, 2014; Terjesen et al., 2015; Sarpong-Danquah et al., 2018; Naciti, 2019; Coleman & Wu, 2020; Puni & Anlesinya, 2020). the moderating implication of CG systems on the connection between MAPs and success of firms as recommended by the contingency and RBV theories has not been examined. Finally, nothwithstanding the fact that studies exist on the direct

effect of OC on the success of business institutions (Denison, 1990; Bakhsh et al.,2018; Adebayo et al., 2020; Le, Nguyen, & Hoang, 2020), the moderating implication of OC systems on the connection between MAPs and success of business institutions as recommended by the contingency and RBV theories has not been examined. This thesis is designed to fill this lacuna.

In summary, the gaps that this study seeks to fill are three. Firstly, Strategic Management Accounting Practices (SMAP) will be analysed as one of the MAPs of firms. Secondly, performance will be looked at as a holistic concept which goes beyond financial performance. The study will focus on Sustainability Performance (SsP) which comprises FP, SP and EP. Finally, the moderating roles of IT adoption, CG and OC in the link between MAPs and SsP as recommended by the contingency and RBV theories will be examined.

Purpose of the study

The purpose of this study is to ascertain the impact of management accounting practices (MAPs) on the sustainability performance of manufacturing institutions in Ghana as well as the moderating roles of IT adoption, CG and OC on the connection between MAPs and SsP of manufacturing institutions in Ghana.

Objectives of the study

The objectives of this thesis are to:

i) Investigate the impact of MAPs on the sustainability performance of manufacturing institutions in Ghana.

ii) Assess the moderating role of information technology (IT) adoption skills in the MAPs versus sustainability performance relationship.

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iii) Evaluate the moderating effect of corporate governance priciples in the MAPs versus sustainability performance relationship.

iv) Assess the moderating role of organisational culture in the MAPs versus sustainability performance relationship.

Hypotheses

Alternate hypotheses

H_1: Management accounting practices (MAPs) have statistically significant positive impact on the sustainability performance of manufacturing firms in Ghana.

H_2: Information technology adoption plays a statistically significant positive moderating effect in the link between MAPs and sustainability performance of manufacturing firms in Ghana.

H_3: Corporate governance plays a statistically significant positive moderating effect in the MAPs and sustainability performance nexus of manufacturing firms in Ghana.

H_4: Organisational culture plays a statistically significant positive moderating effect in connection between MAPs and the sustainability performance of manufacturing institutions in Ghana.

Null hypotheses

H_1: Management accounting practices (MAPs) have no statistically significant impact on the sustainability performance of manufacturing firms in Ghana.

H_2: Information technology adoption does not play any statistically significant moderating effect in the link between MAPs and sustainability performance of manufacturing firms in Ghana.

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H$_3$: Corporate governance plays no statistically significant moderating effect in the MAPs and sustainability performance nexus of manufacturing firms in Ghana.

H$_4$: Organisational culture plays statistically significant positive moderating effect in connection between MAPs and the sustainability performance of manufacturing institutions in Ghana.

Limitations of the study

Each step of the research process has its own set of difficulties. Therefore, the researcher should be conscious of any likely limits of his research and openly disclose them in the research document (Collet-Klingenburg & Kolb, 2011). This research solely used quantitative techniques, and the qualitative approach may present a different picture. The researcher dealt with this issue by ensuring that only managers of manufacturing firms responded to the questions posed in the questionnaire document.

Another limitation has to do with the target population of the work. This academic scholar would have preferred to use manufacturing firms registered with a regulator established by an act of parliaments like the Ministry of Trade and Industry, Accra Metropolitan Assembly, or Tema Metropolitan Assembly. However, due to difficulty obtaining a list of their registered manufacturing firms, the researcher settled on manufacturing institutions that are registered with the AGI. This is because the registered list was readily provided by AGI upon request. Readers must note that AGI is a voluntary organisation; for that matter, manufacturing firms are not obliged to register and become members. This can affect the generalisation of the findings.

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It should however be noted that AGI in Ghana is a force to reckon with. It unofficially and serves as the mouthpiece of manufacturing firms in Ghana, and many big manufacturing firms are registered with it. Besides, AGI is regularly consulted and engaged by many state agencies for input in drafting policies affecting manufacturers in Ghana. AGI also organises trade fairs regularly for manufacturers in Ghana and outside to exhibit their products.

Another drawback is that new changes might have happened at the firms but were not captured in the data because they were cross-sectional and collected at a specific time. The conclusions thus might not apply to the firms' future conditions.

Definition of terms

The relevant terminology and constructs used are described in this section. These include management accounting practises, social performance, financial performance, environmental performance, corporate governance practises, information technology understanding, integration, and organisational culture.

Management Accounting Practices: These are systems manufacturing firms in Ghana put in place that enables them to generate information for budgeting, measuring performance, costing products as well as managing their relationships with their customers and suppliers, which eventually assist them in prudent managerial decision making (Adu-Gyamfi & Chipwere, 2020).

Financial Performance: This refers to a holistic assessment of the overall standing of manufacturing firms in Ghana in terms of their assets, liabilities, equity, expenses, revenue, and profitability (Alsayegh, 2020).

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Environmental Performance: This refers to how business operations and the goods produced by manufacturing companies affect the environment in terms of resource use, waste production, and pollution (Latan et al., 2018).

Social Performance: This refers to how effectively manufacturing firms in Ghana achieve their stated social targets and creates value for people and the society in which they are located (Afum et al., 2020). The level of product quality and the employment of locals are examples of social performance indicators.

Organizational Culture: In terms of the common practises followed by manufacturing companies in Ghana, this is meant to describe how management establishes shared beliefs and values that are then communicated and reinforced through a variety of channels, ultimately influencing the perceptions, actions, and comprehension of employees (Bakhsh et at., 2018).

Corporate governance refers to the systems by which manufacturing firms in Ghana are directed (Puni & Anlesinya, 2020). Directors of the institutions are accountable for a company's overall management. Directors and auditors, as well as a competent governance framework, are shareholder responsibilities in corporate governance.

Information Technology Knowledge: This refers to the level of computer literacy skills of employees of manufacturing firms in Ghana in terms of their use of word, excel, access, and PowerPoint presentations (Ginnenez et al., 2015).

Information Technology Integration: This refers to how well employees of manufacturing firms in Ghana use information technology tools to link up

with other workers, management, customers, suppliers, media, and regulators (Amoako et al., 2020).

Significance of the study

This research is intended to give some significance to policy, practice, and academics. Policy and practice will enable management to create, declare and implement the proper MAPs that can strengthen the going concern of organisations. To academia, it will add to the scanty knowledge of the implications of MAPs on firms' success in Ghana.

Delimitation of the study

This thesis focused on the implications of MAPs on the SsP of manufacturing institutions in Ghana. In addition to this, the moderating roles of IT adoption, CG and OC on the link between MAPs and SsP were also assessed. The sudy used questionnaire to gather data from manufacturing firms that are registered with the AGI. Using quantitative approach, the research adopted the cross-sessional research design to obtain data from managers of the firms at a particular time.

Organisation of the study

There will be six (6) chapters in the study. The background of the study, individual philosophies, an overview of Ghana's manufacturing industry, justification for using manufacturing firms, problem statement, the purpose of the study, precise objectives, hypotheses, limitations of the study, definition of terms, the significance of the study, and study organisation are the main topics that are presented in chapter one. The main concerns in chapter two are the conceptual framework, review of related studies, appropriate theories applied, and gaps in the literature. The population, sample

size, sampling method, research equipment, and data collection process are all covered in chapter three. The second chapter examined the conceptual framework, the theoretical review, the empirical review, and the gaps in the literature. The research methodologies are covered in Chapter 3. The research's findings are presented in chapter 4 and the discussion of the findings are captured in. chapter 5. Finally, the summary, implications and recommendations in covered in chapter 6.

Chapter Summary

This chapter looked at the background of the study, problem statement, purpose of the study, objectives, hypotheses, limitations, the significance of the thesis, key definitions, and how the chapters are organised.

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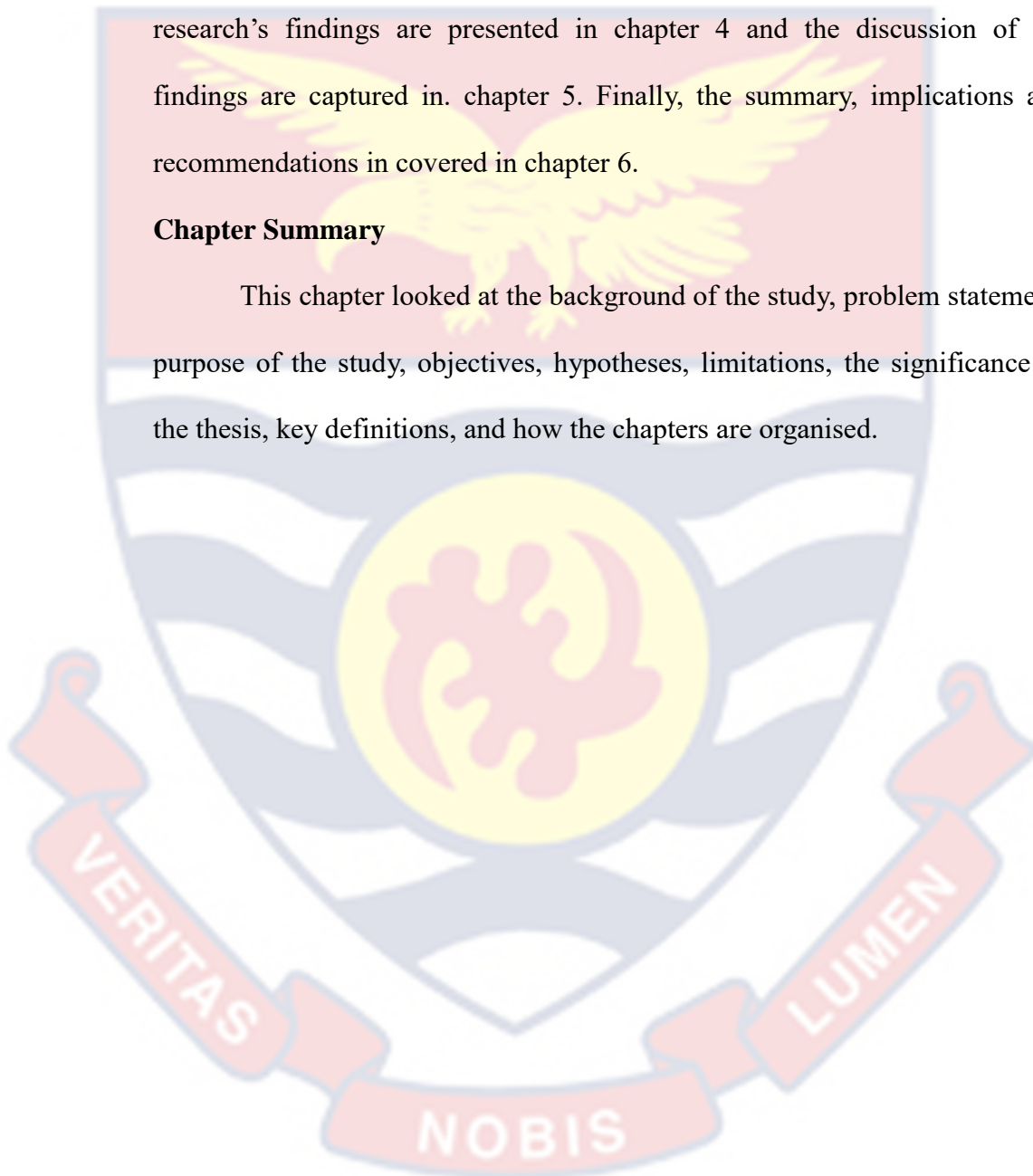
CHAPTER TWO

LITERATURE REVIEW

Introduction

The focus of this thesis is to evaluate the implications of management accounting practices (MAPs) on the sustainability performance (SsP) of manufacturing institutions in Ghana. The thesis also wants to investigate the moderating roles of information technology knowledge, information technology integration, corporate governance and organisational culture in the connection between MAPs and SsP of manufacturing institutions in Ghana. This chapter contains review of applicable theories, conceptual review, empirical review of related studies on the topic, as well as conceptual framework of the research.

Theoretical Review

This section explains the relevant theories that serve as bedrock for this thesis. This thesis is based on three theories namely; the institutional theory (Meyer & Rowan, 1977), the contingency theory (Fieldler, 1964) and the resource based view theory (Wernerfelt, 1986. Under the institutional theory, the researcher throws light on how the theory helps to link management accounting practices (MAPs) to sustainability performance (SsP) of firms. The researcher also explains how the contingency theory and the resource based view theory help to apply information technology adoption, corporate governance and organizational culture as appropriation moderators in the connection between MAPs and SsP.

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Institutional theory of organisations

The institutional theory of organisations explains how institutions are impacted by their social, political, economic, and environmental surroundings (Meyer & Rowan, 1977). This theory explains how environmental variables and market conditions affect institutional development and transformation (Barnett & Caroll, 1995). The *institutional theory* of organisations suggests that institutions like manufacturing firms must adopt appropriate MAPs to enhance their performance (Meyer & Rowan, 1972; Burns & Scapens, 2000). Institutions in this sense may include; manufactuiring firms, the judicial system of a country, the police service, the regulator like the Food and Drugs Authority and the tax office like the Ghana Revenue Authority (GRA). All these institutions have a role to play to implementing relevant MAPs that will help to boost the performance of firms. The implication of this theory is that, there is a direct link between MAPs and success of business institutions, so enforcement of relevant implementation of MAPs by institutions like manufacturing firms can boost their performance as well as increase the contribution of the sector to GDP. Thus, the unsatisfactory performance of manufacturing institutions in Ghana could be due to the type of MAPs they have in place.

Though the institutional theory has been successfully used by many scholars to show how management accounting practices (MAPs) influence performance of firms (Ahmad et al., 2018; Ahinful & Touringana, 2019; Amir et al., 2020; Adu-Gyamfi & Chipwere, 2020; Afifa & Salah, 2021; Ogundajo & Nyikyaa, 2021), most of these studies focused their attention mainly on traditional MAPs like CS and BS, to the neglet of strategic MAPs as

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suggested by Ma et al. (2022). According to Ma et al. (2022), current studies on MAPs must include SMAP where firms must continuously gather data on activities of competitors and use them to as guide in taking quality decisions. This is the first gap that this research purports to find answer to.

Thus, the first objective of this thesis, which is grounded in the institutional theory of organisations, will examine how Ghanaian manufacturing enterprises' performance is impacted by their MAPs. Unfortunately, the moderating implications of technology adoption practices, organisational culture, and corporate governance on the link between MAPs and success of business institutions are not clearly addressed by this theory. Hence, the contingency theory will be used to deal with the defects of the institutional theory.

Contingency theory

The contingency theory is of the view that, MAPs of firms will only enhance their performance if the right internal and external conditions are in place (Fieldler, 1964; Otley, 1980; Ng et al., 2013; Otley, 2016; Hall, 2016; Ruiz & Collazzo, 2021). The internal environment includes a firm's technology or IT system, CG and OC systems. Thus, the effective link between MAPs and firm performance is dependent on certain contingencies like IT adoption practices as well as CG and OC practices. This theory contends that firms determine their MAPs in the light of their particular circumstances (Hall, 2016; Otley, 2016). This implies that, the implementation of MAPs cannot necessarily lead to expected performance unless certain contingencies like appropriate tecknology, CG and OC as well as are conducive (Otley, 1980; Otley, 2016; Hall, 2016).

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It must be noted that, though several studies are available in literature on the direct impact of IT systems on the success of business institutions (Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), the moderating implication of IT systems on the connection between MAPs and success of business organisations as recommended by the contingency theory has not been done. Again, even though studies exist on the direct implications of CG on the success of business institutions (Krechovska & Prochazkova, 2014; Terjesen et al., 2015; Sarpong-Danquah et al., 2018; Naciti, 2019; Coleman & Wu, 2020; Puni & Anlesinya, 2020). the moderating implication of CG systems on the connection between MAPs and success of business institutions as recommended by the contingency has not been examined. Finally, notwithstanding the fact that studies exist on the direct implication of OC on the success of business institutions (Denison, 1990; Bakhsh et al.,2018; Adebayo et al., 2020; Le, Nguyen, & Hoang, 2020), the moderating implication of OC on the connection between MAPs and the success of business organisations as recommended by the contingency has not been examined.

This study will therefore use the contingency theory to fill this lacuna. Thus, the moderating implication of technology, CG and OC in the link between MAPs and company success needs to be looked at. This study is therefore interested in the moderating roles variables like the information technology, CG and and OC play in the connection between MAPs and sustainability performance of manufacturing firms.

Resource-Based View (RBV) Theory

The RBV theory is of the view that, MAPs can boost the performance of firms to expected levels if intangible assets like OC, CG and IT systems that are very difficult to copy are well distributed and used across all the functional units of the firm (Wernerfelt, 1986). This theory works on the assumptions that these resources must be heterogeneous (different from firm to firm) and immobile in the short term. These resources should be unique for every firm so that a firm can capitalize on them to gain competitive advantage. Again, in the the short run, these resources should be difficult to be moved from one firm to the other.

For instance, it should be difficult for an employee of Nestle Ghana Limited to move their technology system to Unilever Ghana Limited. The theory sees these resources to include managerial, financial, technological and other appropriate resources. These resources are categorised into two groups; tangible and intangible business resources. The tangible physical assets include buildings, equipment and furniture while the intangible assets like the firm's culture, reputation and computer softwares are resources that have been internalized by the firm. Both the tangible and intangible assets can be deployed effectively and efficiently by the business institutions to implement specific competitive and profitable business strategies.

This theory explains that, valuable intangible assets of firms are very difficult for business competitors to imitate, hence they help businesses to survive as going concerns (Wernerfelt, 1986). On the other hand, tangible resources can be readily observed, handled, measured and copied by competitors. For instance, intangible or strategic resources like culture,

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softwares, reputation, and staff members' skills are more difficult to see, touch, quantify and copied by competitors. In actual fact, they are very scarce and more challenging to replicate. According to Barney (1991) a firm's intangible assets are rare and strategic, hence leaders of business institutions can used them to strategically brand their products to attract more customers and this will ultimately help to improve upon their sales and profits.

It must be noted that, though several studies exist on the direct impact of intangible assets like IT systems on performance of firms (Riahi-Belkaoui, 2003; Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), the moderating implication of IT systems on the connection between MAPs and success of business organisations as recommended by the RBV theory has not been done. Again, even though studies exist on the direct implication of CG on the success of business institutions (Krechovska & Prochazkova, 2014; Terjesen et al., 2015; Sarpong-Danquah et al., 2018; Naciti, 2019; Coleman & Wu, 2020; Puni & Anlesinya, 2020). the moderating implication of CG systems on the connection between MAPs and success of business institutions as recommended by the RBV theory has not been examined. Finally, notwithstanding the fact that studies exist on the direct implication of OC on the success of business organisations (Denison, 1990; Bakhsh et al.,2018; Adebayo et al., 2020; Le, Nguyen, & Hoang, 2020), the moderating implication of OC systems on the connection between MAPs and success of business organisations as suggested by the RBV theory has not been examined. This study seeks to fill this lacuna.

In summary, these theories will be used to fill three key gaps. Firstly, based on the institutional theory, the implication of MAPs including SMAP on

SsP of manufacturing firms will be assessed. Secondly, the moderating roles of IT adoption, CG and OC in the link between MAPs and SsP as suggested by the contingency and RBV theories will be examined. Finally, performance in this study will be looked at as a holistic concept which goes beyond financial performance. The study will focus on Sustainability Performance (SsP) which comprises FP, SP and EP.

Conceptual Review

This section throws light on the variables and concepts that are essential for the conduct of this thesis. These include: management accounting practices (MAPs), sustainability performance (SsP), determinants of firm performance, information technology adoption (IT), corporate governance (CG) and organizational culture (OC).

Management accounting practices

Management accounting refers to a branch of accounting that helps leadership of firms to plan, control as well as to take informed decisions (Alabdullah, 2022). This implies that management accountants of firms constantly gather financial and non-financial data within and outside their firms, make them available to management to guide them in taking quality decisions. According to Varaniūtė et al. (2022) when management members make good use of management accounting information, it helps to reduce operational costs tremendously, as well as enhance the growth and profitability of the business organisations.

Management accounting practices (MAPs) are routine exercises that firms engage in that assist them to generate information on costing of goods produced and services rendered, budgeting, measuring of performance,

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reporting as well as controlling of daily operations (Pires et al., 2023). Ultimately, adoption of these MAPs help in prudent decision making, that go a long way to make businesses profitable as well as survive as going concerns. There are many dimensions of MAPs. These include: costing systems (CS), budgeting systems (BS), decision support systems (DSS), performance management system (PMS) and environmental management accounting system (Pires et al., 2023; Adu-Gyamfi & Chipwere, 2020).

CS includes the practice of job costing, marginal costing, absorption costing and activity based costing; BS includes rergular preparation of cash budget, sales budget, production budget, zero based budget and incremental budget; DSS includes the constant application of ratios in analysis as well as keeping records of reasons why employees leave the organization or absent themselves from work; DSS includes application of payback and net present value tools to select profitable projects.

Strategic management accounting practices (SMAP) is another dimension on MAPs that has been recommended by Ma et al. (2022). This has to do with the practice of always observing what your competitor is doing before taking decisions. Ma et al. (2022) recommends that leadership of firms in these comtemporary times should include SMAP as part of their MAPs since it helps tremendously to enhance the performance of firms. According to the institutional theory of organisations, implementation of required MAPs can enhance performance of firms (Burns & Scapens, 2000; Ahmad et al., 2018; Ahinful & Touringana, 2019; Amir et al., 2020; Ogundajo & Nyikyaa, 2021). This thesis will therefore treat MAPs as the independent variable by focusing on how the following five dimensions of MAPs namely; CS, BS, DSS, PMS

and SMAP impact on the sustainability performance of manufacturing institutions in Ghana.

Sustainability performance

Performance of a business organization has to do with the ability of the firm to use its material and human resources judiciously to achieve its expected targets. This includes improvement in sales and profit levels, reduction in costs, production of quality goods as well as reduction in waste and pollution (Maji & Lohia, 2023). While Yang & Wang (2023) focused on financial performance in terms of better sales and profits, performance can also be looked at in terms of social and environmental performance (Wendry et al., 2023).

Sustainability performance refers to the ability of a firm to maintain its social, financial and environmental performance continuously over a long period time to benefit current and future generations (Naseer et al. 2023). For instance, firms must continuously implement good policies that will protect the vegetation and this will lead to continuous availability of raw materials for production. This will lead to higher profits that can be used to expand the operations of the business which will in turn lead to employment of more school leavers. This thesis will treat sustainability performance (SsP) as the dependent variable by focusing on how MAPs impact on three dimensions of SsS namely; social performance, financial performance and environmental performance.

Determinants of firm performance

A firm is performing well when it is able to make good use of its assets or resources to realise its set targets (Adu-Gyamfi & Chipwere, 2020). These

resources include trained employees, technology, machines and buildings. The performance of a corporation can be examined in a variety of ways. We can look at it from a financial, social, environmental, and non-financial angle. Financial performance primarily focuses on how profitable a company has been over time. Indicators of profitability include the gross profit margin and operating profit margin. In terms of social performance, a company's impact on people and the communities it operates is evaluated. Social performance metrics include the level of employment generated for the indigenous people and the level of quality of products perceiced by existing and potential customers. On the other hand, environmental performance strongly emphasises waste reduction and environmental conservation.

Historically, the profitability of a company, as reported in its financial accounts, has a bearing on how well it does around the world. This analysis is done by looking at figures from the financial statements of the business institutions. In order to help with assessments in this regard, profitability ratios are computed from these reports and analysed to determine whether profitability is improving or not. While the financial position provides information on the company's current assets, liabilities, and equity, the income statement provides information on the company's profitability. Nowadays, businesses are advised to produce and report information on their social, environmental, sustainable, and integrated performance in addition to these financial performance disclosures (Dzodzomenyo et al., 2017; Quartey & Darkwah, 2018). Shareholders, banks, regulators, tax authorities, the government, the media, social and environmental advocacy groups, management, researchers, donors, customers, and suppliers are just a few who

use these performance reports. In order to make investment, financial, and regulatory decisions, they heavily rely on these reports. For instance, companies that produce a lot of waste, harm the environment, and degrade the land must explain how they have resolved the issues they have caused in these reports.

According to Adebayo et al. (2020), environmental performance measures how successfully a corporation can lessen its unfavourable environmental effects while enhancing its favourable ones. Teodosiu et al. (2018) define environmental performance as the various programmes and practices business institutions routinely engage in to minimise or mitigate the harmful effects their operations are having on the environment. Some strategies that can be used to achieve this are; regular tree planting programmes, use of energy saving imputs and adhering to environmental targets set by the regulator as well as the laws of the land.

Due to their working procedures, the discharge of hazardous gases as well as the development of plastic waste, business operations should be clear of the environmental hazards their operations create. The focus has switched away from a firm's ability to create wealth through outstanding economic performance towards keeping the surroundings neat and safe for people to live in (Liu et al., 2018). This is due to the widespread concern for the environment in today's society.

Users of financial reports should be educated about how a company's operations impact the physical and natural environment via environmental reports. The implications of a company's operations on residents and the communities in which it operates, on the other hand, should be covered in

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social reports. This includes social services like hiring locals, quality of the goods they manufacture, and putting accident policies in place. This suggests that every business has a duty to consider social and environmental issues when dealing with its stakeholders. Although most companies are mandated to publish their financial performance, it should be noted that social, environmental, and other performance measures can be disclosed at the company's choice. Customer happiness, productivity, regulatory compliance, increased productivity, and enhanced efficiency are impertance performance indicators.

These above analyses mean that, performance indicators in our contemporary times include: increase in sales and profits, decrease in operating costs, employment of more people in the locality where the business is located, provision of higher quality goods and keeping the environment safe. A firm may be performing better due to internal and external factors. Internal factors have to do with things happening within the organisation which are under the control of management which external factors relate to happenings outside the confines of the firm which management does not have much control over them.

Internal determinants of firm performance

Per the reasoning behind the resource-based view (RBV) theory, several firms do better than others due to the resources and competencies at their disposal (Barney, 1991). This implies that organisations with clear competitive advantages and useful resources are better equipped to improve their performance than their competitors, who lack these superior attributes (Goldberg & Rai, 1996; Makhija, 2003; Okafor, 2017; Nguyen-Anh et al.

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2022). According to this theory, these resources include capital resources like cash, well trained staff, and physical assets like machines and buildings. These resources can be managed prudently by businesses to improve their performance.

According to Seroa (2003), internal factors that have an implication on a firm's success include; the scale of the business and input cost savings. This implies the larger firms like MTN Ghana Limited has the capacity to perform better than a smaller ones like Vodafone Ghana Limited in the same industry. This is because, larger firms have the resources to purchase their inputs in bulk, thereby enjoying economies of scale (Welbeck et al., 2017; Dodoo et al,. 2021). They also have the means to engage tax experts to help them engage in effective tax planning, in order to legally minimise their tax liabilities. These measures will help reduce their operating costs and therefore boost their performance.

Another internal determinant for firm performance identified by Gallego-Alvarez et al. (2014) is the capacity of firms to regulate corruption and wealth. The point is that, firms that have strong internal audit in place can improve on their performance through cost reduction. Another means of boosting performance through reduction in corruption is by substituting cash payments with electronic payment methods like the use of momo wallets (Shahabadi et al., 2017). By preventing employees from handling cash, corruption will reduce the the besrest minimum and this will improve financial performance of firms.

Culture is also a strong force that can influence the perfoemance of firms (Bakhsh Magsi et al., 2018). This includes; the way the firm treats its

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custoners and employees. For instance, firms that have the culture of attending to the needs of their clients prompyly, encourage team work among their staff as well as motivate their employees, have the higher probability of improving upon their performance than firms that do not have these organisational cultural practices in place.

Appropriate corporate governance practices constitute another internal determinant of performance of firms (Paniagua et al. 2018; Boachie & Mensah, 2022). This is in support of the agency theory which posits that, firms that have quality internal governance mechanisms in place are able to moniter the activities of the managers and this ensures that proper decisions aare taken to enhance the performance of firms. The corporate governance structures to take note of are; effective audit teams and inclusion of females on the board.

External determinants of firm performance

The market-based view theory contends that, performance of a business institution is contingent on the industry in which the institution competes (Tallman, 1991). This point of view contends that the cornerstone of competitive advantage is the entry barriers brought about by market design. How aggressively the company's external product markets are competitive determines value. As a result, the firm's success can be measured by its dominant position in the market. Monopolies, entrance restrictions, and negotiation leverage are necessary to acquire market power (Tallman, 1991). Therefore, a business will perform better the more dominant its market position (Makhija, 2003). Thus, while it may be very easy for a monopolist to continuously make abnormal profits, a firm operating in a very competitive

industry may not be able to make such profits (Acs & Audretsch, 1987; Schumpeter, 1976; Bourne & Neely, 2003).

A lot of external factors influence how socially and ecologically responsible a company will be. These include; the industry it operates in, global organisations, community demands, market incentives, and low-interest lending schemes (Seroa, 2003). For instance, a frim that has to rely heavily on very huge interest loans in running its day-to-day operations will end up increasing its cost of operations and this will adversely affect its profitability. Another point is that, if the chiefs and opinion leaders of the community in which the firm operates continuously put pressure on the firm to keep the environment safe, the firm will definitely improve in its environmental performance.

Gallego-Alvarez et al. (2014) also found that found that capacity to regulate corruption and wealth, had an impact on environmental and social performance. For instance, if there are strong institutions like, external audit firms, effective police service and court systems in place to expose and punish corrupt public officials, more monies will be available for public institutions to create more jobs for the youth and this will help improve their social performance (Chang, 2023).

Another external factor that can boost performance is the existence of strong environmental laws, passing of tax pollution laws as well as stringent laws on waste recycling (Tackie et al,. 2017; Shahabadi et al., 2017; KaoDui et al., 2019; Kim et al., 2020). The existence of these laws serves as a guide to to management of firms to work hard to sataisfy the provisions in the laws. It should be noted that firms which faim the meet the requirements of these laws

will hace their licences revokes. This will help to boost the social and environmental performance of firms.

It must be noted that, most academic scholars who conduct studies of performance of firms concentrate mostly on financial performance; however, this study will take a holistic view of performance by delving into sustainability performance of firms. This comprises financial, social and environmental performance of manufacturing institutions in Ghana.

Information technology adoption

Information technology (IT) can be explained as the use of computer systems or devices like cell phones to process, create, store, secure, retrieve and send information or share various forms of data (Tajudeen et al., 2022). According to Ganbold et al (2021) IT helps firms to complete production of goods as well as attend to the needs of many clients within a short period of time. According to the *contingency theory*, the strength of the link between management accounting practices (MAPs) and sustainability performance (SsP) is dependent on certain contingencies like IT adoption practices (Otley, 1980; Ng et al., 2013; Otley, 2016; Hall, 2016). The *resource based view theory* also suggests that the success of the relationship between MAPs and sustainability performance (SsP) of firms depends on how intangible resources of the firm (like their IT adoption practices) are deployed by the firm (Wernerfelt, 1986; Barney, 1991). This thesis will therefore test the moderating role of information technology adoption (IT) in the connection between MAPs and SsP of manufacturing firms in Ghana.

Corporate governance

Corporate governance (CG) refers to the system of rules, practices, and processes by which business institutions are directed and controlled. Members of the board of directors (BODs) who are appointed by the owners or shareholders of the firm are directly responsible for the governance of the business institution. The shareholders also appoint auditors to review the content of financial reports in order to ensure that the directors are putting the right measures in place to maximise their wealth. Thus, whenever we hear the term CG, we are talking about what the BODs are doing to provide effective strategic leadership and direction for the firm. Good CG helps to maintain a firm's reputation, ensures accountability from all departments, prudent use of funds injected into the business in order to improve upon their wealth, survival, inspires confidence in the shareholders to continue supporting the firm in difficult times.

According to the *contingency theory*, the strength of the link between management accounting practices (MAPs) and sustainability performance (SsP) is dependent on certain contingencies like CG practices (Otley, 1980; Ng et al., 2013; Otley, 2016; Hall, 2016). The *resource based view theory* also suggests that the success of the relationship between MAPs and sustainability performance (SsP) of firms depends on how intangible resources of the firm (like the CG practices) are deployed by the firm (Wernerfelt, 1986; Barney, 1991). This thesis will therefore test the moderating role of CG in the connection between MAPs and SsP of manufacturing firms in Ghana.

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Organizational culture

Organisational culture (OC) can be explained to mean the routine way of life of the employees of a firm, particularly their beliefs and practices during a period of time (Olafsen et al., 2021). This includes the way employees dress to work, how fast they attend to the needs of customers, punctuality at work, the level of team work and involvement of all staff members in decision making as well as respect for employees, irrespective of gender, tribe and position. Effective adoption of OC is very important because it makes a firm unique and this can attract many customers to do business with the firm (Akpa et al., 2021). It also ensures that new employees quickly conform to the culture of their new environment in order not to look odd (Olafsen et al., 2021).

According to the *contingency theory*, the strength of the link between management accounting practices (MAPs) and sustainability performance (SsP) of firms is dependent on certain contingencies like the organisational cultural practices of the firm (Otley, 1980; Ng et al., 2013; Otley, 2016; Hall, 2016). The *resource based view theory* also suggests that the success of the relationship between MAPs and sustainability performance (SsP) of firms depends on how intangible resources of the firm (like the organizational cultural practices) are deployed by the firm (Wernerfelt, 1986; Barney, 1991). This thesis will therefore test the moderating role of OC in the connection between MAPs and SsP of manufacturing firms in Ghana.

Empirical Review

This section discusses the results of related studies and identifies the similarities, contradictions and gaps in such studies. This section is organised based on the research objectives of this study. The major areas discussed are: relationship between management accounting practices (MAPs) and sustainability performance (SsP) of firms, moderating role of information technology adoption (IT) in MAPs and SsP linkage, moderating role of corporate governance (CG) in MAPs and SsP linkage, as well as moderating role of organizational culture (OC) in MAPs and SsP linkage.

Management Accounting Practices (MAPs) and sustainability performance of firms

Management accounting is identifying, generating, presenting, interpreting, and using important information to enhance strategic decision-making. (Petera & Šoljaková, 2020). Management accounting (MA) controls and plans an organisation's operations using accounting information such as profit and cost (Nishimura, 2005). Decision-makers in businesses can benefit from qualitative and quantitative data that are generated through research in MA. MA also offers comprehensive studies, such as cost assessments and financial forecasts, to help top management personnel to make wise decisions (Chapman et al., 2007). Again, MA provides leaders with management accounting information systems and appropriate models and techniques to help minimise costs and improve the firm's profits. In summary, MA provides relevant planning, control, and decision-making information to aid quality decision making.

The implication of MAPs on the success of business institutions has been the focus of several types of research conducted by numerous authors around the globe. Different scholars have looked at Management Accounting Practices (MAPs) from different perspectives. Some comparable empirical investigations on MAPs are examined below to give this study a clear direction and a reasonable basis for comparing the results. For instance, in a study conducted by Adler, Everett, and Waldron (2000), the authors found that manufacturing enterprises in New Zealand tended to use traditional MAPs more than the sophisticated ones such as SMAP. The traditional ones include costing and budgeting techniques. The study however did not cover the impact of MAPs on performance of business organisations.

Abdel-Kader and Luther (2006) conducted a research with an identical focus, using survey research to assess the sophistication of MAPs at 245 business institutions in the UK's fast food and drinks industry. The study also investigated the factors considered when picking the specific MAPs used in the industry. Participants were required to prioritize the significance of various MAPs to their own companies. The findings showed that when organisations entered a more uncertain environment, their management accounting methods became more sophisticated. The firms in the business moved through the stages of evolution in a similar way to how they lost influence on their clientele. The outcomes also showed that most UK food and beverage companies' MAPs were not very complex. Last but not least, the study discovered only a weak link between management accounting and value production for the entire food and beverage industry. This study did not look at the impact of MAPs on performance of firms. Seccondly, by focusing on

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the food and beverage indudtry other manufacturing industries like textiles and furniture firms were not covered.

In a analogous study, Liaqat (2006) utilised a survey approach to find out how modern management accounting approaches were applied in Indian businesses. The study concentrated on 530 enterprises registered with in India. The main objective of the research was to gather data on the rate at which Indian enterprises adopted both modern and traditional management accounting procedures. It was found that management accounting in Indian organisations boosted overall cost reduction and profitability. The implementation of activity costing was also significantly correlated with firm characteristics such as firm size, degree of customisation, competitive pressure, and the percentage of overhead expenditures to total expenses. However, none of the distinctions was significant. The lacuna here is that modern management accounting practices like competitor analysis were not considered.

Amoako (2013) examined the MAPs of 210 SMEs in Kumasi. The population was not industrially focused despite being located inside the Kumasi metropolis, which could have an impact on the outcomes of the study. The research, however, only looked at record-keeping as an accounting approach used by the studied organisations. In order to produce a more reliable results, a thorough and all-encompassing study concentrating on Ghana's manufacturing sector is required, with special attention paid to MAPs and their implications on the successful operations of business institutions.

A research conducted by Mbawuni and Anertey (2014) is an additional one that should be reviewed in the context of Ghana. These writers

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investigated the management accounting strategies used by Ghanaian telecommunications companies. This study largely relied on a cross-sessional survey to get input from 37 of Ghana's top accounting and financial specialists employed by MTN Ghana Limited, a key and significant telecommunications institution in Ghana. The results reveal that the key MAPs of the responding institutions are budgeting methods and these have significant impact on their performance.

The research methodology adopted by Mbawuni and Anertey (2014) has some weaknesses. The study was skewed towards only one industry. Secondly, manufacturing firms in Ghana were not considered. Furthermore, the scope of the study does not accurately reflect the subject of the article. Stakeholder organisations and other interested parties may turn to empirical literature from other areas that may not accurately reflect the Ghanaian context since there is a paucity of pertinent empirical research on the topic. For instance, the geographic contrasts between the two countries limit how much the study's conclusions may apply in the Ghanaian context. A fresh study must address the gaps in these findings and see whether Ghana's conditions reflect the conditions that exist in other countries. Based on these gaps, this study will focus on determining how MAPs of Ghanaian manufacturing businesses affect their sustainability performance.

The study by Adu-Gyamfi and Chipwere (2020) is the most recent one on MAPs in Ghana that has been seen. According to the authors, the study's research design was quantitative and cross-sessional. Managers of 200 manufacturing companies chosen at random completed the questionnaire that was used for the analysis. The findings of this study reveals that, the

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prominent MAPs of manufacturing institutions in Ghana are budgeting, costing and performance techniques. The study found that, these MAPs have helped the firms to perform better.

This study by Adu-Gyamfi and Chipwere (2020) has some methodological flaws. Though data was obtained from two hundred (200) managers of manufacturing firms, the unit of analysis, population, sample size and sampling procedure were not specified. Secondly, performance was looked at from a narrow perspective, in terms of sales and profits. Meanwhile, performance of business institutions can be assessed from the social and environmental perspectives as well. Another lacuna in this study is that, much attention was not given to strategic management accounting practices (SMAP) as recommended by Ma et al. (2022). According to Ma et al. (2022) current academic studies on MAPs should incorporate SMAP as one of the variables. Last but not least, the research never gave any details concerning the validity and reliability procedures that were used to process and clean the data. With these phenomenal loopholes, it may be difficult for scholars and managers to rely on the findings that were reported.

For instance, without specifying the source of the manufacturing firms from which the sample was drawn as well as their status in the industry, it will be difficult for anyone to replicate the study. This means that, any researcher wishing to repeat the study will find it very difficult. To deal with these flaws, this current study will specify the population as all manufacturing firms that are officially registered with the AGI. Besides, the sampling procedure will be specified to make it easy to replicate the study.

Literature shows that, several business institutions that are small and medium contribute in diverse ways in expanding many global economies. They regularly provide jobs for the youth, serve customers at any time of the day as well as pay various forms of taxes to the local government within the jurisdictions where they are located. However, Ma et al. (2022) say they still face many challenges, including a lack of resources and the capacity to make informed decisions about their strategic orientations. The author claims that strategic management accounting methods can assist businesses to make prudent use of their very scarce resources. This can be done by gathering both internal and external quantitative and qualitative data to assist executives in making strategic decisions.

In support of this claim, Ma et al. (2022) conducted qualitative research to examine how one Chinese business organization applied strategic management accounting (SMA) in its operations to boost its performance. Interviews with five M company managers and two employees were conducted to gather information that was used for the statistical assessment. The findings of this research showed that the organisation's senior managers are unaware of SMA and pay little attention to it. The general manager is not interested in SMA, despite the fact that the chief financial officers are aware of SMA and always tried to urge the company to use it. Instead of putting SMA into practice, the company prefers to devote most of its resources to costing techniques.

The study by Ma et al. (2022) has many challenges. Firstly, it focused on only one cross-border e-commerce firm, so the findings cannot be generalised. Therefore, the sample might not accurately represent the Chinese

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businesses' operational issues and SMA applications, hence generalising the findings may be problematic. In order to compare the results with what is prevailing in other nations, more research is required to analyse the implication of SMA principles on the success of many manufacturing institutions in China.

In another study by Nimtrakoon and Tayles (2015), the authors divided MAPs into two categories: conventional MAPs and contemporary MAPs. The earlier MAPs used official, financial, and historical data frequently sourced from financial statements. It offers information with a short-term view that focuses on internal organisational happenings. The time frame is mostly connected to the accounting period of the firms. Today's MAPs rely mainly on less formal, non-financial, and forward-looking data. Here, MAPs concentrate on events outside of a business, such as information about clients, vendors, rivals, and communities. It is founded on a strategic orientation and a longer-term vision. Information delivery deadlines can vary based on management requirements. There are many types of cost objects involved. They may include competitors, market segments, brands, customers, departments, activities, and distribution routes. This study will incorporate variables from both conventional and modern MAPs.

According to the findings of a scholarly research conducted by Alsayegh (2020) cost analysis (CA) is usually used to analyse the viability of project or investment by contrasting its economic costs and advantages. CA frequently has multiple goals. Firstly, CA can be used to assess a project's economic viability. Secondly, the results of various cost studies can be used to compare cost information of various firms. It can be used to evaluate business

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decisions, determine if it makes sense to use natural resources for profit, determine the return on public investments, and make environmental changes. To design a project, all required tasks and services are broken down into different units. Next, all direct and indirect expenses related to the works and services are identified and assessed using traditional cost accounting methods (Ezejiofor et al., 2015; Oyedokun et al., 2019). An inadequate costing analysis is to be blamed for organisations' planning difficulties and project execution failures (Alsayegh, 2020).

Another instrument in management accounting is total quality management (TQM). TQM is a technique used for improving product and service quality by involving all levels and departments of the firm (Shafiq et al., 2019). TQM is seen as an integrated endeavour to achieve unique business advantage by regularly enhancing various aspects of organisational culture (Al-Qahtani et al., 2015; Lakhe & Mohanty. 1994).

Regular preparations of various forms of estimates also known as budgeting is one of the many beneficial business tools for managing and predicting an organisation's operations (Emiaso & Egbunike, 2018). For business organisations to realise the various targets they set for themselves, budgeting requires the rational deployment of organisational resources (Egbunike et al., 2015). Budgeting is an internal tool used to guide managers as they carry out their responsibilities within the organisation (Petera et al., 2020).

According to Ogundajo and Nyikyaa (2021), performance evaluation is crucial for managing human resources of business organizations. The writers make it clear that performance appraisal evaluation pertains to the

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methods and techniques used by organisations to assess the productivity of their employees. This procedure typically entails evaluating an employee's performance and providing comments on calibre of that success the employee has chalked (Dijk & Schodl, 2015). The primary driving force behind this is to improve employees' performance. An important management tool, performance evaluation, links the assessed appraisal to organisational motivations or punishments, and these include remuneration increases, promotions, or dismissals.

MAPs can be grouped into TMAPs and IMAPs (Nartey & Van der Poll, 2021). TMAPs cover costing, budgeting, performance measurement, and decision-making. Costing includes "process costing", "joint costing", "by-product costing", and "job costing". Budgeting includes variance analysis, capital budgeting, activity budgeting, master budgeting, zero-based budgeting, and cash flow analysis. On the other hand, performance measurement includes using project and investment decision making tools to assess the performance of entities. Management's effective decision-making can be realised through profitability evaluations.

IMAPs, on the other hand, covers creative accounting techniques like kaizen costing, material flow costing, environmental cost management, activity-based budgeting, total quality analysis, back flash analysis, activity based management, relevant costing and functional analysis. Nartey and Van der Poll (2021) advised firms and scholars to go beyond traditional management accounting practices and conduct studies on IMAPs to enhance the performance of firms. Specifically, they stated that these creative MAPs would best enhance the performance of manufacturing firms. The study

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advises manufacturing firms to integrate these modern accounting techniques into their operations to enhance efficiency and performance.

Activity-based costing (ABC)

ABC is interested in overseeing the range of actions that businesses carry out. Its structure is based on the idea that activities incur expenses. As a result, long-term cost control is achieved by managing activities (Dubihlela & Rundora, 2014; Mahal & Hossain, 2015). ABC makes a few adjustments to a company's resources while attempting to encourage client approval. Identifying and prioritising high-cost activities allows for a comprehensive investigation to ascertain whether they can be better dealt with or ignored completely (Drury, 2018). When ABC is included in a manufacturing company's strategy, management can identify the company's primary activities, allocate relevant estimates to each of the activities identified as well as determine all the factors that are responsible for all the activities they have to deal with.

ABC might present suitable areas for reducing social and environmental costs in product design. As a result, manufacturing companies can assign expenses to procedures and additional activities utilising environmental data offered by ABC methodologies (Andersson et al., 2011; Drury, 2018). With this in place, leadership members of business organisations are armed with adequate qualitative and quantitative tools and information, which enable them to arrive at realistic costs of the goods they produce and offer various suggestions that will improve upon their branding and competitive urge. We can therefore conclude that, the importance of ABC

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is not in doubt, hence firms should continuously apply it in their daily operations.

Product life cycle costing (PLCC)

To find out if the estimated profit of a firm at the production level will be adequate to take care of all costs incurred in manufacturing the products, the PLCC helps to project and analyse the cumulative costs of the of items produced over the lifetime of the product (Iraldo et al., 2016; Drury, 2018). These authors assert further that the expenses that have been recognised provide insight into the entire cost structure and compositions that have been accrued throughout the product's life cycle. As a result, PLCC identifies places where a strategy for cost reduction can be effected and provides management with an awareness of the size of a cost structure. According to Testa et al. (2011), PLCC enables leadership of business institutions and their employees to focus on creating the awareness in the minds of existing and potential clients as well as other stakeholders concerning the issue of potential costs of our operations to the environment.

Additionally, according to the findings of a study by Arena and Azonne (2012) the adoption of PLCC will help business institutions to achieve lasting targets that will enure to the needs and survival of current and future generations. Businesses can utilise this vital pieces of data to get around obstacles associated with applying general sustainability standards. A component of PLCC is the product-by-product allocation of expenses and revenues across the product's life cycle. Therefore, before the cost is committed to production, management can utilise PLCC to get detailed analysis on the various amounts incurred on production of their goods as well

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as the details of the cost classifications of goods produced that are likely to adversely impact on the communities or societies in which they operate. These cost components can then be deleted in later product design stages.

Total quality management (TQM)

This is a costing approach that ensures that manufacturing institutions constantly assess the level at which their assets are allocated to their production processes to prevent production of subpar products. These cost groupings can be put into three sup-groups namely; failure costs, preventive costs, and assessment costs. The objective of TQM is to make management aware of how to maintain quality and for that matter focus on the importance of putting appropriate measures in place to upgrade the quality of products produced (Barone, 2020; Drury, 2018). Per the findings of a study done by Drury (2018) TQM can be explained as an approach wheret, by elevating customer satisfaction to a top priority, may help management compete successfully in the twenty-first century. Management accountants apply TQM in the organization of a company. It enhances service levels in pricing, quality, dependability, supply, and innovation while helping internal management satisfy the demands of clients.

In the nutshell, appropriate implementation of TQM can help business institutions to adopt innovative and creative strategies that will help improve on the quality of goods produced.

Preventive costs: These are expenses associated with management, training as well as increased expense associated with acquiring high quality and effective materials. This will prompt management to develop plans to lower or eliminate such costs beginning with the product design phase.

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Assessment costs: These costs assist businesses in disclosing the price of materials inspection, as well as cost of internal and external audits, cost of surveys and goods produced.

Internal failure costs: These expenses help businesses to provide detailed management reports that help business institutions to be aware of variables that affect the image and quality of goods produced. Armed with this information, leadership of business organisations are in position to calculate expenses like rework, scrap prices, downtime, and stoppages brought on by faults that will be incurred during product approval before they are delivered to customers.

External failure costs: These charges aid managers to estimate costs associated with sending clients items and resources that do not meet quality standards. These expenses could include the price of managing customer complaints, guaranteeing a replacement, return repairs, and the price of a damaged company image.

Reports that assist management in locating and managing the expenses as indicated above internally may result from the inclusion of these costs, which are TQM components, into a company's plans (Boca, 2011). TQM has the added benefit of providing management with relevant and timely information that can make it easy for them to evaluate any possible savings brought on strategies meant to enhance the quality of the products produced (Sahoo & Yadav, 2018; Drury, 2018).

Environmental costing (EC)

EC estimates costs associated with current or predicted resource depletion brought on by an enterprise's economic operations. A company's

resources, practices, commitments as well as organisational structures are usually well created using EC strategies. The data analysis showed that companies have difficulty implementing the most creative and successful MAPs that will help them to realise their environmental targets (Ntalamia, 2017). Manufacturing companies may use EC to assist them in discovering and controlling environmental expenses by utilising the following techniques due to their restricted resources (Drury, 2018).

Environmental prevention cost: In the context of product development, this term denotes a strategy for minimising emissions and other waste that could have an adverse effect on the natural world. Investing in measures to lower environmental impact during product development and manufacturing, as well as recycling are all examples of what may fall under this category.

Environmental detection cost: This is employed to identify goods, actions, and processes that, throughout the product's design stages, fail to conform to applicable laws and standards. This could help managers check manufacturing processes and goods to comply with environmental standards.

Environmental internal failure costs: This process calculates the costs associated with operations that may lead to pollution of the environment by solid waste. These expenditure items that are meant to mitigate all sorts of pollution catch the attention of management of firms and are always considered when designing or innovating new products.

Environmental external failure costs: These are the costs incurred for the subsequent environmental cleanup procedures. These costs, which include trash discharge charges, are presented to management to aid them in taking informed decisions. Leadership members of firms are therefore in a good

position to have total control over all costs at the plant design stage. Society may be certain that the adoption of EC into the strategies of manufacturing organisations would result in a reduction or elimination of the harmful environmental effects of the enterprises.

Target Costing (TC)

A new product's target price, production costs, and anticipated profits can all be determined using the TC approach (Hendricks, 2015). The design of the product can be completely abandoned by management if these manufacturing estimates are not realised (Romanova et al., 2017; Drury, 2018). The main focus of TC is to supplement the efforts put in place by management of business organisations in adopting ideal strategies that will help to reduce costs to the bearest minimum. By incorporating TC into their business strategies, manufacturing companies are able to ensure that inclusive cost planning measures as well as cost control strategies are implemented from the beginning of the product design process. Hopefully, these will positively impact on sustainable cost structures.

Kaizen costing (KC)

This is another costing strategy that can be applied when goods are being manufactured (Drury, 2018). In management accounting, KC assists institutions to minimise the expenditure they incur in improving the quality of goods produced. Since many items are currently in the manufacturing stages of their life cycles, any potential cost reduction will happen gradually to address specific issues (Romanova et al., 2017). The KC philosophy fosters an atmosphere that gives the workplace more significance as a real site of improvement and as a source of information about how businesses progress

(Mind Tools, 2018). Boca (2011) asserts that KC is one of the cutting-edge MAPs that may boost businesses' environmental friendliness when management members of organisations are considering going green. As a result, manufacturing companies may have a chance to achieve sustainability targets if they include it in their plan.

Value Analysis (VA)

A thorough, interdisciplinary analysis of the elements that affect production costs is used in the VA process to establish appropriate strategies for carrying out the specific activity for the lowest possible cost while keeping the requisite level of quality (Ismail et al., 2010). VA aims to improve internal communication, inspire innovation, and focus on a particular product or procedure to boost project management effectiveness (Drury, 2018). Additionally, VA enables people to participate in improvement programmes by consistently paying attention to quality products as well as service delivery. Last but not least, VA supports continuing product improvement and risk mitigation (Ismail et al., 2010). VA performs tasks including cost analysis of product functionalities and alternative evaluation to achieve the aforementioned goals. VA also provides managerial considerations for manufacturing companies that might enable firms to holistically attend to the social and environmental needs of society (Ramli et al., 2013). As a result, including this unique MAP in a manufacturing company's strategy could aid in its efforts to achieve social and environmental sustainability.

Traditional management accounting practices (TMAPs) were historically the subject of most academic studies on MAPs. However, recent studies on MAPs are delving into other areas including Environmental

Management Accounting (EMA). Taking a hint from Nartey and Van der Poll (2021), contemporary researchers could incorporate strategic management accounting practices (SMAPs) into their studies. This is because SMAPs might be the best tools for boosting a company's productivity and performance. TMAPs are highly quantitative and internally focused. TMAPs find it difficult to provide dynamic information for organisational decision-making because of the competitiveness and the changing manufacturing environment. TMAPs compel organizational managers to focus on operational issues rather than external considerations like competition, product quality, and customers. Planning, decision-making, and control rely heavily on this kind of data.

Multiple empirical research on environmental accounting (EA) is also catching the eyes of many modern researchers. According to Chang (2007), EMA is a strategy that aids businesses in monitoring their environmental impact and sharing that data with interested parties inside and outside the company. Companies create numerous chemicals that deplete the ozone layer (Christine et al., 2019, Drury, 2018). As leadership of business institutions adopt EA as part of their culture, it will go a long way to lessen the adverse environmental impact of their operations in several ways (Qian et al., 2018; Drury, 2018). EA consistently applies principles in all aspects of accounting to inprove the quality of goods produced as well as decrease environmental protection expenses.

Syarif and Novita (2019), suggest that data that relate to waste and pollution should be identified, gathered, evaluated, and used for decision-making (Syarif, & Novita, 2019). EA is essential to the company's operations

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since it has the potential to improve operational standards and safety requirements (Schaltegger, 2018; Drury, 2018).

The media has recently drawn the public's attention to social and environmental obligations of every firm. Concerns over environmental dangers like biodiversity loss, climate change, and greenhouse gas emissions are to blame for this. The second reason is that performance evaluations of businesses today are based on both their financial and environmental performance (Schaltegger, 2018).

As a result of this trend, stakeholders are eager to exert additional pressure on management of organisations to prioritise environmental concerns and safety standards (Gunarathne & Lee, 2015). EA in contemporary times is viewed by many businesses as a means toward this end (Gunarathne & Lee, 2015). However, it is not yet known whether or not integrating the two can boost the environmental performance of a business. It must be noted that, vven in some countries, environmental performance reporting is not mandatory, and there is little transparency around such reports (Drury, 2018).

It has been established in a research conducted by Solovida and Latan (2017) that environmental accounting plays an effective moderating implication in the association that exists between environmental strategies of an institution and the successful targets of the institution. This imples that this relationship is strengthened when business institutions frequently allocate their environmental costs judiciously. The following are a few shortcomings of this study.

The number of people surveyed is inadequate. Secondly, many businesses believe their environmental outcomes are proprietary and

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confidential information that should not be publicised, hence they may not provide the right information on such issues. Due to this, we cannot draw any reliable conclusions about the results obtained. There is the need for scholars in MAPs to fill this gap in our understanding of natural resource perspectives by responding to calls to conduct research that will esrablish the synergistic implications of MAPs on environmental performance. This outcome could provide a transparent baseline for companies working on strategies to improve their environmental performance. Based on these findings, additional pressure from authorities within Indonesia's government may be necessary to boost green accounting in the country.

Corporate resources, such as tangible and intangible assets are needed to enable a firm achive its set targets. Sustainable MAPs and techniques are also needed to enhance performance (Schaltegger & Csutora, 2012). In order to effectively apply accounting techniques, management accountants must be actively engaged in boosting firm performance through a robust corporate environmental plan. Generally, a company's management anticipates working to lessen its operations' financial burden and environmental impact (Schaltegger & Csutora, 2012).

It must be emphasised that business institutions across the globe are subjected to pressure from a wide variety of sources, including pressure groups and NGO. This study will recruit participants at the managerial level because it is assumed that managers will benefit most from the information presented in an organization's environmental performance monitoring system (Latan et al., 2018).

Latan et al. (2018) conducted an impressive study on environmental accounting in Indonesia. To get a representative sample, the authors surveyed 107 ISO 14001-approved Indonesian Stock Exchange-listed firms online. The empirical evidence suggests that specific organisational resources have a favourable and significant effect on EMA use, which can improve an organization's environmental performance.

These results show how useful EMA is for informing Indonesian companies that want to better their corporate environmental performance. Organizations in other countries might use the findings to improve their environmental performance by developing the skills necessary to handle EMA tools and cope with the perceived environmental uncertainty that comes with doing so. Per the findings of the research conducted by Afum et al. (2020) green production techniques adopted by Ghanaian small and medium-sized manufacturing companies significantly favour sustainable performance. This definition of performance includes social, environmental, and economic success indicators.

Per the results of a research conducted by Phan et al. (2018) activity management (AM) principles can be applied and are effective in a variety of environmental scenarios. Through a mail survey questionnaire, 208 Australian companies from diverse industries gave data to the researchers. The study indicated that EA is moderately applied by business institutions in Australia. It was also discovered that companies with superior environmental performance made greater use of EA. The findings point to the need for businesses to improve their usage of EA and to revise their cost models to

include the factors that contribute to the costs associated with environmental actions.

Fuzi et al. (2019) conducted a wonderful study on environmental accounting. The authors conclude that, EP in the manufacturing sector must be improved using strategic management accounting options. The outcome of this study helps to confirm that application of EA is fundamental to the efficient management of environmental activities in the manufacturing sector. In order to comply with EA regulations, a manufacturing industry should adopt EA principles to enhance performance of the manufacturing sector in Malaysia

Zandi and Lee (2019) assessed the connection that exists among different dimentions of environmental accounting (EA). The study investigated how corporate moral, social responsibility (SR) and regulatory pressure (RP) affected safety standards of manufacturing institutions in Indonesia. The resesrch found that EA significantly contributes to improvement in the EP of firms in Indonesia. Therefore, there should be better SR among employees of a firm, as well as good control over customer influence and regulation.

Christine et al. (2019) looked into how MAPs relate to enhancing firm performance among business institutions in Indonesia. They obtained and used data from 317 respondents from various sectors of the business environment to do the analysis. The outcomes of the SEM analysis demonstrate that safety plans has significantly and favourably impacted economic and environmental performance (ENP). Last but not least, the

findings imply that MAPs significantly and favourably impacted all the performance indicators.

When applied to environmental management, financial and strategic control systems are what we call eco-control (Henri & Journeault, 2010). This was studied for its effects on the natural world and the economy. The connection between eco-control and economic success can often be deciphered through the environment's performance in several contexts. The researchers relied on data gathered from manufacturing institutions in Canada. Though the results of this research suggests that eco- control does not influence financial success much, indirect implications are found to be sharper under conditions of increased (i) environmental exposure, (ii) public visibility, and (iii amd (iii) and safety standards. This research adds to the existing body of knowledge on management accounting and safety standards on the environment.

The connection that exists between strategic management systems and financial success of business institutions has dominated research on environmental performance (Quartey & Darkwah, 2018). While some researchers focused more on disclosures in yearly reports, others looked at environmental performance at the firms. More study has to be done on environmental accountability practices and their consequences inside businesses.

According to Quartey and Darkwah (2018), implementing quality safety standards, lowers overall waste in the system, as well as helps to come out with plans for reducing different types of pollution, which all lower operating costs and increase profitability. As a result, industry participants

must educate the public about the damage that improper sachet waste disposal does to Ghana's environment. Management of sachet water production enterprises should also adopt environmental responsibility, with the aim of creating a serene and conducive environment of to live in.

Reduced energy consumption, decreased water waste, and increased sachet water waste recycling are all possible thanks to increased producer responsibility. There are many approaches to urge the sachet water industry to improve its environmental footprint. Optimised processes (where they consider their impacts by employing environmental management systems and maximising energy and water use), innovations (where the sector makes investments in significantly more environmentally sound IT systems and +- +networking are all examples of these.

Susanto (2019) asserts that MAPs have influence on performance on business institutions in Indonesia. This research aimed at examining the implications of environmental accounting (EA) on various performance indicators. The findings support the view that EA. has a sizable and beneficial effect on environmental efficiency.

Appiah et al. (2020) investigated the effects of management strategies on performance of production institutions in China. According to the study, creating a perfect EP depends on environmental accounting (EA) and EA strategies are effective mediators that aid the business in operating more sustainably. The authors argue that to better the performance indicators of enerprises, the government and manufacturing corporations need to enact environmentally friendly rules that will instil discipline among all stakeholders.

Amir et al. (2020) assessed the influence of dedication of senior managers on performance of their various institutions. The data used for the statistical analysis was gathered using questionnaires from Pakistani manufacturing businesses that had earned ISO 14001 certification. To address the research topics, route analysis with structural equation modelling of the data from 304 respondents was performed. The findings demonstrate that senior management commitment affects how well organisations function in terms of the environment directly and advantageously. As an additional mediating factor, MA and internal control connects the commitment of upper-level leaders to environmental outcomes.

In their study of data from 144 Sri Lankan companies, Gunarathne et al. (2021) found evidence to support their assertion that EA techniques have moderating implications in the connection between environmental management strategy and performance indicators on environment and economy. This implies that EA techniques for disseminating information about environmental expenditures and helps to keep tabs on sustainability issues.

Burritt et al. (2010) used a questionnaire to investigate the connections between a company's innovativeness, environmental management accounting (EMA), and overall business strategy. It appears that combining process innovation with EMA use yields positive results. However, no link could be found between the method and the usage of EMA. This study's sample size is too small to draw any firm conclusions about its results. The study contends that EMA's implementation is linked to process innovation and that this

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strategy's use could lead to monetary profits and enhanced environmental performance.

Sari et al. (2020) assessed how environmental management accounting affected the performance of Indonesian manufacturing businesses. According to the study's analysis of accountants' opinions, management accounting application improves business performance. The study's drawback derives from the fact that data were only gathered from one area of Indonesia, which may affect how generalizable the study is. The study also included a few topics of management accounting.

Using the terms Monetary Management Accounting (MMA) and Physical Management Accounting (PMA), respectively (Jamil et al., 2015) conducted a comprehensive study on MAPs in Malaysia. Among the MMA are cost accounting, lifecycle costing, target costing, relevant environmental costing, lifecycle budgeting, lifecycle target pricing and capital expenditure and revenue. The majority of Malaysia's small and medium-sized manufacturing companies, according to Jamil et al. (2015), place more emphasis on PMA than MMA. For instance, they are required to set aside money each year for their environmental initiatives by the regulator.

The research conducted by Agyabeng-Mensah et al. (2020) aimed to identify approaches that provide superior performance to competitors while enhancing environmental and business outcomes. Comparative advantages in competitive quality, environmental performance, and business outcomes were analysed to see how they were changed by environmental practices and lean management. The quantitative technique of the study involved data collection from 259 industrial businesses in Ghana, and the data was gathered using

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validated questionnaires. The study's control variables are the importance of environmental issues, firm size, and the sector in which the institutions operate.

The study's findings demonstrate that green and lean techniques boost financial and environmental efficiency and offer a competitive edge in the marketplace because of their superior quality. However, the positive effects of these strategic practices on a company's bottom line are tempered by factors like environmental sustainability and the level of quality products produced. The findings also show that environmental techniques result in a greater improvement in quality of products manufactured than lean management. Besides, strategic practices are more capable of enhancing environmental performance.

Tarmuji et al. (2016) investigated the implication of governance practices (GP) on the financial performance of business institutions in Singapore and Malaysia. The study reveals that, a firm's performance and future survival are impacted by its Environmental, Social, and Governance (ESG) criteria. According to research, ethical management of ESG issues promotes a corporate culture and environment that raises a company's sense of social responsibility and stakeholder trust. As a result, firms that openly disclose their ESG practices were stated to have enhanced their reputation, raising investor trust. Additionally, they were considered to be using their resources more wisely and keeping their competitiveness. The results demonstrate the positive implication of GP on the success of Malaysian and Singaporean businesses. The findings can be used as guidelines by legislators,

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company management, and stakeholders to control how ESG practices are implemented.

The causal links between small and medium enterprises (SME) proactive environmental practices in Malaysia were investigated by Rasi, Abdekhodaee, and Nagarajah (2014). The study focused on how relationships among various stakeholders, including suppliers and clients, may speed up the adoption and dissemination of green technologies on a wide scale. The survey data for the research came from 232 SMEs in Malaysia and was quantitatively gathered and analysed. It was chosen to use structural equation modelling to assess the idea. The empirical data show that stakeholder interactions, particularly in various ways, significantly influence decisions about environmental regulations. Senior managers are interested in internal management enhancements, while customers and staff concentrate on process-based adjustments. On the other hand, contact with suppliers motivates SMEs to improve operations for simultaneous changes in both the product and the process.

According to Molina-Azorn et al. (2009), there is an ongoing discussion about the implication MAPs of performance of institutions of environmental practices on business performance. However, relevant literature has not produced any conclusive findings. Numerous approaches have been used to study this link, with most of the research focusing on industrial companies. This paper uses cluster and quantitative analysis to ascertain the connection between environmental practices and corporate success in Spain's hospitality sector. First, hotels were divided into three groups according to how environmentally proactive they were, and it was

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discovered that the hotels with the strongest environmental processes outperformed the others. Regression analysis findings also showed that environmental practices significantly affect a number of performance measures.

Llach et al. (2013) claim that small service businesses, particularly those in the restaurant industry, have paid little attention to environmental policies. According to the authors, most research on environmental practices has targeted the industrial sector and large corporations. They used structural equation modelling to examine how the elements related in their study, which was based on 374 surveys with restaurant managers as participants. The study found that quality management practices directly improve market success criteria while having little impact on profitability, and the study also strongly correlates with financial performance and environmental management strategies. The study's findings indicate that by actively participating in quality and environmental issues, small service businesses can benefit in various ways that increase their competitiveness.

However, Vilchez et al. (2017) argue that most studies have incorrectly stated that people and institutions who constantly interact with organisations influence their environmental routine practices. Instead, they propose that stakeholders have an impact on managerial choices regarding the adoption of routine practices as well as the the firm's competitive advantage. The study found that, though internal and external interested parties are able to influence the direction of the institutions, leadership of the various firms have different ways they look at these influences, and these vatiations in views affect their environmental practices. Consequently, it emerges that the

stakeholders' sphere of influence is larger than was originally thought. Managers' actions in response to these concerns may improve the firm's ability to satisfy stakeholder expectations and so boost its reputation.

Muoz-Villamizar et al. (2018) claim that there is greater pressure than ever on manufacturers to account for their usage of resources and environmental impact. They also become more conscious of how their actions affect society, the environment, and performance. As a result of these problems, businesses are being driven to create and combine numerous management practices. The study showed the procedures manufacturing organisations use to produce their products and the environmental practices they engage in by analysing interviews with officials from roughly 58 corporations. The research adds to the never-ending discussion over environmentally friendly manufacturing in the literature by arguing that companies that use sophisticated manufacturing techniques do not actively engage in environmental management through tactical and strategic strategies within their own companies. The study results show that practices like internal environmental training can boost the performance of manufacturing organisations.

Construction-related activities generate a significant amount of waste and energy. This is according to a claim made by Awang and Iranmanesh (2017). Due to the enormous environmental effects of these activities, environmental practices (EP) must now be applied at all levels of the construction industry. The authors studied the consequences of such methods on the financial and environmental performance of construction enterprises, along with the variables influencing the usage of EP in building projects. Data

were gathered from 210 firms that were members of project teams via a survey. These responses were processed and statistically analysed and the results were presented to the firms in the construction industry in Malaysia.

According to the findings, organisational support, customer, and regulatory pressure all favour implementing EP in construction projects. This process also appears to positively affect construction enterprises' environmental and financial performance. The study's findings are valuable, as they help to comprehend in detail different aspects of EP. With this understanding, leadership of firms are able to fashion out applicable strategies to adopt in order to mitigate the negative impacts of their oprations on the environment. It is vital to highlight that accounting researchers have not given much consideration to Environmental Accounting (EA). Although there have not been many studies that discuss the advantages of EA (Masanet-Llodra, 2006; Staniskis & Stasiskiene, 2006), little focus has been placed on how it can improve the performance indicators of manufacturing institutions in Ghana.

Based on the literature reviewed on MAPs, one can properly categorise MAPs into six (6) categories. These include strategic management accounting practices (SMAP), environmental accounting practices (EAP), performance management systems (PMS), decision support systems (DSS), budgeting systems (BS), and costing systems (CS). However, this study will focus on five: namely; CS, BS, PMS, DSS, and SMAP.

It should be emphasised that literature provides very scanty researches on the connection between MAPs and performance of business institutions in Ghana (Amidu et al., 2011; Amoako, 2013; Mbawuni & Anerte, 2014; Adu-

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Gyamfi & Chipwere; 2020). Meanwhile these studies focused on MAPs and organisational performance to fairly limited areas. For instance, Ma et al. (2022) recommends that any study on MAPs should include a dimension called strategic management accounting practices (SMAP) but this has not been looked at in the literature reviewed. The majority of them examined how MAPs affected businesses' financial performance. Performance of firms can also looked at from social and environmental angles. Others concentrated only on Ghanaian-listed companies. Meanwhile, there are many manufacturing companies in Ghana that are not quoted. By examining traditional and strategic MAPs and how they affect sustainability performance (SsP) of manufacturing institutions in Ghana, this research will take a comprehensive and holistic view of the variables under investigation. The environmental and social performance of manufacturing firms in Ghana will also be evaluated in addition to financial performance. The above gaps, together with some inconsistencies in the findings in the literature, have brought about the first hypothesis of this study:

H₁: Management accounting practices have a significant positive impact on the sustainability performance of manufacturing firms in Ghana.

Moderating role of information technology adoption in the MAPs versus sustainability performance relationship

The introduction of information technology (IT) into the daily lives of individuals has encouraged many firms to allocate funds for IT investments. This is because they believe integrating IT into their business operations will help them gain traction in their work sector. In an attempt to digitize the economy in 2019, the Government of Ghana (GoG) recognised the crucial

role IT plays in economic development. Since then the GoG has introduced many IT interventions. These include introducing the Ghana card, e-filing of tax returns, and distribution of laptops to teachers. Many academics are interested in the connection between IT usage and firm success now that many businesses are investing significantly in IT.

Seth and Xiaofang (2021) looked into twenty-one (21) logistic companies in Ghana to find out the implications of IT on the success of production institutions in Ghana. The authors looked at four (4) areas of IT. These include systems for integrating information, tracking and security, delivering customer care, and using IT. Performance criteria include reputation, employee productivity, return on assets, sales growth, liquidity, and connections with customers and suppliers. Managers, supervisors, and other staff members who frequently interact with the IT systems received questionnaires. Through multiple regression analyses of the data gathered, the study found that the application of IT systems enhanced the performance of the firms. Except security and monitoring systems, all the IT indicators were statistically significant. Despite this result, IT introduction has helped reduce costs and increase client confidence.

Ankrah (2019) researched the implication of information system (IS) on the success of Ghanaian banks. According to the survey, international banks operating in Ghana invest more in information technology than their Ghanaian counterparts. All six banks employed in this study are, to varying degrees, investing in network infrastructure, servers, workstations or client stations, better software, Automated Teller Machine (ATM) services, and general upkeep of their IS services. The study discovered that all the banks

increased their market share of bank deposits and loans and profitability (ROA) due to the significant investment they made in the information mentioned above systems using survey design, descriptive study, and chi-square analyses. This implies that IS investment and Ghanaian bank performance are positively and statistically correlated. One can argue that this research is very innovative in that it relied heavily on questionnaires to obtain important and relevant data from strategic staff members who hold strategic positions at the various head offices of the target banks.

Another study on IT worth reviewing is the one conducted by Vachon (2012). The author looked into how corporate technology capabilities affected environmental performance. The ability of businesses to acquire or develop new technologies is known as technology capacity. The study concludes that technological capability and overall performance metrics are related. According to Wang, Chen, and Benitez-Amado (2015), information technology (IT) has both advantages and disadvantages for environmental sustainability. While IT gives the potential for businesses to improve their resource usage efficiency, it creates a lot of waste and pollution during manufacturing and disposal. The authors studied 151 Chinese companies' environmental performance and how IT affects it. According to the study's findings, business environmental performance can be enhanced if IT is integrated into environmental management processes.

The environmental performance of businesses can be impacted by integrating technology with any managerial policy. This is a claim made by Gutiérrez and Teshima (2018). This implies that the relationship between accounting practices and firm performance can be moderated by technology.

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Alam et al. (2019) looked into the connection between R&D investment and a company's performance, as shown by waste disposal levels. The research found that IT investment improves a company's environmental performance.

Gimenez et al. (2015) looked into the connection between the effects of environmental practices and information technology (IT) and how well the environment functions. Data was collected from factories in Brazil, China, Germany, Hungary, and the United States. Using multiple regression analysis, the authors investigated how technological innovation acts as a moderator between environmental behaviours and performance. According to the findings, information technology improves the correlation between eco-friendly behaviours and productivity. Moori et al. (2018) showed that the success of the Brazilian chemical sector might be attributed to the interplay between green practices and technological advancements. Green management and the environmental performance of Brazilian chemical companies were found to have a moderating effect on one another, with technology playing a key part in this process. There was proof that innovations offered genuine competitive benefits, even though some required long-term effort. Based on this conclusion, a study must determine whether technology will mitigate the relationship between Ghanaian manufacturing enterprises' performance and MAPs.

To determine which practical innovations improve or worsen environmental performance, González-Blanco et al. (2018) looked into the the analysis of such innovations and found that product or process innovation has a negative impact on environmental performance. Secondly, the adoption of other innovation strategies is completely substitutable, whereas the combined

implementation of these two types of innovation is only conditionally so. This result lends credence to the argument advanced by numerous researchers who have argued that drawing a connection between a firm's success and IT may be complicated. Finally, other innovations apart from IT is the sole innovation that helps to improve environmental performance and that non-technology innovation and product innovation are conditionally compatible.

The effects of innovativeness and IT capacity on the performance of Polish business institutions were studied by Kmieciak et al. (2012). Having a handle on cutting-edge, IT has been found to positively affect both objective and subjective company success metrics. However, IT capabilities have not significantly dampened the correlation between innovation and company success. Amoako et al. (2020) also conducted a research on the moderating role of IT in the connection between SMEs' external stakeholder dealings and their performance in Abossey Okai in Ghana. Results showed that the use of ICT might temper the link between external integration and SMEs' performance. Conclusions from the research should inspire leadership and owners of SMEs to acquire and apply ICT expertise to boost their companies' operational performance.

Although several studies have demonstrated that businesses perform better when they utilise the pertinent information technology (IT) available, most of these studies concentrated on the banking industry. Researchers have also overlooked the moderating implication of IT adoption in the connection between MAPs and performance of manufacturing organisations as recommended by the *resource based view (RBV)* and *contingency theories*. In the light of this, this study aims at analysing the moderating implication of IT

adoption (IT knowledge and IT integration) in the connection between MAPs and SsP of manufacturing institutions in Ghana. In short, several studies exist on the direct omplication of IT systems on success of firms (Amoako et al., 2020; Seth & Xiaofang, 2021), but the moderating implication of IT adoption systems on the connection between MAPs and performance as recommended by the *contingency theory* and the *RBV theory* has not been done.

The following is therefore the second hypothesis that this research wants to verify:

H_2: *Information technology adoption plays a significant moderating role in the relationship between MAPs and sustainability performance of manufacturing firms in Ghana*

Moderating role of corporate governance in the MAPs versus sustainability performance relationship

Companies worldwide are taking corporate governance (CG) issues seriously due to the failure of numerous local and global businesses (Appiah, 2013). Enron and Lehman Brothers are a few companies that failed as a result of poor CG practices (Duke & Kankpang, 2011). The collapse of Ghana Airways and DKM are a few examples of such businesses in Ghana. Therefore, it is evident from the study above that a number of issues, including poor corporate governance structures, can cause a firm's performance to plummet (Appiah, 2020). As a result, it is not surprising that academics have become interested in CG research during the past thirty (30) years.

The word CG is used to describe processes that are put in place to defend the interests of all stakeholders, according to the Cadbury Committee

(1992). Campbell (2007), on the other hand, defines it as the functions that the board of directors play in managing the affairs of businesses to meet predetermined goals. One of the key duties of a board of directors is to develop strong strategic plans and decisions that will significantly help the firm achieve its objectives (Krechovska & Prochazkova, 2014). Good CG practices not only serve to improve leaders' acceptable behaviour but also aid in avoiding agency issues (Terjesen et al., 2015). If organisations have effective CG practices, they stand a good chance of performing well (Economist, 2010). This implies that for a company to succeed, its leaders must put strong CG principles into practice during normal business operations. This may be the cause of the widespread adoption of certain CG principles and standards by local and international organisations to guide their operations and enhance performance (Naciti, 2019).

The structures a company establishes to manage and oversee its overall operations are the subject of corporate governance. This structure provides a clear explanation of the relationships between the management team members, the board as well as other internal and external interested parties. Good corporate governance standards make it possible to manage stakeholder conflicts effectively. Such procedures are crucial in lowering agency costs due to the division of ownership and management and the presence of independent members on the board. Some of the CG mechanisms that organisations implement with the goal of enhancing their CG credentials include transparency, the hiring of experienced directors, disclosure of CG practises in their annual reports, and having CG guidelines in a manual for all employees to constantly refer to (Del Bosco & Misani, 2016).

As claimed by Pfeffer (1973), boards of directors with sufficient resources had a higher chance of using those resources wisely to improve the performance of their enterprises. Haniffa and Hudaib (2006) assert that the resource reliance theory favours boards with a higher percentage of independent directors. This is because independent directors have more in-depth knowledge and the requisite network of external stakeholders, which may be utilised to secure more money and establish business and political contacts (Kiel & Nicholson, 2003). If everything stays the same, this should improve business performance. However, the agency theory asserts that there may be a conflict of interest between the owners and the agents or directors because ownership and control of organisations are held by separate parties (Aguilera et al., 2008). Williamson (1975) claimed that managers might work to further their interests rather than make efforts to boost the wealth of the owners. Effective CG principles can be applied to handle this agency issue properly because this may lead to trust issues.

Sarpong-Danquah et al. (2018) discovered that women are underrepresented on the boards after researching how corporate governance (gender diversity, board independence, and board size) affects the financial performance of listed manufacturing enterprises in Ghana. Additionally, gender diversity and board independence significantly improve financial performance (ROA and ROE). However, the board's size does not greatly affect a company's performance. The authors support adding more female and outside directors to the boards of manufacturing companies to boost performance. This is due to the fact that having more outside directors

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increases a board's independence. This is considered to improve the performance of businesses (Coleman & Wu, 2020).

According to Coleman and Wu (2020), the effective use of CG concepts in enterprises brings various advantages. These include increasing long-term capital, promoting foreign direct investment, and reducing corruption, poverty, and tax evasion. According to the survey, businesses in Nigeria and Ghana are only recently starting to employ high-quality CG systems. As a result, the study encourages businesses to follow CG's code of ethics and principles. Additionally, businesses should create efficient audit committees led by independent directors who can offer the board the additional experience it needs to function effectively and impact financial results. However, this study focused on publicly traded corporations and used secondary data from financial statements. This researcher is adamant that primary data will make it possible for direct interaction with each manufacturing company's CG systems and that this will help scholars gain a thorough grasp of CG in enterprises.

Puni and Anlesinya (2020) used panel regression analysis to assess how the CG guidelines proposed by the Ghanaian Securities and Exchange Commission (SEC) affected business performance from 2006 to 2018. "These regulations aim to boost the monitoring aspect of corporate governance, lower agency issues, and enhance business performance. Board meetings, shareholder concentration, board composition (board size, internal directors, and outside directors), board committees (audit, remuneration, and nominating), CEO duality/separation, and board meetings are some of these ideas. The study found that a firm board with insiders and outsiders had

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superior financial results. The size of the board, the frequency of board meetings, and the distribution of ownership among shareholders frequently had a positive impact on financial success". Board committees, on the other hand, frequently had a detrimental effect, whereas CEO duality did not affect financial performance.

Abdullah and Said (2015) conducted a study using questionnaire analysis to examine the moderating influence of strategic management accounting (SMA) practises on the connection between alliance management capability and enterprises' value creation in Malaysia. According to the study, organisations with a large percentage of independent directors and a leadership separation are more likely to adopt MAPs and thus perform better. Utilizing multiple regression analysis, this was discovered. On the other hand, businesses with a minority of independent directors and a leadership combination are least likely to embrace management accounting techniques, which have the least positive effects on performance.

Wang and Huynh (2014) conducted a study on the connection between corporate governance structure and management accounting in listed Vietnamese companies. They found that adopting management accounting practices in business organisations necessitates the implementation of sound CG structures. For their companies to operate as efficiently as possible, managers should create effective management accounting approaches that complement their corporate governance frameworks.

Alamri (2018) examined the moderating effect of CG in the relationship between "strategic management accounting" and business success using listed companies in Saudi Arabia between 2013 and 2016. Both

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secondary data and a questionnaire survey were used. The results reveal that CG moderates the association between strategic accounting and business performance. This implies that putting strategic management accounting into practice will improve corporate governance processes, improving business performance.

Since the SEC first established the CG principles in Ghana, only a few studies have been done to examine their effects on the performance of Ghanaian businesses (Agyemang & Castellini, 2015; Puni & Anlesinya, 2020). Despite the contradicting findings of this research, no study has looked at the moderating effect of CG in the connection between MAPs and success of manufacturing enterprises in Ghana. It should be underlined that companies who ignore the CG principles recommended by the SEC do so at their own risk. According to Anlesinya et al. (2019), a number of Ghana Stock Exchange (GSE) listed businesses underperformed and were subsequently delisted due to their subpar achievement and lax CG procedures.

Similarly, many banks, microfinance firms, and media organizations shut down between 2017 and 2019 in Ghana due to regulatory enforcement (Anlesinya et al., 2019). This implies that firms in Ghana who disregard the CG principles advocated by the SEC run the risk of problems with going concern, poor performance, and regulatory concerns. It should be noted that, though studies exist on the direct effect of CG on success of firms (Sarpong-Danquah et al., 2018; Naciti, 2019; Coleman & Wu, 2020; Puni & Anlesinya, 2020), the moderating implication of CG on the connection between MAPs and sustainability performance (SsP) of firms as recommended by the

contingency theory and the *resource based view* (RBV) theory has not been done.

The third hypothesis this study wants to test therefore reads as follows:

H₃: Corporate governance plays a significant moderating role in the relationship between MAPs and sustainability performance of manufacturing firms in Ghana.

Moderating role of organizational culture in the MAPs versus sustainability performance relationship

Organizational culture (OC), according to Kwarteng and Aveh (2018), is crucial to the development and survival of commercial enterprises. The culmination of shared values, traditions, mythology, and attitudes that members of an organisation come to accept is OC (Pettigrew, 1979; Denison, 1984). Numerous academics have shown that the cultural practices businesses use help them function well (Kwarteng & Aveh, 2018). This researcher has not sighted any empirical research on the moderating role of OC on the connection between MAPs and sustainability performance of firms, despite the fact that MAPs can affect the success of manufacturing firms (Amidu et al, 2011; Adu-Gyamfi & Chipwere, 2020).

A moderating variable influences the dependent variable in conjunction with the independent variable (Baron & Kenny, 1986). The contingency theory states that any firm's management should consider a few deciding factors that will support its MAPs to enhance firm performance. These elements include the business' organisational cultural practises.

Due to the challenging features of doing business, many businesses find it very difficult to survive in the global market (Bolboli & Reiche, 2014).

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The difficulties include meeting the demands of diverse stakeholders and increasing global pricing competition (Bolboli & Reiche, 2014). It is more challenging for managers in the business sector to establish a strong organisational culture, a critical component of boosting performance and productivity (Bolboli & Reiche, 2014). Every company needs to be profitable to survive, and expanding a business's reach is also necessary for growth (Erdorf et al., 2013). When developing a conducive culture among various enterprises, business managers in organisations have greater challenges than managers in a separate company (Erdorf et al., 2013).

Bolboli and Reiche (2014) claim that a lack of cultural integration among various business enterprises affects both the shareholders' value and the corporate group's financial performance. These scholars went further to claim that the main cause of more than 90% of business excellence programmes failing is the corporate group's company managers' poor cultural integration. The group's internal cultural differences greatly hinder performance at work (Weber & Tarba, 2012). An inadequate organisational culture is the main factor contributing to the business group's poor performance and productivity (Eaton & Kilby, 2015). Business managers need to comprehend the relevance of an effective organisational culture to increase productivity and performance within the corporate group (Viegas-Pires, 2013).

The major value of an organisation comes from its culture, which serves as a window through which the outside world may view the organisation and is a reflection of its beliefs. The culture of a people is reflected in their way of life. From the highest levels of management to the

lowest levels of employees in a business, culture is thus present in all aspects of human lifestyle. Norms, traditions, convictions, policies, and beliefs that are recognised and widely accepted as a way of life and are interpreted by the organization's members to define how work procedures are to be carried out within the organisation can also be referred to as organisational culture.

According to Adebayo et al. (2020) any organisation that wants to continue operating in the modern business climate must embrace a few integrated cultural behaviours. The prevailing values that are believed to affect environmental performance are related to organisational culture. The study examines organisational behaviours that could become embedded in a company's culture to ensure a more sustainable working environment. In order to improve a short-term sustainable environment, the paper suggests using six organisational cultural practises namely; core values, reporting system, task performance, clarity of roles, careful deliberations, and distinctive identity. These practices can be used to identify organisational values as well as individual preferences.

Four hundred and eighty workers from Fast-Moving Consumer Goods (FMCGs) organisations who actively participated in organisational work processes were interviewed for the study. According to the study, organisational culture greatly impacts how well the environment performs. Nevertheless, task performance has the smallest effect on environmental performance among organisational practices. In light of this, businesses should focus less on organisational cultural traits that have the highest impacts on the target construct of environmental performance and more on those that are more important for performance.

The organisation's culture, which is defined as the routines people form through time for a reason and purpose, incorporates a core value. The motivation for achieving specific goals and making changes at individual and organisational levels comes from the organization's core principles. For others to recognise and identify the organisation implies that it has an identity. The members of a group who adopt it as a way of life believe it to be true when the group projects and upholds a particular hierarchy of values. Later, new members are exposed to this to establish a culture within the company. Employee behaviour can be improved by applying the accepted and changed values, which operate as a foundation for instructional and motivating strategies geared toward the organization's learning, training, and development. According to Adebayo et al. (2020), core values are fundamental concepts that work as guiding principles for each member and must be upheld in order to have an effect on how the ecosystem functions

According to Bakhsh et al. (2018), adaptability, mission, and consistency favourably impact the environmental performance of manufacturing enterprises in Pakistan. However, participation does not affect how well the environment functions. This suggests that organisational culture (OC) has a significant impact on the performance of the environment. The study did not, however, look at the moderating impact of OC on the relationship between management accounting practices and environmental performance. Another problem I have is with the scale of measurement. The researchers used measurement scale with responses that ranged from strongly agree to strongly disagree. In order to make it possible to compute means in this study, responses will range from 'least agree' to 'very strongly agree'.

Adebayo et al. (2020) found a significant relationship between the environmental performance of four top fast-moving consumer goods firms in Nigeria and the following organisational cultural practices: core value, reporting system, task performance, clarity of roles, careful deliberations, and distinctive identity, though task performance has the least influence. Le, Nguyen, and Hoang (2020) discovered that the cultural orientation of a firm's managers and knowledge of management accounting techniques could considerably increase a firm's potential for innovation and overall performance in Vietnam.

The effects of organisational characteristics (organisational culture, centralization, and formalisation), as well as environmental characteristics, on management accounting, practises (cost determination and financial control, information for management planning and control, reduction of waste in business resources, and creation of value through effective resource use) were examined by Erserim (2012). Management accounting practices are influenced by business culture, although there is no correlation between these practices and perceived levels of competition or environmental unpredictability.

San Ong, Magsi, and Burgess (2019) studied how organisational culture affects a firm's environmental performance and how environmental management control systems function as a mediating element using manufacturing enterprises in Pakistan. The study discovered that incorporating environmental culture within an organization's culture and control systems leads to greater environmental performance.

Le, Nguyen, and Hoang (2020) examined the connections between organisational culture, management accounting data, innovation capacity, and business performance of SMEs in Vietnam. The study found a substantial positive relationship between management's cultural orientation and management accounting information and business performance improvements. Management accounting data also serves as a mediator in the interaction between management's value orientation toward innovation and corporate performance.

According to Ogungbade and Oyerogba (2020), organisational cultural characteristics (team-based, attention-to-details, and stability cultures) have a significant impact on the choice of management accounting practices (MAPs). As a result, Nigerian manufacturing companies need to understand their culture and how it could impact MAPs. This means that they should develop cultural practices that will let them choose contemporary MAPs and take advantage of the advantages of doing so.

When a company has a good reporting structure as part of its culture, it is simpler to organise and structure work correctly to fulfil organisational goals. According to Ogungbade and Oyerogba (2020), business organisations should use their reporting structure as their framework of culture to improve performance. The claim is that paying close attention to detail and exercising extreme precision when serving clients would assist staff understand how to service clients or consumers. Compliance with the regulations and procedures is normally not difficult for any organisation that values a high level of accuracy in its reporting system. This is due to the fact that performance can be enhanced through compliance and a structured reporting system.

This study will use the organisational cultural model developed by Daniel Denison in 1990. His model suggests that organisational culture (OC) has a relationship with performance parameters, including sales growth, return on equity, return on investments, customer satisfaction, innovation, staff happiness and quality of products. He identified four organisational cultural sub-components that interact to enhance an organization's effectiveness. They consist of flexibility, commitment, mission, and consistency. These four organisational culture components are required in order to establish and maintain an effective organisational culture within a particular organisation (Wambugu, 2014).

The Denison Model further divides the four parts into two groups. While involvement and consistency have an internal focus, adaptability and mission have an outward focus (concentration on events occurring outside the organisation) (attention is focused on happenings within the organization). Regarding adaptability, we have the capacity for change, the ability to put the needs of the customer first, and organisational learning. Mission comprises clear vision, strategic direction, goals and objectives. In terms of involvement, we have empowerment, team orientation, and capacity building. In terms of consistency, we have clear core values, dialogue, cooperation, and integration.

According to study conducted by Mousavi et al. (2015), participation is a crucial component of an effective organisational culture. Strong interpersonal ties throughout the organisation, open communication, and leadership prioritising employees make up involvement (Engelen et al., 2014).

Organizational and national cultures may have an impact on a company's performance (Bakhsh Magsi et al., 2018; Salvi et al., 2017). A

group of people's way of life is their culture. Culture can be viewed from a variety of angles. Management must determine whether the company is consistently communicating about the environment, whether they regularly engage in innovative practises related to the environment, and whether the culture of the society in which the company is located influences their social and environmental practises. Researchers must ascertain whether various cultural factors have an impact on the performance of their companies.

Shareholders' wealth is negatively affected when a firm fails to cultivate an effective organisational culture and integrate its many cultures (Eaton & Kilby, 2015). While the majority of business leaders (72%) recognise the importance of organisational culture to organisational performance, just 25% have identified an effective organisational culture for their company (Eaton & Kilby, 2015). The company's biggest problem was that a few of its managers lacked a robust organisational culture, which usually resulted in poor output and decreased efficiency across the board (Eaton & Kilby, 2015; Viegas-Pires, 2013). To be more precise, the problem was that several top managers in the company lacked strategies for fostering a culture of productivity and efficiency throughout the company (Eaton & Kilby, 2015).

According to Tedla (2016), inadequate cultural integration is one of the key reasons why many business organisations are not performing to expectation. According to the findings of the study, the businesses have a clearly defined objective that has aided in establishing a good morale between management and employees. Additionally, there is a leadership style that is employee-focused, which inspires workers.

It is worthy to note from the reviewed literature that many studies exist on the direct impact of OC on performance of firms (Denison, 1990; Bakhsh et al., 2018; Adebayo et al., 2020; Le et al., 2020). However, the moderating role of OC in the connection between MAPs and sustainability performance (SsP) as recommended by the *contingency theory* and the *resource based view* (RBV) theory has not been done. Therefore, the following is the fourth hypothesis that this study wants to investigate:

H₄: Organisational culture plays a significant moderating role in the relationship between MAPs and sustainability performance of manufacturing firms in Ghana.

Conceptual Framework

This study sought to examine the relationship between management accounting practices (MAPs) and sustainability performance (SsP) of manufacturing firms in Ghana as well as the moderating roles of information technology (IT) adoption, corporate governance (CG) and organisational culture (OC) in the connection between MAPs and SsP of manufacturing firms in Ghana. MAPs which is the independent variable has five sub dimensions namely; Budgeting System (BS), Costing System (CS), Decision Support System (DSS), Performance Management Syetem (PMS) and Strategic Management Accounting Syetem (SMAP). Sustainability Performance (SsP) which is the independent variable has three sub dimensions namely; Financial Performance (FP), Environmental Performance (EP) and Social Performance (SP). The study has three moderators namely; Information technology (IT) adoption, corporate governance and organization culture. IT

adoption has two sub dimensions namely; Information Technology knowledge (ITK) and Information Technology Integration (ITI).

This section captures the conceptual framework of the study, and it explains the author's idea of how the research is investigated as well as the relationship between the variables that have been tested. *Figure 1* below shows the conceptual framework of the study and is designed based on the institutional theory, contingency theory and resource-based view theory.
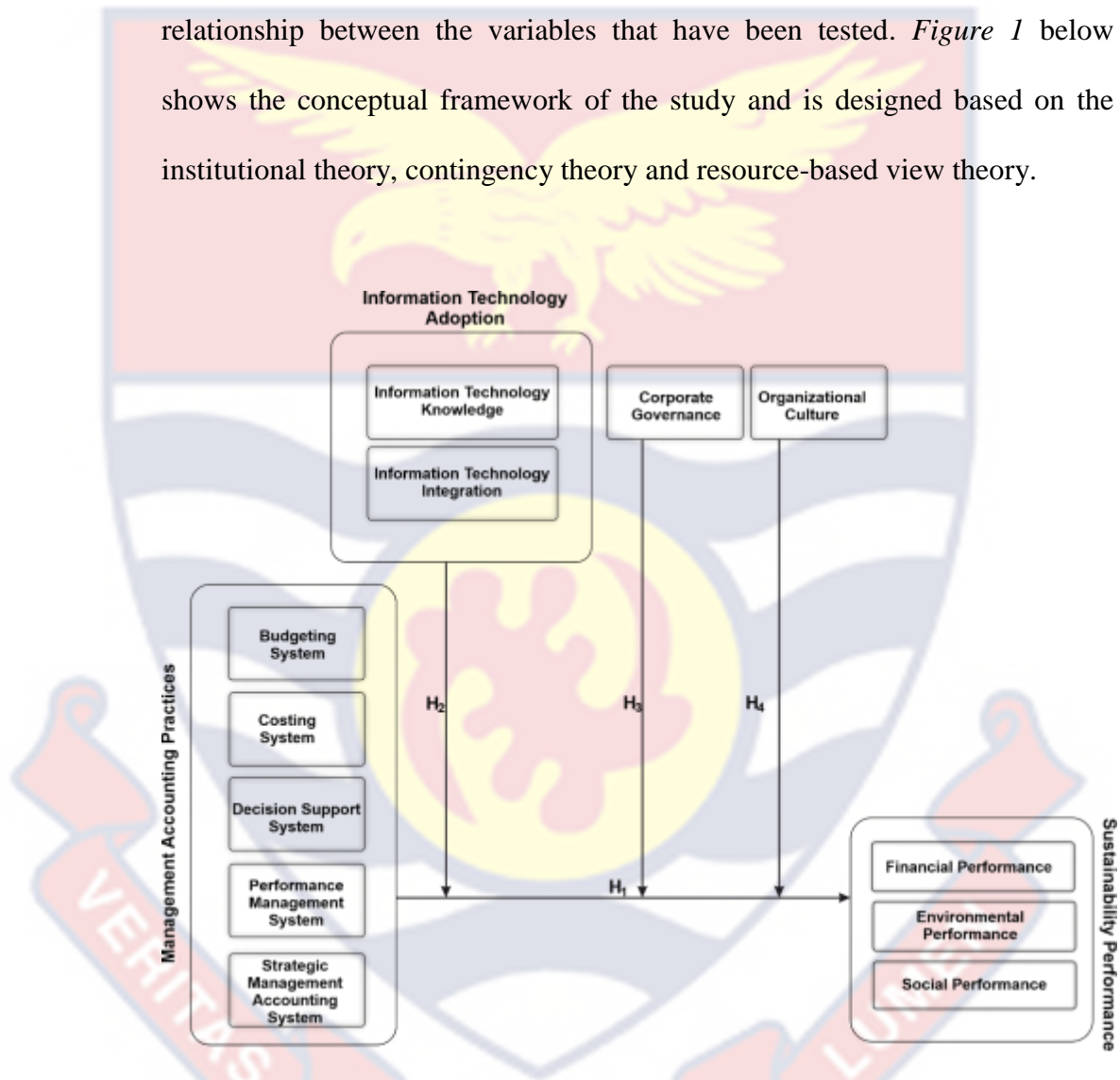
Figure 1: Conceptual framework of the study.
Source: Akuma (2022).

The research hypotheses are captured in this conceptual framework. Firstly, the possible strong association between management accounting practices (MAPs) and the sustainability performance (SsP) of manufacturing firms was explained using the *institutional theory* of organisations

(Hypothesis 1). According to this notion, there is a connection between an organization's sustainability performance and its level of management accounting techniques (Burns & Scapens, 2000). This suggests that institutions like manufacturing firms who want to improve upon their SsP must implement appropriate MAPs. Thus, the study sought to evaluate the direct connection between MAPs and the SsP of the target firms. The *contingency theory* and the *resource based view (RBV)* theory were then applied to test the moderating roles of information technology adoption (IT), corporate governance (CG), organisational culture (OC) in the relationship between MAPs and SsP of manufacturing enterprises in Ghana. The moderating role of Information technology knowledge (Hypothesis 2A) and information technology integration (Hypothesis 2B) were examined as potential moderators of information technology adoption (Hypothesis 2). According to this logic, the type of information technology adoption can improve or weaken the connection between MAPs and sustainability performance (SsP) of an organization. Furthermore, the moderating role of corporate governance (Hypothesis 3) in the connection between MAPs and SsP has been captured in the conceptual framework Thus, the type of corporate governance practices of a firm can either improve or weaken the link between MAPs and SsP of the firm. Finally, the moderating role of organisational culture (OC) in the connection between MAPs and SsP of the target firms (Hypothesis 4) has also been captured. The intuition here ias that OC can either improve or diminish the link between MAPs and SsP of firms.

The *contingency theory* suggests that no single MAP can help a firm improve its performance. The suitable MAP depends on the firm's peculiar

circumstances, including its IT practices, corporate governance practices and organizational culture. The best performance-enhancing MAP depends on specific factors coordinating with MAPs to make this objective a reality. The *contingency theory* specifically argues that the impact of accounting systems on the performance of firms will differ in different situations with changes in technology, organizational structure and the level of culture that is practised.

Chapter Summary

This chapter captures the theories that underpin this thesis as well as the conceptrual review in terms of the main variables and ideas about the study. The impirical review in terms of related studies on management accounting procedures and performance of firms were also assessed. The chapter ends with the conceptual framework that contains the different hypotheses that are tested in the thesis.
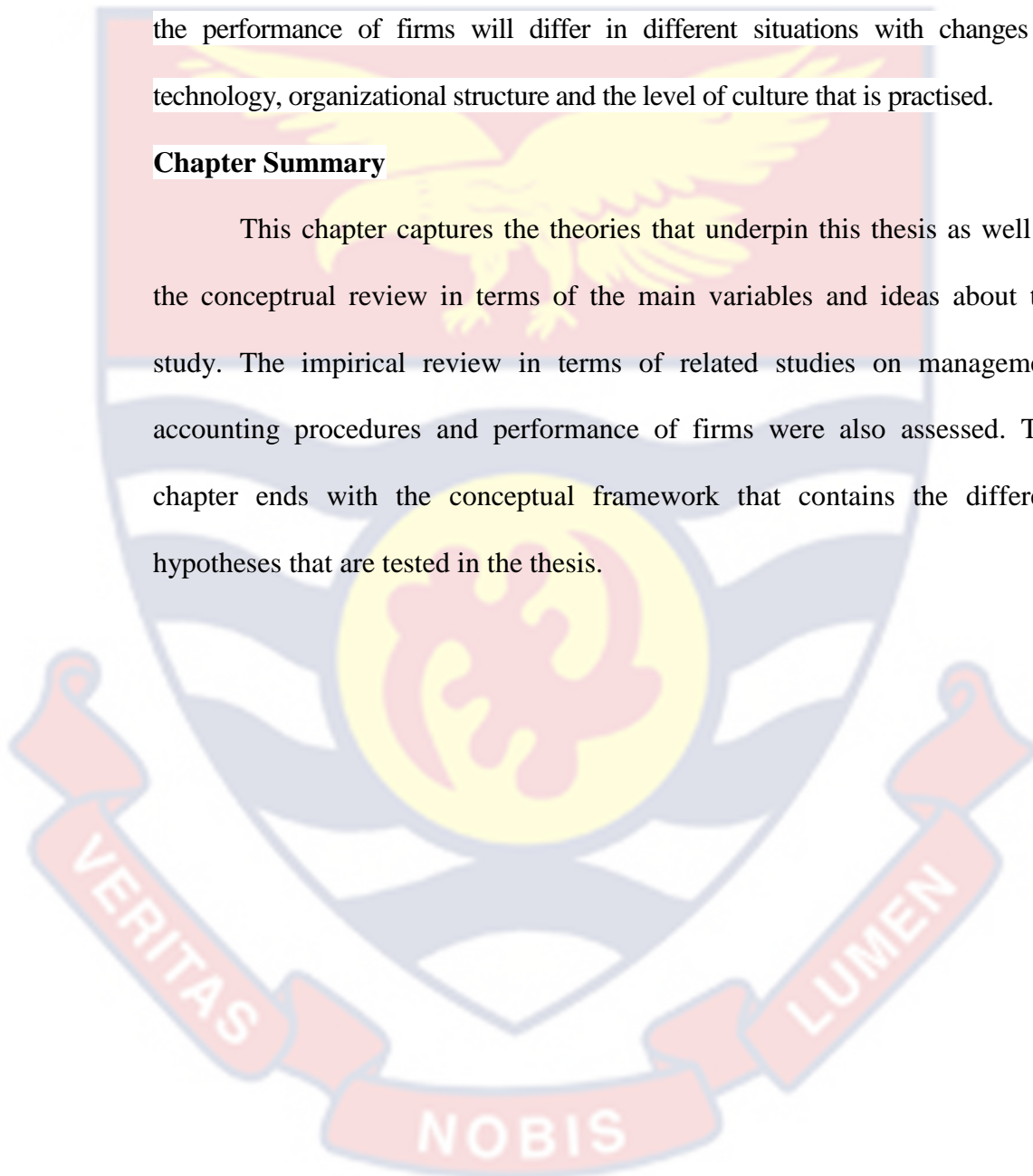
CHAPTER THREE

RESEARCH METHODS

Introduction

This study looked at the link between management accounting practices (MAPs) and the sustainability performance of manufacturing firms in Ghana. This study also sought to assess the moderating roles of information technology knowledge, information technology integration, corporate governance, and organisational culture in the connection between management accounting practices and the sustainability performance of manufacturing firms in Ghana. This chapter describes the assumptions and methods with which the researcher addressed the research objectives. This chapter presents the research philosophy, emphasising the positivist philosophical paradigm, research design, unit of analysis, study population and target population. Other areas captured here are the sample size and its estimation, sampling technique, instruments for data collection, data collection procedures, data processing, unit of analysis, common method variance, reliability and validation procedures.

Research Philosophy

The term 'research philosophy' relates to ideas on the nature, origins, and progression of knowledge in a particular field of study. It outlines the researcher's presumptions and viewpoints about the world or reality and defines what knowledge in the topic of study constitutes (Saunders et al., 2009; Hair et al., 2019). The approach, design, strategy, and other pertinent methodologies suitable for meeting the study objectives are chosen in

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accordance with the research philosophy. As a result, the choice of research philosophy must be based on the questions the researcher is trying to address.

In business studies, there are essentially two philosophies in use. These are interpretivism and positivism (Saunders et al., 2009; Saunders et al., 2015). According to positivism, there is only one perspective on reality; as a result, the reality is objective, free from social values and interests and the researcher's own biases. It tries to explain and anticipate occurrences and believes science is the only method to truly advance knowledge. In order to examine phenomena, it consequently uses a deductive approach as well as quantitative design and methodology.

On the contrary, interpretivism holds that reality is socially constructed and has multiple perspectives. This implies that the researcher cannot be separated from the process of knowledge development in interpretivism, so the knowledge that is developed has some of the researcher's own biases ingrained in it. It seeks to offer a thorough comprehension of occurrences and the growth of theories. As a result, it uses qualitative design and methods along with an inductive approach to research phenomena.

This study aimed at explaining the relationship between management accounting practices (MAPs) and the sustainability performance of manufacturing firms in Ghana. The study also looked at the moderating roles of corporate governance, information technology usage and organizational culture in the link between MAPs and sustainability performance of the firms. The study aimed at identifying the MAPs that influence the sustainability performance of manufacturing firms in Ghana. This was done by testing hypotheses developed based on relevant theories and findings from extant

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studies. The researcher also assumeed an independent and objective position and developed knowledge using quantitative methods. Given these premises, the choice of the positivist philosophy is justified as most appropriate.

Research Design

The broad approach taken by the researcher to address the research objectives is referred to as research design. It determines the techniques used for data collection and analysis. The decision on a design is influenced by the researcher's ideology, which depends on the goals of the study. Invoking the positivist school of thought, this study adopted the quantitative approach. This is because the researcher believes that, objective data can be obtained on the topic from the manufacturing firms in Ghana. The study employed an explanatory research design within a deductive approach. This design sought to establish a causal relationship between the variables (O'Sullivan, 2016). The deductive method involves analysing a theory by formulating specific hypotheses and acquiring information to confirm or refute them (Bryman, 2016). This adheres to the positivist paradigm within the scope of classical and neoclassical economics.

This study used a cross-sectional survey research methodology and a quantitative research approach to examine how MAPs practices affect the sustainability performance of manufacturing enterprises in Ghana. The researcher was able create accurate and dependable measurement scales for the variables thanks to the quantitative approach to the primary data gathering and analysis.

Deductive reasoning was used in this design to test the hypotheses based on known facts and accepted theories. It emphasised the validity and

dependability of measures while providing the researcher with impartial data collection techniques. Additionally, it permitted the application of statistical methods for data analysis and the creation of generalizable associations (Bryman, 2016). The quantitative research design was most suitable for fulfilling the goals of this study because of these qualities. The respondents' replies were collected specifically using a cross-sectional survey design at one particular moment.

Unit of Analysis

This refers to the area of specialisation for the researcher. The object of study for a researcher is the thing being studied. As a result, the researcher gathers information on this subject to analyse the phenomenon under investigation. For this study, accountants and top management of manufacturing companies in Ghana were asked about the several MAPs they use and how they affect their sustainability performance. The study used registered Ghanaian manufacturing companies, specifically those registered with the Association of Ghana Industries (AGI). AGI had around 2,500 registered businesses as of June 2021, 634 of which were manufacturing businesses located throughout Ghana. About 15% are huge corporations, and the remaining 85% are small and medium-sized businesses. Both businesses that engage in manufacturing and businesses that offer services to businesses that engage in manufacturing are members of the AGI.

Target Population

The population is the theoretically specified aggregation of study elements (Rubin & Babbie, 2001). Creswell and Creswell (2017) advocate that members of a population should possess material facts relevant to the

study and the researcher. As such, the target population for this study comprises all the manufacturing firms [634] that are registered with the Association of Ghana Industries (AGI) at the time of gathering the data (AGI, 2021).

AGI is chosen as the target population because of its visibility in Ghana. It is regularly consulted by state agencies to discuss issues that relate to the manufacturing sector. For instance, in October 2022, the president of the republic of Ghana and his finance minister met with the leadership of AGI to brainstorm on how the manufacturing sector can be supported to produce certain goods locally in order to strengthen the value of the cedi against the convertible currencies. Secondly, AGI is the only body representing manufacturing firms in Ghana that has a representation on the board of the Public Utilities Regulatory Commission (PURC). Regular workshops and trade fairs are organised by AGI for members while member firms regularly record some level of profits year on year (AGI, 2021). Besides, it is a well-established association made up of small, medium and large firms scattered across all the regions in Ghana. These include Kinapharma Limited, Latex Foam Rubber Products Limited, M & G Pharmaceuticals Limited, Guinness Ghana Breweries Limited, Graphic Communications Group Limited, Accra Breweries, Aluworks Limited, Electricity Company of Ghana, Fan Milk Limited, Gihoc Distilleries Company Limited, Ghana Rubber Estates Limited, Ernest Chemist Limited and Kasapreko Company Limited. Data were collected from primary sources through questionnaire administration. AGI was chosen because the association has readily available up-to-date data on all

the manufacturing firms that are registered with it. This made it easy to obtain

a list of members to be contacted for the research.

Determination of minimum sample size

Krejcie and Morgan (1970) developed a table for determining the

minimum sample size applicable for any defined population. The table is

based on the formula below:

$$S = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$

Where:

S = the required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired

confidence level (3.841)

N = the population size

P = the population proportion assumed to be 0.5 since this would provide a

maximum sample size

d = the degree of accuracy expressed as a proportion (0.05)

Per the sample size determination table developed by Krejcie and

Morgan (1970), with a target population of 634 registered manufacturing

firms, the minimum returned sample size required for this survey at 95%

confidence level and margin of error of 0.05 is 242. It must however be noted

that, the table developed by Krejcie and Morgan (1970) assumes a response

rate of 100%. This study therefore adjusted the 242 minimum sample by 10%

to take care of firms who may not respond to the questionnaire. Thus, the 242

minimum required sample was grossed up to 269 [100/90 multipled by 242].

269 sets of questionnaires were therefore distributed and 266 responded. This

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implies that three firms failed to respond and this amounts to 98.8% response rate.

Sampling technique

The stratified sampling technique was adopted to segregate the 634 taget population into eleven groups namely: furniture firms [59], food and beverage firms [118], drugs and pharmaceutical firms [55], chemical firms [28], building and construction firms [103], clothing and textiles firms [18], toiletries and cosmetics firms [76], electrical and electronic firms [97], energy firms [14], printing and packaging firms [52] and others [14] who manufacture cooking utensils, beads and machetes. **Table 2** below presents details of the stratified groups.

Table 2: Stratified Target Population

Manufacturing Industry	Number of firms	Percentage
Furniture producing firms	59	9.3%
Food and beverage-producing firms	118	18.7%
Drugs and pharmaceutical-producing firms	55	8.7%
Chemicals producing firms	28	4.4%
Building and construction firms	103	16.2%
Clothing and textiles-producing firms	18	2.8%
Toiletries and cosmetics-producing firms	76	12%
Electrical and electronic firms	97	15.3%
Energy producing firms	14	2.2%
Printing and packaging firms	52	8.2%
Other manufacturing firms	14	2.2%
TOTAL	634	100%

Source: Field Survey, Akuma (2022).

Respondents from each sub-group were then selected based on simple random sampling. Specifically, the researcher obtained the list of registered manufacturing firms from the Association of Ghana Industries (AGI) and put

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them into eleven (11) strata based on the products they produce. Based on Krejcie and Morgan (1970), the researcher was able to determine the minimum number of respondents that are required from each sub-group. Then using a simple random sampling technique, the researcher picked the firms at random from each sub-group to give each manufacturing firm an equal chance of being selected. Names of the firms in each stratum are written on paper and shuffled. Then a field assistant is called upon to pick after every shuffle until the required sample is achieved. With support from the five (5) trained field assistants, the sampled firms were contacted at their offices to help fill out the questionnaire. The questions were initially administered in google forms and later in hard copies, to fast-track the process.

After two months of data gathering, 266 manufacturing firms out of 269 completed the questionnaires comprising: 26 from furniture manufacturing firms, 48 from food and beverage firms, 22 from drugs and pharmaceutical firms, 14 from chemical producing firms, 40 from building and construction firms, 9 from clothing and textiles firms, 30 from toiletries and cosmetics firms, 38 from electrical and electronic firms, 6 from energy firms, 20 from printing and packaging firms and 13 other firms. The 13 other firms comprise 7 cooking utensils-producing firms, 5 beads and jewels manufacturing firms and 1 cutlass-producing firm. Table 3 below presents the number of respondents used for the statistical analysis.

Table 3: Sample size

Manufacturing Industry	Number of respondents	Percentage
Furniture producing firms	26	9.8%
Food and beverage-producing firms	48	18%
Drugs and pharmaceutical-producing firms	22	8.3%
Chemicals producing firms	14	5.3%
Building and construction firms	40	15%
Clothing and textiles-producing firms	9	3.4%
Toiletries and cosmetics-producing firms	30	11.3%
Electrical and electronic firms	38	14.3%
Energy producing firms	6	2.3%
Printing and packaging firms	20	7.5%
Other manufacturing firms	13	4.8%
TOTAL	266	100%

Source: Field Survey, Akuma (2022).

Type of study

This is a firm-level study as opposed to an individual-level study. The study is looking at the MAPs of manufacturing firms in Ghana. Since this is a strategic issue, one senior-level manager of each registered manufacturing firm is required to serve as a respondent.

Data collection instrument

This research aimed at investigating the effect of Management Accounting Practices (MAPs) on the sustainability performance (SsP) of manufacturing firms in Ghana as well as testing the moderating role of information technology adoption (IT), corporate governance (CG) and organizational culture (OC) in the connection between MAPs and SsP. To conduct this thesis, the researcher used a validated structured questionnaire (Appendix A) as the instrument to gather the data. This means that the responses were obtained through primary sources. The decision to use a

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questionnaire is justified because, in the view of Muthukunar et al. (2022), it ensures greater uniformity, consistency and objectivity in the data collected. The study measured the variables by adapting existing scales that have been validated and used in previous studies.

The questionnaire is organised into six sections; section A to F. Section A obtains demographic data about respondents including their ages and gender. Section B comprises statements used to obtain data on MAPs of the sampled manufacturing firms. MAPs has five sub dimensions namely: Costing System (7 items), Budgeting System (13 items), Performance Management System (8 items), Decision Support System (5 items) and Strategic Management Accounting Practices (5 items). Section C obtains data on Sustainability Performance (SsP) of manufacturing firms in Ghana. This has three sub divisions namely: Financial Performance (7 items), Social Performance (15 items) and Environmental Performance (14 items). Section D has 10 items that were used to obtain data on organisational cultural practices of the manufacturing firms. Section E has two sub divisions designed to gather data on Information Technology Knowledge (6 items) and Information Technology Integration (8 items). Finally, Section F has 10 statememnts that were used to gather data on corporate governance practices of the firms. A five-point Likert scale was used to obtain the level of agreement from respondents (1 = Not at all; 2 = Least agree; 3 = Agree; 4 = Strongly agree and 5 = Very strongly agree). Five trained field assistants supported the researcher to administer and retrieve the sets of questionnaire in google forms as well as using hard copies.

The questionnaire instrument for MAPs is adapted from an instrument developed by Burritt et al. (2010) with a reported Cronbach alpha (α) of 0.82 and composite reliability of 0.76 respectively. This instrument has been successfully used in several studies, including Latan et al. (2018) and Gunarathne et al. (2021). For instance, Gunarathne et al. (2021) used this this same instrument and reported a Cronbach alpha (α) of 0.919, composite reliability of 0.934 and average variance extracted of (AVE) of 0.641.

Cronbach alpha and composite reliability are internal consistency measures that are used to test whether the various items measuring the different constructs deliver consistent scores. According to Hair et al. (2021), a cronbach's alpha and composite reliability threshold of 0.7 is acceptable, hence these original values provide evidence that internal consistency was achieved. Average variance extracted (AVE) is a convergent validity measure used to test whether the new scale correlates with existing variables and alternative measures of the same construct. AVE values should be greater than 0.5 to prove that the criteria for convergent validity has been met (Hair et al., 2021).

The sustainability performance (SsP) of manufacturing firms has been looked at from three (3) dimensions: financial performance, environmental performance and social performance. The financial and social performance scale has been adapted from an instrument developed by Kohli and Jaworski (1990) and published in the Journal of Marketing with a Cronbach alpha (α) and composite reliability of 0.85 and 0.79 respectively. Lee et al. (2012) and Afifa and Saleh (2021) used this scale successfully to publish papers in Elsevier. For example, Afifa and Saleh (2021) used this instrument and

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published the findings in Emerald with a reported Cronbach's alpha (α) of 0.916 on Financial Performance (FP), Cronbach's alpha (α) of 0.888 on non-financial performance.

Based on Hair et al. (2021) criteria of 0.7, these original values on performance of firms provide evidence that internal consistency was achieved. Amoako et al. (2020) also used this same scale to publish a paper in Emerald with a reported composite reliability (CR) of 0.913 and an average variance extracted (AVE) of 0.679. It should be noted that AVE is a convergent validity measure used to test whether the new scale correlates with existing variables and alternative measures of the same construct. AVE values should be greater than 0.5 to prove that the criteria for convergent validity has been met (Hair et al., 2021). This shows that the criteria for convergent validity has been met. The instrument for environmental performance (EP) is adapted from an instrument initially developed by Sharma and Vredenburg (1998) with a reported Cronbach's alpha (α) of 0.80 and composite reliability of 0.77. This scale was later used by Henri and Journeault (2010) with a reported Cronbach's alpha (α) coefficient of 0.78. Again, the criteria for internal consistency was met based on the 0.7 criteria proposed by Hair et al. (2021).

Information Technology (IT) adoption has been examined with two sub variables: IT Knowledge (ITK) and IT integration (ITI). The instrument on IT knowledge is adapted from Tippins and Sohi (2003) with a reported Cronbach's alpha (α) coefficient and composite reliability of 0.78 and and 0.74 respectively. This instrument was used successfully by Kmieciak et et al. (2012) with reported cronbach's alpha and composite reliability of 0.73 and and 0.75 respectively. IT integration with business strategy is adapted from

Bharadwaj et al. (1999) with cronbach's alpha and composite reliability of 0.71 and and 0.76 respectively. Tippins and Sohi (2003), Kmieciak et al. (2012) and Amoaku et al. (2020) successfully used this scale in their studies. For instance, Amoako et al. (2020) used this same scale to publish a paper in Emerald with a reported composite reliability (CR) of 0.817 and an average variance extracted (AVE) of 0.531. These figures show that internal consistency and convergent validity criteria as recommended by Hair et al. (2021) have been achieved.

The measurement scale of corporate governance (CG) practices was adapted from Symon and Cassell (2012) with a cronbach's alpha of 0.83 and composite reliability of 0.75. This instrument looks at CG from different dimensions. Aspects of this scale includes: well functioning audit committees, availability of females on the board, proportion of independent directors and the duality or the separation of the positions of chairperson and CEO. This instrument was successfully used by Vachon (2012) with a cronbach's alpha of more than 0.7. This satisfies the criteria for internal consistency as suggested by Hair et al. (2021).

Organizational culture (OC) has also been used as a moderating variable in this study. It is measured with an instrument with four (4) traits initially developed by Denison and Mishra (1995) with a cronbach's alpha of 0.74 and composite reliability of 0.76. This was further used in a study by Fey and Denison (2003) as well as Bakhsh et al. (2018) with a cronbach's alpha of more than 0.7. The adapted OC scale as suggested by Denison and Mishra (1995) comprises flexibility (involvement and adaptability) and stability (consistency and mission), which is the premise for the model based on the

Denison OC Survey. Bakhsh et al. (2018) used these questions and reported a composite reliability of more than 0.7 for each construct. Refer to Appendix A for the detailed questionnaire on all the variables used for the analysis. Table 4 below shows summarized information about the variables used for the study.

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Table 4: Measurement of research variables

Variable	Source	Number of items	Scale type	Likert scale point	Scale format
MAPs	Burritt et al. (2010)	CS: 7, BS: 13, DSS: 5, PMS: 8, SMAP: 5	Continuous	5-point	not at all (1), Least agree (2), Agree (3), Strongly agree (4), Very strongly agree (5)
FP	Kohli and Jaworski (1990)	7	Continuous	5-point	From not at all (1) to very strongly agree (5)
SP	Kohli and Jaworski (1990)	15	Continuous	5-point	From not at all (1) to very strongly agree (5)
EP	Sharma and Vredenburg (1998)	14	Continuous	5-point	From not at all (1) to very strongly agree (5)
ITK	Tippins and Sohi (2003)	6	Continuous	5-point	From not at all (1) to very strongly agree (5)
ITI	Bharadwai et al. (1995)	8	Continuous	5-point	From not at all (1) to very strongly agree (5)
CG	Cassell (2012)	10	Continuous	5-point	From not at all (1) to very strongly agree (5)
OC	Denison and Mishra (1995)	10	Continuous	5-point	From not at all (1) to very strongly agree (5)

Source: Akuma (2022)

Pre-estimation diagnostic of the estimation technique

This section explains the *pre-estimation diagnostic* of the *estimation technique* in this study. Though already existing validated questionnaire was adapted from literature and used for the study, the researcher passed the questionnaire through reliability and validity procedures in order to satisfy himself that the instrument is valid and reliable; and for the matter can be used to gather the data. The main analyss conducted in this section has to do with pre-testing of the instrument used. Under pre-testing, internal consistency reliability, convergent validity and discriminant validity of the research instrument were analysed.

Pre-Testing

The researcher of this thesis engaged in pre-testing before going ahead to deal with the main analysis. According to Geisen and Murphy (2020) pre-testing in survey research means administering the designed questionannaire to few respondents from the target population to ascertain the suitability of the questionnaire and data obtained. Pre-testing helps to streamline the survey questions as well as ensure that the questions are easily understood by those who will be given the opportunity to respond to them. (Colbert et al., 2019). Doing pre-testing also helps to do away with questions that are likely to harm the fortunes of the responding firms as well as questions that are culturally biased (Geisen & Murphy, 2020).

According to Perneger et al. (2015) a minimum required sample of 32 is sufficient and appropriate for conducting pre-testing of survey data because it has the probability of detecting and resolving at least 80% challenges that are associated with the designed questionnaire. It should be noted that the

questionnaires are based on already existing scales. During this pre-testing, stratified and simple random sampling techniques were used to select and distribute the designed sets of questionnaire to managers of fifty manuafacturing firms within the target population. The population comprises 634 manajufacturing firms that are registered with the Association of Ghana industries (AGI). This was done on pro-rata basis based on the type of products the manufacturing firms produce. It must be noted that each manufacturing firm filled one set of questionnaire. Fifteen (15) questionnaires were retrieved within one week. It took the researcher with his trained field assistants three extra weeks of follow ups to retrieve additional twenty one (21) making a total of 36, representing a response rate of 72%. Table 5 below shows the sample retrieved and used for the pre-testing.

Table 5: Sample size for pre-testing

Manufacturing Industry	Number of respondents	Percentage
Furniture producing firms	4	9.8%
Food and beverage-producing firms	6	18%
Drugs and pharmaceutical-producing firms	3	8.3%
Chemicals producing firms	2	5.3%
Building and construction firms	5	15%
Clothing and textiles-producing firms	1	3.4%
Toiletries and cosmetics-producing firms	4	11.3%
Electrical and electronic firms	5	14.3%
Energy producing firms	1	2.3%
Printing and packaging firms	3	7.5%
Other manufacturing firms	2	4.8%
TOTAL	36	100%

Source: Field Survey, Akuma (2022).

Our follow ups revealed that some of the managers of the manufacturing firms delayed in filling the questionnaires because they found

some of the statements challenging to understand due to the wording. Some of them explained that they had to use accounting text books and internet searches to find the meaning of some of the statements before responding to them. Due to this challenge, some of the expressions were rephrased before doing the actual distribution. For instance, *'My firm uses variable costing'* was rephrased to *'My firm uses variable costing to monitor the costs incurred in production (this means cost of products produced include cost of direct raw materials, direct labour and variable expenses)'.* Also, *'My firm engages in strategic management accounting practices'* was rephrased to *'My firm takes into account strategic factors when fixing prices for its products (for example: competitor price reaction, elasticity, market growth, economies of scale and experience)'.*

Original internal reliability of the instrument

Table 6 below captures original reliability and validity figures obtained from literature before pre-testing. It should be noted that the original reliability and validity precedures analysed MAPs in composite terms but MAPs under the pre-testing was analysed under the five sub dimensions namely: costing system (CS), budgeting system (BS), decision support system (DSS), performance management system (PMS) and strategic management accounting practices (SMAP).

Cronbach alpha and composite reliability are internal consistency measures that are used to test whether the various items measuring the different constructs deliver consistent scores. According to Hair et al. (2021), a cronbach's alpha and composite reliability threshold of 0.7 is acceptable,

hence these original values provide evidence that internal consistency reliability was achieved from literature before pre-testing.

Table 6: Original Internal consitency reliability

Items	Source	Cronbach's Alpha	Composite reliability
MAPs	Burritt et al. (2010)	0.82	0.76
FP	Kohli and Jaworski (1990)	0.85	0.85
SP	Kohli and Jaworski (1990)	0.79	0.79
EP	Sharma and Vredenburg (1998)	0.8	0.77
ITK	Tippins and Sohi (2003)	0.78	0.74
ITI	Bharadwaj et al. (1999)	0.71	0.76
CG	Symon and Cassell (2012)	0.83	0.75
OC	Denison and Mishra (1995)	0.74	0.76

Internal consistency reliability during pre-testing

Cronbach's alpha and composite validity of the variables were analysed during pre-testing with Smart PLS software version 3 to check the internal consistency reliability of the instrument. This looks at the consistency of the results delivered to find out if the various items measuring the different

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constructs deliver consistent scores. It is a way of finding out if the instrument measures what it actually wants to measure. For instance, when the same question is paraphrased differently, the respondent should provide the same answer. The cronbach's alpha and composite reliability indicate the reliability of a set of indicators. According to Hair et al. (2021), a cronbach's alpha and composite reliability threshold of 0.7 is acceptable. From Table 7 below, the internal consistency reliability of the instrument is adequate.

It should be noted that, during the pre-testing, MAPs was analysed under five dimensions namely: Costing System (CS), Budgeting System (BS), Decision Support System (DSS), Performance Management Syetem (PMS) amd Strategic Management Accounting Practices (SMAP). Thus, reliability and validity figures were reported for each of the dimensions.

Table 7: Internal consistency reliability during pre-testing

Items	Cronbach's Alpha	Composite reliability
BS	0.869	0.878
CS	0.797	0.895
DSS	0.842	0.843
EP	0.840	0.859
FP	0.938	0.942
PMS	0.786	0.784
SMAP	0.882	0.906
SP	0.922	0.931

Source: Akuma (2022)

Convergent validity during pre-testing

How well the new scale correlates with existing variables and alternative measures of the same construct is what we mean when we talk about its convergent validity. The concept should have a positive correlation with similar variables and a negative correlation with unrelated ones (Gignac,

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2021). In order to assess the convergent validity of the data, Smart PLS software version 3 was used to examine the average variance extracted (AVE). AVE should be greater than 0.5 to establish adequate convergent validity (Hair et al., 2021; Sarstedt et al., 2020). Therefore, from Table 8 below, the criteria for convergent validity of the research instrument during pre-testing has been fulfilled.

Table 8: Average Variance Extracted (AVE) during pre-testing

Items	AVE
BS	0.604
CS	0.704
DSS	0.762
EP	0.757
FP	0.844
PMS	0.703
SMAP	0.741
SP	0.810

Source: Akuma (2022)

Discriminant validity during pre-testing

Discriminant validity tests are conducted to ensure that constructs that should have no relationship do, in fact, not have any relationship. The Heterotrait-Monotrait (HTMT) ratio was analysed using Smart PLS software version 3 to determine the data's discriminant validity. According to Henseler et al. (2015) HTMT is the best method used to test the discriminant validity of a research instrument. According to these scholars, the HTMT must be less than 0.90 at a confidence level of 95% to suggest adequate discriminant validity. As can be observed from Table 9 below, discriminant validity per HTMT is adequate since all the values are less than 0.90.

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Table 9: Heterotrait-Monotrait (HTMT) Ratio during pre-testing

	BS	CS	DSS	EP	FP	PMS	SMAP	SP
BS								
CS	0.461							
DSS	0.726	0.513						
EP	0.590	0.688	0.709					
FP	0.787	0.563	0.851	0.735				
PMS	0.701	0.395	0.819	0.522	0.672			
SMAP	0.800	0.606	0.836	0.604	0.785	0.735		
SP	0.436	0.640	0.614	0.810	0.581	0.599	0.445	

Source: Akuma (2022)

Recruitment and training of field assistants

Due to the large number of manufacturing firms that are supposed to be contacted to complete the survey questions, the limited time available to collect data as well as the nature of the research, this researcher recruited and trained five (5) field assistants to help in data collection. Training them is essential in order for them to know how to conduct themselves. This goes a long way to assure the participating firms of their confidentiality and anonymity. Since this study is in a specialised area of accounting, the 5 field assistants were required to have a minimum qualification of the first degree in accounting. These assistants were recruited from past students who have graduated in accounting from Ghana Communication Technology University. Their engagement covered a period of three (3) months (May, June and July 2022). Each assistant was given an allowance of two hundred cedis (GH¢200.00) to take care of their transportation cost. Terms of their engagement were contained in an appointment letter given to each of them. Since all of them are doing their national service during this period, the weekends in May 2022 were used to train them, while they were required to

use June and July to help visit the offices of the manufacturing firms to administer the questionnaire. Both face-to-face and virtual means were used to do the training. The training focused on the following four key areas: *understanding the purpose and constructs of the study, knowing the geographical areas for the study, research ethics and data management.* These are explained below:

1. Understanding the constructs in the study

The purpose of the study was explained to them. That is to assess the role management accounting practices (MAPs) play in the performance of manufacturing firms in Ghana. The mediating roles of organizational culture (OC), corporate governance (CG) and information technology (IT) were also explained. The following seven (7) constructs were explained to them: MAPs, OC, CG, IT, financial performance, environmental performance and social performance.

2. Knowing the geographical areas for the study

The list of the registered manufacturing firms obtained from the Association of Ghana Industries (AGI) was shared among the five (5) field assistants. The researcher helped them to identify the location of these offices.

3. Research ethics

The field assistants were trained on the issues of *confidentiality* and *anonymity*. They were trained to keep any information about the manufacturing firms in perfect secrecy. This is because any disclosure of such privileged information about them to any third party can affect their revenue and profit levels, not to forget the damage it will cause to their reputation. They were also told not to mention the names of the manufacturing firms used

for the study to any third party. This is because this is a general study of manufacturing firms, and findings will be presented in general terms without mentioning the names of individual manufacturing firms.

4. Data management

The field assistants were told that the data collected would be stored and used by only the researcher and leadership of the Association of Ghana Industries (AGI). Names of individual firms were not to be associated with the data. The data will be stored and archived on a well-secured external drive for five (5) years. This standard is recommended by the American Psychological Association for survey data to be stored for 5 years, after which it can be disposed of. It is stated clearly that the data gathered will be made available to the leadership of AGI and the manufacturing firms as and when it is demanded.

The assistants were told that, per the agreement with the manufacturing firms, they would have to delete the google forms of the questionnaire on their phones at the end of their engagement period, which comes at the end of July 2022. This is meant to prevent third parties from having access to it.

Data collection procedures

An official letter was written to the Association of Ghana Industries (AGI) to seek permission from their outfit to use the manufacturing firms that are registered with them for the study as well as to obtain the list of their registered manufacturing firms. Permission was sought from the authority of the firms to grant permission for the data to be collected. The questionnaires in hard and google forms were then given to the leadership of the firms by the

researcher and his trained field assistants to complete. The researcher later received the responses in his mail as well as in hard copies An official letter from the University of Cape Coast Business School (Department of Accounting) has already been submitted to the AGI office on 5th October 2021 to seek permission for the administration of the questionnaire. Thankfully, the firms that consented to participate in the survey were given the questionnaire to fill in both hard and Google forms. By the end of the first week in July 2022, the researcher retrieved 266 filled questionnaires. Google forms of the questionnaire and hard copies complimented each other to fast-track the retrieval of the filled responses.

Data analysis

The study's hypotheses were analysed and tested using Smart Partial Least Square – Structural Equation Modelling (SEM) version 3. This software was used because it is suitable for multiple hypotheses testing, and it is an advanced software that can test a theory and the goodness of fit measure. It is also used to analyse non-normal data. Besides, it can easily be used to assess the associations that exist among multiple latent variables concurrently (Baah et al. 2021; Hair et al. 2017; Khan et al. 2019). The SEM analyses were employed to allow the researcher to engage in many types of analysis. For example, it helped perform all the required reliability and validation procedures. At the same time, the researcher was able to look at the link between the latent variables. It also made the testing of all the hypotheses much easier.

Post-estimation diagnostic of the estimation technique

This section explains the *post-estimation diagnostic* of the *estimation technique* in this study. The actual responses obtained from the 266 sampled manufacturing firms out of the 634 target population were used for this analysis. Before the hupotheses were tested, the actual data used for the analysis were taken through reliability and validity procedures. This includes internal consistency, convergent reliability and discriminant validity.

Internal consistency reliability

Cronbach's alpha and composite validity of the variables were analysed with Smart PLS software version 3 to check the survey's internal consistency reliability. This looks at the consistency of the results delivered in the survey, ensuring that the various items measuring the different constructs deliver consistent scores. It is a way of finding out if the survey measures what it actually wants to measure. For instance, when the same question is paraphrased differently, the respondent should provide the same answer. The cronbach's alpha and composite reliability indicate the reliability of a set of indicators. According to Hair et al. (2021), a cronbach's alpha and composite reliability threshold of 0.7 is acceptable. However, this can be higher at the later phases of research (Hair et al., 2021). From Table 10 below, the internal consistency reliability is adequate.

Table 10: Internal consitency reliability

Items	rho_A	Cronbach's Alpha	Composite reliability
BS	0.929	0.922	0.935
CS	0.822	0.819	0.892
DSS	0.727	0.725	0.879
EP	0.895	0.893	0.918
FP	0.931	0.930	0.947
PMS	0.845	0.842	0.894
SMAP	1.000	1.000	1.000
SP	0.920	0.916	0.929

Source: Akuma (2022)

Convergent Validity

How well the new scale correlates with existing variables and alternative measures of the same construct is what we mean when we talk about its convergent validity. The concept should have a positive correlation with similar variables and a negative correlation with unrelated ones (Gignac, 2021). In order to assess the convergent validity of the data, Smart PLS software version 3 was used to examine the "outer loadings" and the "average variance extracted (AVE)". The outer loadings must reflect a threshold value of 0.7 to suggest an adequate convergent validity. However, lower outer loadings of 0.4, 0.5, and 0.6 can be accepted if the values lead to an average variance extracted that is greater than 0.5 (Hair et al., 2021; Sarstedt et al., 2020). From Appendix D, all the outer loadings meet the threshold of 0.7. Therefore the criteria for convergent validity based on outer loadings has been fulfilled.

Table 11: Average Variance Extracted (AVE)

Items	AVE
BS	0.618
CS	0.733
DSS	0.784
EP	0.651
FP	0.781
PMS	0.680
SMAP	1.000
SP	0.569

Source: Akuma (2022)

From Table 11 above, all the AVE values are greater than 0.5. This implies that the criteria for convergent validity based on AVE has been met (Hair et al., 2021).

Discriminant validity

Discriminant validity tests are conducted to ensure that constructs that should have no relationship do, in fact, not have any relationship. The cross loadings, Fornell-Lacker criterion, and Heterotrait-Monotrait (HTMT) ratio were analysed using Smart PLS software version 3 to determine the data's discriminant validity. To have sufficient discriminant validity, a concept should have loadings that are greater than its cross loadings on the other constructs, as suggested by Fornell and Larcker (1981). Therefore, for the related concept to have sufficient discriminant validity, its loadings on other constructs must be lower. Discriminant validity is demonstrated in Appendix E.

Fornell Larcker criterion assessment

Hair et al. (2020) proposed using the Fornell-Larcker criterion, proposed by Fornall and Larcker (1981), to analyse discriminant validity

instead of cross loading. If the maximum correlation between the latent variable and the other constructs is less than the square root of the AVE, then the instrument has construct-level discriminant validity according to the Fornell-Larcker criterion. Therefore, a sufficient discriminant validity can be assumed if the square root of the AVE of each latent variable is larger than its correlation with the latent variable (Fornall and Larcker, 1981). According to Garson (2016), if the Fornall-Larcker criterion is true, then it means the model has been correctly stated. As can be seen from Table 12 below, this important criterion is satisfied.

Table 12: Fornell-Larker criterion

	BS	CS	DSS	EP	FP	PMS	SMAP	SP
BS	**0.786**							
CS	0.779	**0.856**						
DSS	0.705	0.670	**0.886**					
EP	0.561	0.529	0.592	**0.807**				
FP	0.581	0.642	0.532	0.533	**0.884**			
PMS	0.724	0.615	0.701	0.610	0.464	**0.824**		
SMAP	0.682	0.618	0.629	0.558	0.445	0.643	**1.000**	
SP	0.585	0.555	0.632	0.804	0.665	0.609	0.547	**0.754**

Source: Akuma (2022)

Heterotrait-Monotrait (HTMT) Ratio

Examining discriminant validity has come to be regarded as a necessary step before examining correlations between latent variables. The Fornell-Larcker criterion and the investigation of cross-loadings are the prevalent methods for assessing discriminant validity in variance-based structural equation modelling, such as partial least squares. Henseler et al. (2015) utilised a simulation exercise to demonstrate that these methods are unreliable in identifying the absence of discriminant validity in typical

research scenarios. Therefore, in order to address any discrepancies between the cross loading and the Fornell-Larcker criterion, the authors presented an alternate method, called the heterotrait-monotrait ratio (HTMT) of correlations. Going by this novel approach, the HTMT must be less than 0.90 at a confidence level of 95% to suggest adequate discriminant validity. As can be observed from Table 13 below, discriminant validity per HTMT is adequate.

Table 13: Heterotrait-Monotrait Ratio

	BS	CS	DSS	EP	FP	PMS	SMAP	SP
BS								
CS	0.897							
DSS	0.860	0.868						
EP	0.613	0.614	0.732					
FP	0.621	0.730	0.648	0.585				
PMS	0.821	0.736	0.897	0.698	0.522			
SMAP	0.712	0.683	0.737	0.589	0.461	0.697		
SP	0.623	0.629	0.767	0.888	0.722	0.679	0.566	

Source: Akuma (2022)

Goodness-of-fit test

According to Hair et al. (2016), the Standardized Root Mean square Residual (SRMR) and Normal Fit Index (NFI) should have a threshold of between 0 and 1 to suggest an adequate model fit. The closer they are to 1, the better the model fit. As can be seen from Table 14 below, The SRMR and the NFI results show that the model is fit since the SRMR and the NFI have a threshold of between 0 and 1.

Table 14: Model fit

	SATURATED MODEL	ESTIMATED MODEL
SRMR	0.063	0.096
d ULS	3.252	7.571
d G	1.757	1.963
Chi-Square	2402.671	2578.614
NFI	0.735	0.715

Source: Akuma (2022)

Common Method Variance

This study used questionnaires to collect data from manufacturing firms at a point in time; hence the risk of common method variance or bias is possible. Common method bias (CMB) happens when variations in responses are caused by the instrument rather than the actual predispositions of the respondents that the instrument attempts to uncover. In other words, the instrument introduces a bias, which leads to misleading findings. According to Hair et al. (2021) it refers to the variance that is attributable to the measurement method rather than to the construct that the measures represent. Creswell and Creswell (2017) recommend using different scale answering formats for different constructs to reduce the possibility of respondents using previous responses to answer subsequent questions. In other to do away with CMB, respondents were convinced that they would remain anonymous; hence they were not required to state the names of their firms. They were also assured that there were no right or wrong answers. These measures helped to obtain honest answers from the respondents.

Kock (2020) recommends the use of Harman's 1976 single factor score to test for CMB, in which all items assessing the latent variables are loaded

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into one common factor. If the total variance for a single factor is less than 50%, it suggests that CMB does not affect the data and hence the results. This researcher used Statistical Package for the Social Sciences (SPSS) version 24 to analyse possible CMB in the research instrument and this produced Herman's single factor score of 39.656% (Appendix F). The outcome of the test revealed that the first common factor accounted for only 39.656% which is less than 50% This implies that there is a very low probability that CMB will affect the results of the study (Tehseen et al. 2017).

Ethical Consideration

Both the researcher and the study subjects must take ethics into account when doing research. According to Neuman (2014), doing ethical research involves striking a balance between the importance of scientific advancement and the importance of respecting the privacy of others. To accomplish this, consent was obtained, and anonymity and confidentiality were maintained. When conducting a survey, confidentiality and informed consent are crucial ethical considerations. The study's anonymity and confidentiality were emphasised when creating the research instrument. As a demonstration of the researcher's commitment to observing the required ethical standards, the researcher submitted the required clearance documents to the University of Cape Coast Ethics Institutional Review Board to seek approval, and this was officially granted on 1st April 2022. (Refer to Appendix A for the approval letter). Research participants were given consent forms to complete before the research instruments were administered. The study also considered the ethical issues in reporting. The following ethical issues were identified and dealt with.

A few ethical issues have been identified so far as this research is concerned. These include obtaining informed consent from the leadership of the registered manufacturing firms that are registered with AGI as well as how to maintain scientific integrity in the research. Other ethical issues include confidentiality, how to protect the interest of participants and the proper way of handling and protecting the data gathered.

1. Informed consent

Before the questionnaires were given to participants to complete, each manufacturing firm was given an informed consent form to read and sign to voluntarily agree to participate in the research. The research topic and the specific objectives were clearly explained on the form, and participants were told that they had a right to fill out the questionnaire or otherwise. It was made known to them that this research is being sponsored by Ghana Communication Technology University (GCTU) to ensure that all their lecturers hold Ph.D. qualifications, a basic qualification required for a lecturer to teach in a university. The researcher did not resort to persuasion and force to have the forms filled; rather, respondents relied on their free will to fill the form.

2. Maintaining scientific integrity

The questions in the questionnaire were stated in simple and clear English for participants to understand and provide honest answers. This is aimed at making the findings reliable. The limitations and shortcomings of the research were stated at the end of the study to guide stakeholders who may want to rely on the findings to take decisions for their firms. The conclusions of this study are based solely on the data gathered. To make the research

scientific and acceptable in academic platforms, statistical tools like Cronbach's alpha were used to measure the internal validity of the variables used for the research. This helped to reduce errors and biases in the results. Besides, the methodology used for the research was published so that other scholars could replicate the study. This is meant to make the research rigorous and scientific.

3. Confidentiality

The manufacturing firms were told not to state the name of their firm on the questionnaire document since this research is solely an academic exercise and findings are presented in general terms. The firms have the right to take legal action against the researcher should there be any breach of trust.

4. Protecting the interest of participants

Managers of the target manufacturing firms were contacted to fill out the questionnaire. These are executives who can read and understand simple English and adults who attain at least eighteen (18) years and above. The research benefits were explained to them before they filled out the questionnaire, and they were told that participation is 100% voluntary. Findings from the research were reported in general terms without mentioning the names of individual manufacturing firms. This is to ensure that any negative findings will not affect the fortunes of any manufacturing firm.

5. Handling and protection of data

Google forms and hard copies of the questions were used to gather the data. Data has been stored and well-secured on my computer and external drive. A well-secured password was used to protect the data and will be made available to the manufacturing companies who filled out the questionnaire

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anytime they request for it. Based on the APA standards, the data will be kept for five (5) years before it is discarded. The data will not be released to any other party without the consent of the target manufacturing firms.

Chapter Summary

This chapter looked at the research philosophy, research design, study area, target population, sample size, pre and post-estimation diagnostic of the estimation technique, ethical consideration, data collection instrument, common method variance, goodness-of-fit test and the software used to process and analyse the data. Assessment of the structural model is presented in chapter 4.
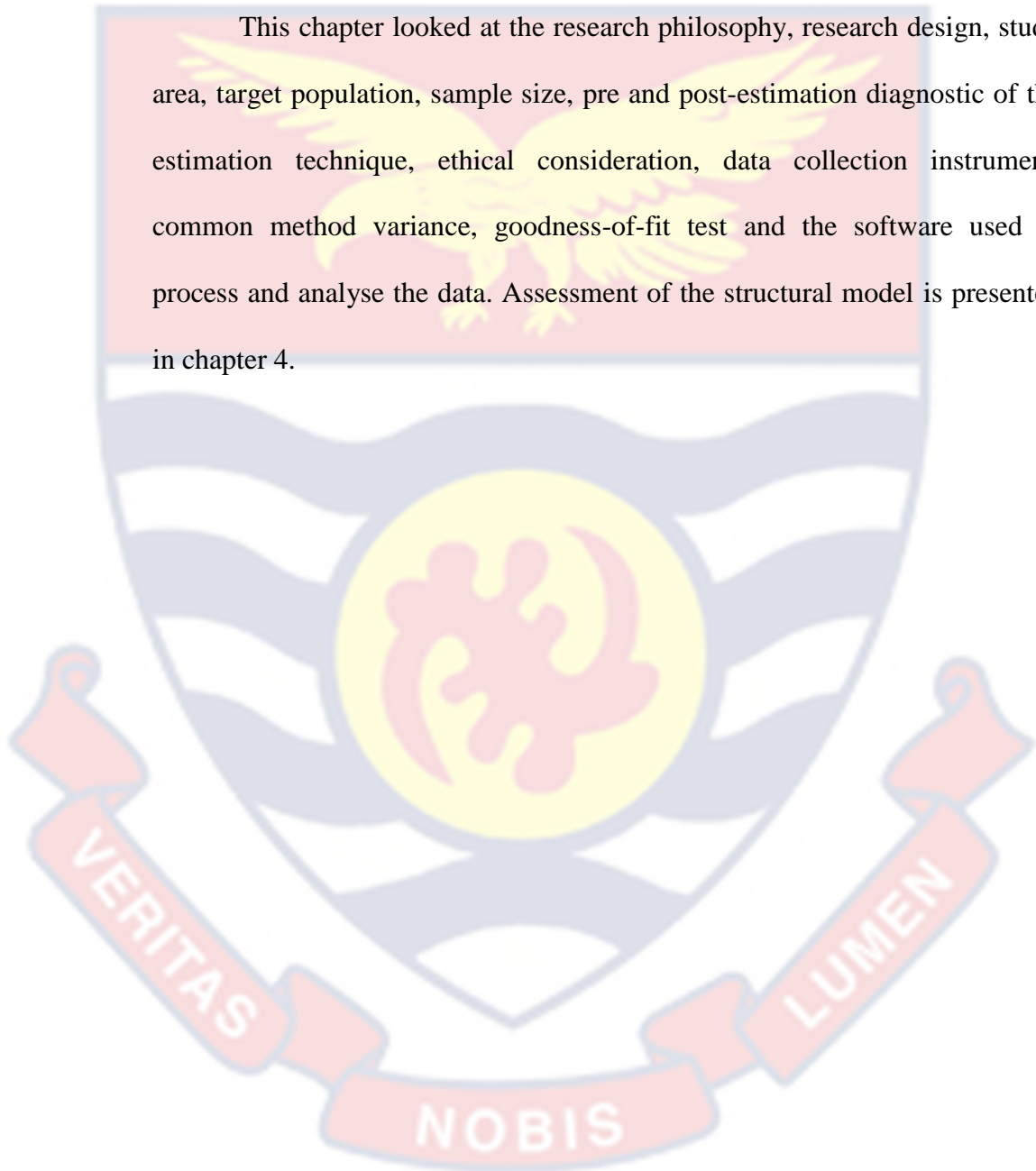
CHAPTER FOUR

PRESENTATION OF FINDINGS

Introduction

This chapter presents the raw findings from the Smart PLS software version 3, which was used to analyse the data. Findings presented here include the profile of respondents, validity and reliability procedures, descriptive statistics, structural model assessment, the relationship between Management Accounting Practices (MAPs) and the Sustainability Performance of firms, as well as assessment of moderation effects of Information Technology Integration (ITI), Information Technology Knowledge (ITK), Corporate Governance (CG) and Organizational Culture (OC) on the relationship between MAPs and Sustainability Performance of manufacturing firms in Ghana.

Profile of the manufacturing firms

As shown in Table 15 below, 266 manufacturing firms filled the questionnaires comprising: 26 from furniture manufacturing firms, 48 from food and beverage firms, 22 from drugs and pharmaceutical firms, 14 from chemical producing firms, 40 from building and construction firms, 9 from clothing and textiles firms, 30 from toiletries and cosmetics firms, 38 from electrical and electronic firms, 6 from energy firms, 20 from printing and packaging firms and 13 other firms. The 13 other firms comprise 6 cooking utensils-producing firms, 4 beads and jewels manufacturing firms and 3 cutlass producing firm.

The furniture firms are into production of metal/plastic/wooden chairs, tables, beds and kitchen cabinets. The food and beverage firms are into

production and distribution of dairy products (like cheese and yoghurt), poultry feeds, milk, alcoholic and non-alcoholic beverages, cassava floor, bottled water, sachet water, fruit juice, as well as the processing and serving of meals. The drugs and pharmaceutical firms are into the production and distribution of hospital medicines, herbal medicines, syringes, medical equipment, non-medical consumables and drapes like disposable pillows, suction tables, colons copy shorts, trousers and gloves. The chemical-producing firms include those that manufacture and sell chalk, insecticides for controlling insects, paints, mosquito coils, cigarettes, camphor and other pest-control drugs. The building and construction firms are producing and marketing iron rods, nails, roofing sheets, wires, pipes, building blocks, pavement blocks, aluminium profiles, road construction, real estate buildings, doors, windows, water closets, mesh, steel rods, solid and hollow blocks.

The clothing and textiles firms produce and sell clothes, clothing of all kinds and foot wears. The toiletries and cosmetics firms focus in the manufacture and sale of pomades, processed Shea butter, liquid soaps, pads, detergents, toilet rolls, soaps, tissues, beauty products, perfumes, shampoo, deodorant, make-ups, skin care products, disinfectants and stain remover products. The electrical and electronic firms are into production, assembling and distribution of meters, transformers, fire extinguishers, compact discs, wires for wiring, electronic security, access control, toll automation systems, alarm systems, polybags and video monitoring devices, including closed-circuit television (CCTV) cameras. The energy firms are into production, installation and distribution of solar energy, electricity, gas cylinders, refined petroleum products and manufacture of industrial casting and balls of mines.

The sampled firms from the printing and packaging industry are into producing and distributing exercise books, textbooks, story books, past questions, A4 sheets, graphic designs, sellotape, glue and staplers. The firms classified as others are those that are into the production and sale of beads, cuff links, cooking utensils like saucepans, cutlasses, and machetes.

It should be noted that 139 of the sampled firms comprising 52.3% are owned by Ghanaians, 65 of the sampled firms comprising 24.4%, are owned by foreigners, while 62 of the sampled firms comprising 23.3%, are owned by both Ghanaians and foreigners.

Table 15: Profile of responding firms

Manufacturing Industry	Number of respondents	Percentage
Furniture producing firms	26	9.8%
Food and beverage-producing firms	48	18%
Drugs and pharmaceutical-producing firms	22	8.3%
Chemicals producing firms	14	5.3%
Building and construction firms	40	15%
Clothing and textiles-producing firms	9	3.4%
Toiletries and cosmetics-producing firms	30	11.3%
Electrical and electronic firms	38	14.3%
Energy producing firms	6	2.3%
Printing and packaging firms	20	7.5%
Other manufacturing firms	13	4.8%
TOTAL	266	100%

Source: Field Survey, Akuma (2022).

General information about respondents

In all, 266 valid responses were gathered and used for the statistical analysis. Out of this number, males were 61.30 (n=163), while 38.70% (n=103) were females. This shows that males were more than females. The study relied on the age classifications recommended by Yarlagadda et al. (2015), namely young adults (<31 years), middle-aged adults (31 to 50 years)

and senior adults (>50 years). The age of the respondents are presented in Table 16 below.

Table 16: General information about respondents

Details	Classes	Frequency	Percentage
Sex	Male	163	61.3%
	Female	103	38.7%
Age	< 30 years	56	21%
	31 and 50 years	186	70%
	> 50 years	24	9%
Position	Chief Executive Officer	29	10.9%
	Senior Manager	145	54.5%
	Board Member	14	5.3%
	Shareholder	5	1.9%
	Middle level Manager	73	27.4%

Source: Akuma (2022)

This implies that 21% (n=56) were young adults, 70% (n=186) of the respondents were middle-aged adults, and 9% (n=24) were senior adults. Thus, middle-aged managers constitute a chunk of the respondents. It can be argued that these respondents are matured and experienced and, for that matter, are in a good position to provide information on the management accounting practices of the manufacturing firms.

In terms of the positions held by the respondents, 10.9% (n=29) were Chief Executive Officers (CEOs) or General Managers, 54.5% (n=145) were senior managers, 5.3% (n=14) were board members, 1.9% (n=5) were shareholders while 27.4% (n=73) were middle-level managers. This implies that senior managers and CEOs combined constitute 65.4% (n=174) of the respondents. These are top-level employees with huge experience and can therefore provide quality responses on their management accounting practices. Niesen et al. (2018) explained that employees who have worked in

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organisation for a considerable period are more likely to exhibit better work-related behaviours than those who are not.

Descriptive Statistics

Costing System (CS)

The study sought to examine the types of costing systems that manufacturing companies practice. To measure the type of costing systems practiced, the study presented respondents with seven (7) questions. From the results in Table 17 below, the highest mean recorded is 4.252 on the question 'My firm uses **Batch Costing** to monitor the costs we incur in production.'

Table 17: Costing System

Code	Items	Mean	Standard Deviation
CS1	My firm uses **Job Costing** to monitor the costs incurred in the production	4.094	1.122
CS2	My firm uses **Batch Costing** to monitor the costs we incur in production	4.252	1.034
CS3	My firm uses **Contract Costing** to monitor the costs incurred in the production	4.169	1.116
CS4	My firm uses **Process Costing** to monitor the costs incurred in the production	4.083	1.048
CS5	My firm uses **Absorption Costing** to monitor the costs incurred in the production	3.293	1.413
CS6	My firm uses **Variable Costing** to monitor the costs incurred in the production	4.241	1.161
CS7	My firm uses **Activity Based Costing** to monitor the costs incurred in the production	4.192	1.102

Source: Akuma (2022).

This was followed by the question, 'My firm uses Variable Costing to monitor the costs incurred in production,' which recorded a mean of 4.241. The least mean recorded for this variable is on the question, 'My firm uses Absorption Costing to monitor the costs incurred in production with a mean value of 3.293. This shows that absorption costing may not influence the costing systems in general that are practised by manufacturing firms.

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However, batch costing was indicated as a type of costing system practice mostly favoured by manufacturing firms.

Budgeting System (BS)

The study sought to examine the types of budgeting systems that manufacturing companies practise. To measure the type of budgeting systems practiced, the study presented respondents with nine (9) questions. From the results in Table 18 below, the highest mean recorded is 4.436 on the question 'My firm prepares cash budget to assess whether the firm will have sufficient cash to continue operating over a period of time**.**

Table 18: Budgeting System

Code	Items	Mean	Standard Deviation
BS1	My firm prepares sales budget to forecast sales and plan for utilization of resources	4.372	0.974
BS2	My firm prepares purchases budget to plan for the amount of raw materials that must be bought during each budget period	4.387	0.998
BS3	My firm prepares production budget to show the number of units of products that must be manufactured to meet expected demand	4.286	0.946
BS4	My firm prepares cash flow budget to estimate all cash receipts and cash expenditures that are expected to occur during the budget period	4.368	0.981
BS5	My firm prepares cash budget to assess whether the firm will have sufficient cash to continue operating over a period of time	4.436	0.900
BS6	My firm prepares zero based budgets to justify all planned expenses	4.030	1.176
BS7	My firm prepares incremental based budgets to justify all planned expenses	2.523	1.578
BS8	My firm prepares activity based budgets to justify all planned expenses	4.256	1.115
BS9	My firm prepares flexible based budgets to justify all planned expenses	4.154	1.118

Source: Akuma (2022)

The least mean recorded for this variable is on the question 'My firm prepares incremental-based budgets to justify all planned expenses,' which recorded a mean of 2.523. This shows that incremental budgeting may not influence the type of budgeting systems in general that are practised by manufacturing firms. However, cash budgeting was indicated as the type of budgeting system practice that is mostly favoured by manufacturing firms.

Budget Frequency (BF)

The study sought to examine how frequently budgets are prepared in a year by manufacturing firms. To measure the frequency of budgeting in a year, the study presented respondents with four (4) questions. From the results in Table 19 below, the highest mean recorded is 4.410 on the question 'My firm prepares annual budgets**.**

Table 19: Budget Frequency

Code	Items	Mean	Standard Deviation
BS1	My firm prepares monthly budgets	2.500	1.462
BS2	My firm prepares quarterly budgets	2.756	1.261
BS3	My firm prepares semi-annual budgets	3.902	1.166
BS4	My firm prepares annual budgets	4.410	1.094

Source: Akuma (2022).

The least mean recorded for this variable is on the question 'My firm prepares monthly budgets' with a mean value of 2.500. This shows that monthly budgeting may not influence the frequency of budgeting by manufacturing firms. However, annual budgeting was indicated as a budget frequency practice mostly favoured by manufacturing firms.

Decision Support System (DSS)

The study examined the decision support systems employed by manufacturing firms to take decisions on their projects. To measure the

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decision support systems of the sampled firms, the study presented

respondents with five (5) questions. From the results in Table 20 below, the

highest mean recorded is 4.267 on the question 'My firm does customer

profitability analysis to determine the customers who give us the highest

profit.'

Table 20: Decision Support System

Code	Items	Mean	Standard Deviation
DSS1	My firm does economic order quantity analysis to determine the number of raw materials to buy at a time to minimise storage cost and holding cost	4.102	0.946
DSS2	My firm does break-even analysis to determine the number of goods to produce to start making a profit	3.959	0.986
DSS3	My firm does customer profitability analysis to determine the customers who give us the highest profit	4.267	1.030
DSS4	My firm computes the payback period to determine the period it will take the firm to recover monies it has invested into the operations of the firm	4.026	1.027
DSS5	My firm computes net present value to determine profitability or otherwise before every production process	3.932	0.877

Source: Akuma (2022).

The least mean recorded for this variable is on the question, 'My firm

computes net present value to determine profitability or otherwise before

every production process with a mean value of 3.932. This shows that net

present value analyses may not influence the decision support system by the

manufacturing firms. However, customer profitability analysis was indicated

as a type of decision support system mostly favoured by manufacturing firms.

Performance Management System (PMS)

The study sought to examine the performance management systems employed by manufacturing firms. To measure the performance management systems of the sampled firms, the study presented respondents with eight (8) questions. From the results in Table 21 below, the highest mean recorded is 4.335 on the question 'My firm always compares its budget estimates with the actual expenditure to measure its performance.

Table 21: Performance Management System

Code	Items	Mean	Standard Deviation
PMS1	My firm uses return on investment (ROI) to measure its performance	4.180	1.075
PMS2	My firm always compares its budget estimates with the actual expenditure to measure its performance	4.335	1.053
PMS3	My firm interviews its customers to find out their level of satisfaction with our products	4.301	0.938
PMS4	My firm uses ratio analysis to measure its performance	3.880	1.160
PMS5	My firm keeps a record of on-time delivery of goods to customers to assess its delivery performance over time	4.211	0.954
PMS6	My firm keeps a record of the total time it takes to manufacture its products during every manufacturing period	4.102	0.974
PMS7	My firm keeps a record of reasons why employees leave the organisation	4.045	1.106
PMS8	My firm keeps a record of reasons why employees are absent themselves from work or come to work late	4.199	1.077

Source: Akuma (2022).

The least mean recorded for this variable is on the question My firm uses ratio analysis to measure its performance with a mean value of 3.880. This shows that ratio analyses may not influence the performance management system the manufacturing firms. However, a comparison of estimates with actual

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performance was indicated as a type of performance management system mostly favoured by manufacturing firms.

Strategic Management Accounting Practice (SMAP)

The study sought to examine the strategic management accounting practices that manufacturing firms employ. To measure the strategic management accounting practices of the sampled firms, the study presented respondents with five (5) questions. From the results in Table 22 below, the highest mean recorded is 4.376 on the question, "My firm takes into account strategic factors when fixing prices for its products (for example competitor price reaction, elasticity, market growth, economies of scale and experience)."

Table 22: Strategic Management Accounting Practices

Code	Items	Mean	Standard Deviation
SMAP1	My firm engages in target costing when designing new products in order to engage in proactive cost reduction practices	3.320	1.226
SMAP2	My firm engages in analysis of the costs incurred in each of the activities in the firm's value chain	3.966	1.031
SMAP3	My firm monitors and keeps records of the costs that occur across stages of product development and distribution	4.019	0.963
SMAP4	My firm takes into account strategic factors when fixing prices for its products (for example: competitor price reaction, elasticity, market growth, economies of scale and experience)	4.376	0.951
SMAP5	My firm constantly collects and analysis data on competitors' price reaction, demand reaction and market position	4.256	0.935

Source: Akuma (2022)

The least mean recorded for this variable is on the question 'My firm engages in target costing when designing new products in order to engage in proactive cost reduction practices' with a mean value of 3.320. This shows

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that target costing may not influence the strategic management practice of manufacturing firms. However, analysis of strategic management accounting issues like competitor price reaction, elasticity, market growth, economies of scale and experience were indicated as types of management accounting practices that are mostly favoured by manufacturing firms.

Financial Performance (FP)

The study sought to examine the financial performance of manufacturing companies. To measure their financial performance, the study presented respondents with seven (7) questions. From the results in Table 23 below, the highest mean recorded is 4.195 on the question 'The overall financial performance of my company has increased over the last 3 year".

Table 23: Financial Performance

Code	Items	Mean	Standard Deviation
FP1	The overall financial performance of my company has increased over that last 3 years	4.195	0.799
FP2	Return on assets of my company has increased over the last 3 years	4.128	0.844
FP3	Return on investment of my company has increased over the last 3 years	4.132	0.828
FP4	Operating profit of my company has increased over the last 3 years	4.158	0.835
FP5	Operating cash flow of my company has been stable over the last 3 years	4.132	0.877
FP6	The overall market share of my firm has increased over the last 3 years	3.707	0.944
FP7	Business transaction costs have been reduced over the last 3 years	2.248	1.463

Source: Akuma (2022).

The least mean recorded for this variable is on the question 'Business transaction costs have reduced over the last 3 years with a mean value of 2.248. This shows that lower business transaction cost is the least financial performance indicator experienced by the firms. However, higher financial

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performance or profitability was the best financial performance indicator of manufacturing firms.

Social Performance (FP)

The study sought to examine the social performance of manufacturing companies. To measure their social performance, the study presented respondents with fifteen (15) questions. From the results in Table 24, the highest mean recorded is 4.233 on the question 'Employees are more responsive towards clients over the last 3 years.

Table 24: Social Performance

Code	Items	Mean	Standard Deviation
SP1	Our number of new clients or customers has increased over the last 3 years	3.838	0.814
SP2	Employee satisfaction and retention in my firm have increased over the last 3 years	4.064	0.813
SP3	Employees are more responsive towards clients over the last 3 years	4.233	0.774
SP4	Employee empowerment has increased in this firm over the last 3 years	4.184	0.897
SP5	Employee productivity in this firm has increased over the past years	4.098	0.760
SP6	Quality of our products and services has improved over the last 3 years	4.113	0.752
SP7	The number of new products we provide have increased over the last 3 years	3.966	0.782
SP8	Our firm has employed more people in the local community we operate over the last 3 years	3.613	0.960
SP9	The number of complaints by customers has reduced by at least 70% in the last three years	4.041	0.881
SP10	The number of customers refereed to our products has increased by at least 50% in the last three years	3.992	0.799
SP11	The level of customer satisfaction has been on the rise in the last 3 years	4.060	0.713
SP12	We have opened more branches in the last 3 years	3.613	0.960
SP13	Over 70% of our customers feedback on the products bought are positive over the last 3 years	4.045	0.803
SP14	Over the past 3 years, our customers are now patronising more of our products	4.041	0.690
SP15	There is improved employee morale in the organization over the past 3 years	4.079	0.881

Source: Akuma (2022)

The least mean recorded for this variable is on the questions 'Our firm has employed more people in the local community we operate over the last 3 years and 'We have opened more branches in the last 3 years with the mean value of 3.613. This shows that the opening of more branches and the employment of workers from the local community are the worst financial performance indicators recorded by the firms. However, improved responsiveness of employees towards the needs of clients was the best financial performance indicator of the manufacturing firms.

Environmental Performance (EP)

The study sought to examine the environmental performance of manufacturing companies. To measure their environmental performance, the study presented respondents with fourteen (14) questions. From the results in Table 25 below, the highest mean recorded is 4.139 on the question, "Personnel of this firm now have increased knowledge about effective ways of managing the environment and operations".

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Table 25: Environmental Performance

Code	Items	Mean	Standard Deviation
EP1	This firm has reduced the amount spent on raw material costs over the past 3 years	2.381	1.503
EP2	Our firm has reduced the amount spent on processes and production over the past 3 years	2.432	1.528
EP3	We have reduced costs of regulatory compliance over the past 3 years	3.353	1.152
EP4	There has been an increase in process and production efficiency	3.959	0.787
EP5	Personnel of this firm now have increased knowledge about effective ways of managing the environment and operations	4.139	0.888
EP6	There is an improvement in process and product innovations: EP6	3.838	0.761
EP7	Organizational-wide learning about the environment among employees has improved over the past 3 years	3.898	0.814
EP8	"Our firm now has better relationships with our stakeholders, such as local communities, regulators and environmental groups, due to our environmental practices"	4.030	0.760
EP9	There is an overall improved company reputation or goodwill due to our environmental practices	4.034	0.727
EP10	We have better filters and controls over emissions and discharges from our company	4.038	0.773
EP11	Environmental indicators are now more important in our reward systems	4.068	0.797
EP12	We now place more emphasis on environmental performance objectives in our planning systems	4.068	0.815
EP13	My firm has been able to achieve its environmental targets over the past 3 years	4.025	0.722
EP14	My firm has had fewer complaints from the public with regard to environmental issues	4.113	0.829

Source: Akuma (2022).

The least mean recorded for this variable is on the question, 'This firm has reduced the amount spent on raw material costs over the past 3 years'' with a mean value of 2.381. This shows that the firm's inability to reduce the amount spent on raw materials was the worst environmental performance indicator recorded by the firm. However, improved knowledge of better ways of managing the environment and operations was the best environmental performance indicator of the manufacturing firms.

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Organizational Culture (OC)

The study sought to examine the types of organizational culture that are practised by manufacturing companies. To measure the types of organizational culture in practice, the study presented respondents with ten (10) questions. From the results in Table 26 below, the highest mean recorded is 4.504 on the question, 'When disagreements occur in this firm, we work hard to achieve solutions that benefit both parties in the disagreement.'

Table 26: Organizational Culture

Code	Items	Mean	Standard Deviation
OC1	Teams in my organization are our primary building blocks	4.410	0.832
OC2	My firm continuously invests in the skills of employees	4.335	0.883
OC3	The leaders and managers of this firm follow the guidelines that they set for the rest of the organization	4.316	0.831
OC4	There is a clear and consistent set of values in this organization that governs the way we do business	4.391	0.817
OC5	When disagreements occur in this firm, we work hard to achieve solutions that benefit both parties in the disagreement	4.504	0.796
OC6	This organization responds well to competitors and other changes in the business environment	4.432	0.798
OC7	Customer inputs and complains directly influence our decisions	4.376	0.855
OC8	This organization encourages and rewards those who take risk	4.383	0.792
OC9	We make sure that we coordinate our actions and efforts between different units in this organization	4.395	0.808
OC10	We have a clear vision and mission which create excitement and motivation for our employees	4.462	0.766

Source: Akuma (2022)

The least mean recorded for this variable is on the question : "The leaders and managers of this firm follow the guidelines that they set for the rest of the organization". with a mean value of 4.316. This shows that

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"leadership by example" may not influence the organizational cultural practices of the firms. However, quality resolution of disagreements was indicated as a type of organizational culture indicator of the manufacturing firms.

Corporate Governance (CG)

The study sought to examine the effects of corporate governance practices on manufacturing companies. To measure this effect, the study presented respondents with ten (10) questions. From the results in Table 27 below, the highest mean recorded is 4.444 on the question "Audit Committee has a positive impact on the performance of our firm."

Table 27: Corporate Governance

Code	Items	Mean	Standard Deviation
CG1	Performance of my firm will improve if the board chairman is the same as the CEO (duality)	2.357	1.426
CG2	More females on the Board will have a positive effect on performance of my firm (board composition)	4.158	1.188
CG3	Board meetings have a positive effect on performance of our firm	4.417	0.903
CG4	Gender of my CEO/General Manager has a positive impact on the performance of my firm	4.248	1.201
CG5	Gender of my Chairman of Board of Directors has a positive impact on the performance of my firm	4.237	1.186
CG6	Age of our CEO/General Manager has a positive impact on the performance of my firm	4.244	1.109
CG7	Age of our Chairman of Board of Directors has a positive impact on the performance of my firm	4.180	1.119
CG8	Qualification of our CEO/General Manager has a positive impact on the performance of our firm	4.308	0.995
CG9	Qualification of our Chairman of Board of Directors has a positive impact on the performance of my firm	4.263	0.965
CG10	Audit Committee has a positive impact on the performance of our firm	4.444	0.925

Source: Akuma (2022)

The least mean recorded for this variable is on the question Performance of my firm will improve if the board chairman is the same as the CEO with a mean value of 2.357. This shows that this particular opinion is the least favoured effect of corporate governance practice of the firms. However, the positive effect of audit committees on performance was indicated as the most favoured corporate governance opinion of the manufacturing firms.

Information Technology Integration (ITI)

The study sought to examine the types of Information Technology Integration practised by the manufacturing companies. To measure these practices, the study presented respondents with eight (8) questions. From the results in Table 28, the highest mean recorded is 4.060 on the question, "My firm has a clear vision regarding how IT contributes to business value."

Table 28: Information Technology Integration

Code	Items	Mean	Standard Deviation
ITI 1	My firm has implemented IT solutions to fulfil our expectations	4.023	0.888
ITI 2	Our firm uses IT to collect and analyze market information	4.019	0.873
ITI 3	Our firm frequently utilizes decision-support systems and soft wares	4.015	0.901
ITI 4	Our firm encourages risk taking and experimentation with	3.887	0.847
ITI 5	My firm has clear vision regarding how IT contributes to business value	4.060	0.865
ITI 6	Our firm has IT-based links with our suppliers	4.034	0.898
ITI 7	Our firm has IT-based links with our customers	4.011	0.960
ITI 8	Our firm integrates its business strategic planning with its IT planning	3.966	0.869

Source: Akuma (2022)

The response to the question "Our firm supports risk-taking and experimenting with IT" had the lowest mean ever recorded for this variable. This demonstrates that industrial companies favor other IT Integration practices more than this particular one. However, the most preferred IT

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practice among manufacturing companies was revealed to be having a clear understanding of how IT adds to business value.

Information Technology Knowledge (ITK)

The study sought to examine the types of Information Technology Knowledge of the manufacturing companies. To measure this variable, the study presented respondents with six (6) questions. From the results in Table 29 below, the highest mean recorded is 4.060 on the question "We are very knowledgeable about new IT-based innovations."

Table 29: Information Technology Knowledge

Code	Items	Mean	Standard Deviation
ITK1	Our firm has a clear IT strategy	4.008	0.884
ITK2	We have the knowledge to develop and maintain IT-based communication links with our customers	3.992	0.790
ITK3	We are very knowledgeable about new IT-based innovations	4.060	0.843
ITK4	Our IT technical support is sufficient	3.996	0.878
ITK5	Our firm has skilled people who can work with different types of IT levels	4.049	0.877
ITK6	We possess a high degree of IT-based technical expertise	3.932	0.903

Source: Akuma (2022)

The least mean recorded for this variable is on the question "We possess a high degree of IT-based technical expertise" with the mean value of 2.357. This shows that, this statement is the least favoured IT Knowledge of the firms. However, knowledge in new IT-based innovation is the most favoured IT knowledge of the manufacturing firms.

Evaluation of the Structural Model

According to Hair et al. (2019), a researcher needs to create a model to explain the relationship between his research variables before going ahead to

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test the research hypotheses. The dependent variable of this study is Sustainability Performance of manufacturing firms in Ghana. As Figure 2 shows below, this was examined under three sub areas namely: "Financial Performance (FP)", "Social Performance (SP)" and "Environmental Performance (EP)". FP was examined by presenting respondents with seven (7) statements comprising FP1 to FP 7. SP was examined by presenting respondents with fifteen (15) statements comprising SP1 to SP15. EP on the other hand was examined by presenting respondents with fourteen (14) statements comprising EP1 to EP14.

The independent variable of the study is "Management Accounting Practices (MAPs)" of manufacturing firms in Ghana. As depicted in figure 3 below, MAPs was examined under five (5) sub headings namely: "Costing System (CS)", "Budgeting System (BS)", "Performance Management System (PMS)", "Decision Support System (DSS)" and "Strategic Management Accounting Practices (SMAP)". CS was looked at by presenting respondents with seven (7) questions from CS1 to CS7. BS was investigated by providing respondents with thirteen questions from BS1 to BS13. Four of the BS questions namely BS10 to BS13 focused on budget frequency within a year. PMS was examined by presenting respondents with eight (8) statements starting from PMS1 to PMS8. DSS was investigated by presenting respondents with five (5) statements comprising DSS1 to DSS 5. Finally, SMAP was looked at by presenting respondents with five (5) statements starting from SMAP1 to SMAP5.

According to Hair et al. (2020), indicators should be deleted if they fail to meet the required loading threshold of 0.7. After the initial algorithm was

run, some of variables were deleted because of low indicator loadings. These
variables are: CS2, CS3, CS5, CS7, BS7, BS8, BS10, BS11, PMS1, PMS2,
PMS3, PMS5, DSS1, DSS2, DSS4, SMAP1, SMAP2, SMAP3, SMAP4, FP6,
FP7, EP1, EP2, EP3, EP6, EP7, EP9, EP12, EP13, SP1, SP8, SP9, SP10 and
SP12. In other words, these variables were deleted because they could not
fulfil the criteria for discriminant validity (Hair et al., 2020).
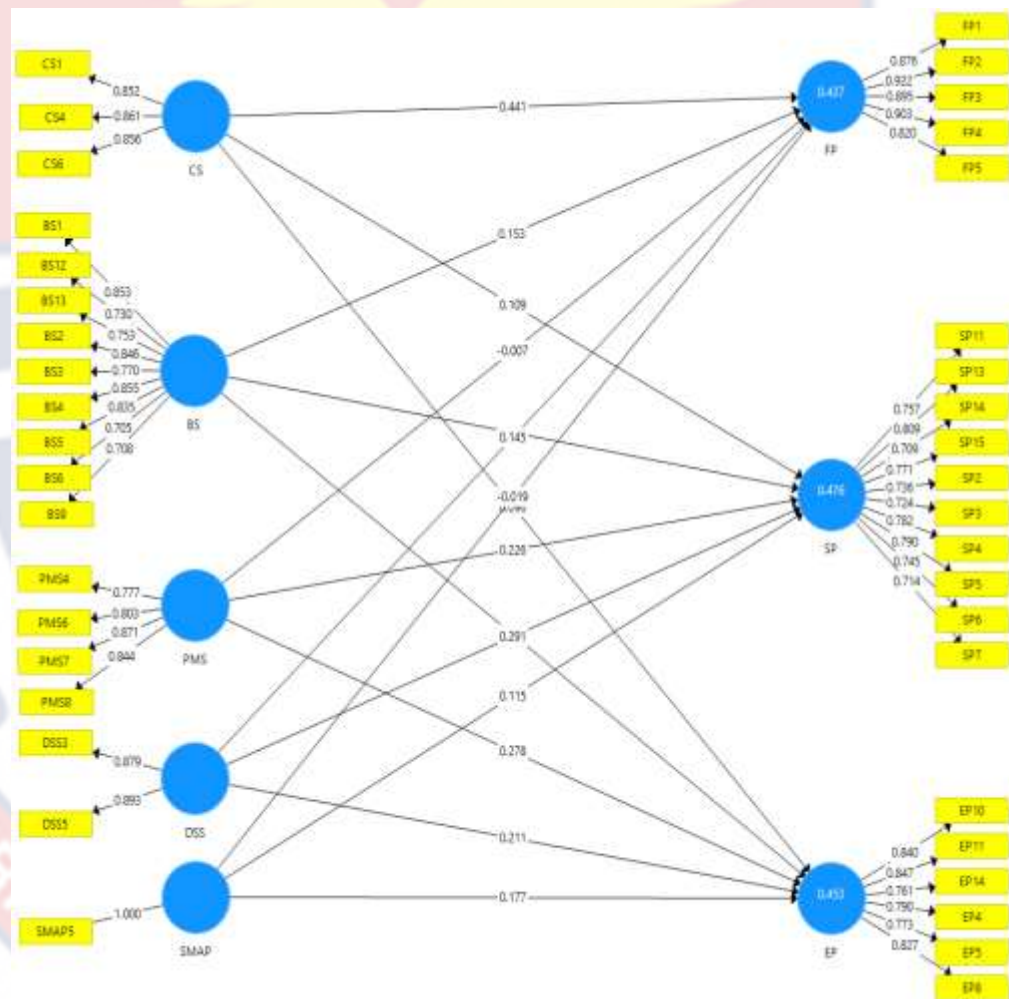
Figure 2: Structural model
Source: Field Survey, Akuma (2022).

Normality tests

One typical method for determining whether or not a set of
multivariate data is normally distributed is the Mardia (1974) process. In
comparison to other methods, the skewness or kurtosis approach has the

advantage of providing a straightforward measure of departure from normalcy. For univariate normality, the coefficient is based on the null hypothesis that the data is not skewed nor kurtotic. The skewness should be ± 1 and kurtosis should be ± 7 for normal distribution to be established. The values in Table 30 below shows that the data used in this study is not normal. For multivariate normality as presented in Table 30, the required threshold is ± 1 for skewness and ± 20 for kurtosis. Based on this standard, the data here is not normal. However, Smart PLS that was used for the analyses takes care of both normal and non-normal data.

Table 30: Mardia's test for univariate skewness and kurtosis

Sample size: 266

Case ID	Skewness	SE_skew	Z_skew	Kurtosis	SE_kurt	Z_kurt
BS	0.000	0.149	0.000	-1.200	0.298	-4.032
CS	-1.592	0.149	-10.662	2.637	0.298	8.862
DSS	-1.355	0.149	-9.074	1.520	0.298	5.106
EP	-1.372	0.149	-9.189	1.903	0.298	6.394
FP	-1.357	0.149	-9.085	3.408	0.298	11.449
PMS	-0.988	0.149	-6.613	1.573	0.298	5.285
SMAP	-1.150	0.149	-7.697	0.964	0.298	3.238
SP	-1.502	0.149	-10.057	2.365	0.298	7.946

Source: Akuma (2022)

Table 31: Mardia's test for multivariate skewness and kurtosis

	B	Z	p-value
Skewness	19.869	880.899	0
Kurtosis	120.321	25.995	0

Source: Akuma (2022)

Structural/Inner Model Assessment

Assessment of the structural model (SM) results enables the researcher to analyse the relationship between the constructs as well as determine the model's capability to predict one or more target constructs (Hair et al., 2011). The structural model of this study was assessed by engaging in six key

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analyses namely: multicollinearity assessment, path coefficient, significant of the path coefficient, coefficient of determination (R^2), effect size (F^2) and predictive relevance (Q^2).

Multicollinearity arises when two or more independent variables are highly correlated in a model. When this happens, the independent variables will lead to misleading results because the researcher will find it difficult to understand how well each independent variable can be used to predict or understand the dependent variable in the model. It can happen if an independent variable is computed from other variables in the data set or if two independent variables provide similar and repetitive results. The collinearity among the latent variables is assessed through Variance Inflation Factor (VIF). There is a likely indication of multicollinearity problem, if the VIF in general is more than 5 (Hair et al., 2011; Wong, 2013). Therefore, a lower than 5 VIF suggests there is no such issue in the model. VIF measures how much the behaviour or variance in the independent variable is influenced by its correlation with other independent variables. From table 32 below, there is no multicollinearity challenge in the model since all the VIF are less than 5.

Table 32: Multicollinearity Assessment (Inner VIF)

	EP	FP	SP
BS	3.682	3.682	3.682
CS	2.791	2.791	2.791
DSS	2.561	2.561	2.561
PMS	2.590	2.590	2.590
SMAP	2.159	2.159	2.159

Source: Akuma (2022)

"Path coefficient'' is the coefficient linking a construct in the structural model. It represents the hypothesized relationship or the strength of

the relationship. This researcher adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 34 below that there is a positive but weak relationships between BS and EP, BS and SP as well as CS and EP. There is also a negative but weak relationship between PMS and FP as well as SMAP and FP. We can also say that there is a moderate positive relationship between PMS and EP as well as PMS and SP.

Now, whether a path coefficient is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When an empirical t value is larger than the critical value, we conclude that the coefficient is statistically significant at a certain error probability. Commonly used critical values for two-tailed tests are 1.65 at 10% significant level and 1.96 at 5% significant level. Most researchers use p values to assess significant levels. When assuming a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 33 below, the path coefficients between CS and FP "(β = 0.441, t = 6.116, p < 0.01), DSS and EP (β = 0.211, t = 2.176, p < 0.05), DSS

and SP (β = 0.291, t = 3.160, p < 0.01), PMS and EP (β = 0.278, t = 2.635, p < 0.01), PMS and SP (β = 0.226, t = 2.465, p = 0.05) as well as SMAP and EP (β = 0.177, t = 2.025, p = 0.05) are significant. This implies that there is significant positive relationship between the variables.

From Table 33 below, the path coefficients between BS and EP (β = 0.015, t = 0.140, p = 0.889), BS and FP (β = 0.153, t = 1.61, p = 0.106), BS and SP (β = 0.053, t = 0.451, p = 0.652), CS and EP (β = 0.096, t = 0.826, p = 0.409), CS and SP (β = 0.109, t = 1.042, p = 0.298), DSS and FP (β = 0.145, t =1.406, p = 0.160), PMS and FP (β = -0.007, t = 0.070, p = 0.944), SMAP and FP (β = -0.019, t = 0.235, p = 0.814) as well as SMAP and SP (β = 0.115, t = 1.327, p = 0.185) are not significant. These hypotheses were therefore not supported.

Table 33: Significance of the path coefficients of the relationship between MAPs and SsP

Hypotheses	Path in Sem	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Comment
H1b	BS -> EP	0.015	0.107	0.140	0.889	Not significant
H1a	BS -> FP	0.153	0.095	1.617	0.106	Not significant
H1c	BS -> SP	0.053	0.117	0.451	0.652	Not significant
H1e	CS -> EP	0.096	0.116	0.826	0.409	Not significant
H1d	CS -> FP	0.441	0.072	6.116	0.000	Significant
H1f	CS -> SP	0.109	0.105	1.042	0.298	Not significant
H1h	DSS -> EP	0.211	0.097	2.176	0.030	Significant
H1g	DSS -> FP	0.145	0.103	1.406	0.160	Not significant
H1i	DSS -> SP	0.291	0.092	3.160	0.002	Significant
H1k	PMS -> EP	0.278	0.106	2.635	0.009	Significant
H1j	PMS -> FP	-0.007	0.099	0.070	0.944	Not significant
H1l	PMS -> SP	0.226	0.092	2.465	0.014	Significant
H1n	SMAP -> EP	0.177	0.088	2.025	0.043	Significant
H1m	SMAP -> FP	-0.019	0.079	0.235	0.814	Not significant
H1o	SMAP -> SP	0.115	0.087	1.327	0.185	Not significant

Source: Akuma (2022)

Coefficient **of determination (R^2)** is a number that ranges from zero to one and explains the variance of the dependent variable due to the impact of the independent variable. The higher the R^2 the higher the predicting accuracy of the model. It can also be explained as the proportion of variation in the dependent variable that is predicted by the model. In general, a high R^2 indicates that the model is a good fit for the data. Hair et al. (2011) and Henseler et al. (2009) articulated that R^2 values of 0.75, 0.50 and 0.25 can be described as substantial, moderate and weak respectively. On the other hand, Chin (1998), explained that R^2 values of 0.67, 0.33 and 0.19 is substantial, moderate and weak respectively.

Based on Chin (1998) criteria, it can be observed from Table 34 below that 45.3% variation in EP is predicted by the model and this represents moderate predicting accuracy. Secondly, 43.7% variation in FP is predicted by the model and this represents moderate predicting accuracy. Finally, 47.6% variation in SP is predicted by the model and this represents moderate predicting accuracy.

Table 34: Coefficient of Determination (R^2)

Constructs	R Square	R Square Adjusted
EP	0.453	0.442
FP	0.437	0.427
SP	0.476	0.466

Source: Akuma (2022)

Effect size (f^2) assessment allows the researcher to observe the effect of each independent variable on the dependent variable. This study adopted Cohen (1992) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value

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that is less than 0.02 indicates that there no effect of the independent variable on the dependent variable".

The effect size in Table 35 below shows that if BS (f^2= 0.000, 0.011, 0.001) is omitted from EP, FP and SP respectively, it will have no effect. If CS (f^2= 0.006, 0.008) is omitted from EP and SP respectively, it will have no effect. If CS (f^2= 0.124) is omitted from FP, it will have a small effect. If DSS (f^2= 0.032, 0.063) is omitted from EP and SP respectively, it will have a small effect. If DSS (f^2= 0.015) is omitted from FP, it will have no effect. If PMS (f^2= 0.055, 0.038) is omitted from EP and SP respectively, it will have a small effect. If DSS (f^2= 0.000) is omitted from FP, it will have no effect. If SMAP (f^2= 0.0000, 0.012) is omitted from FP and SP respectively, it will have no effect. If SMAP (f^2= 0.027) is omitted from EP, it will have a small effect.

Table 35: Effect size

	EP	FP	SP
BS	0.000	0.011	0.001
CS	0.006	0.124	0.008
DSS	0.032	0.015	0.063
PMS	0.055	0.000	0.038
SMAP	0.027	0.000	0.012

Source: Akuma (2022)

The **predictive relevance (Q^2)** of the model was also assessed. In addition to evaluating the magnitude of R^2 values as a criterion of predictive accuracy, researchers should also examine Stone-Geisser's Q^2 value (Geisser, 1975; Stone, 1974). This measure is an indicator of the model's predictive power or predictive relevance. The Q^2 value is obtained by using blindfolding procedures for specified omission distance D with a value between 5 and 10. A Q^2 value that is larger than zero suggests that the model has predictive

relevance for a certain dependent variable. In contrast, values of zero and below indicate lack of predictive relevance. As can be seen from Table 36 below, the model used in this study has predictive relevance since the Q^2 values are more than zero

Table 36: Predictive relevance

	SSO	SSE	Q² (=1-SSE/SSO)
EP	1596.000	1151.212	0.279
FP	1330.000	888.919	0.332
SP	2660.000	1986.218	0.253

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Integration (ITI) in the connection between Management Accounting Practices (MAPs) and Financial Performance (FP)

Figure 3 below shows the **measurement and structural model** of the moderating role of ITI in the link between MAPs and FP.

Figure 3: Moderating model of the role of ITI in the link between MAPs and FP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of ITI on the relationship between MAPs and FP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand, a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 37 below that ITI has a negative but moderately weak moderating effect (MOD_BS_FP = -0.087) on the connection between BS and FP. ITI has a negative but moderately weak moderating effect (MOD_CS_FP = -0.039) on the connection between CS and FP. ITI has a negative but moderately weak moderating effect (MOD_DSS_FP = -0.066) on the connection between DSS and FP. ITI has a positive but moderately strong moderating effect (MOD_PMS_SP = 0.178) on the connection between PMS and FP. ITI has a negative but moderately weak moderating effect (MOD_SMAP_FP = 0.040) on the connection between SMAP and FP.

To assess whether the **path coefficient of the moderation effect of ITI is significant** or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. To conclude that the association under investigation is significant at a significant level of 5%, the p values must be lower than 0.05. (Hair et al., 2011). The p values, however, must be less than

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0.01 to suggest a relationship is significant when using a significance level of 1%.

From Table 37 below, we can conclude that there is no significant moderating effect of ITI "(β = -0.087, t = 0.943, p = 0.346) on the connection between BS and FP. There is no significant moderating effect of ITI (β = -0.039, t = 0.478, p = 0.633) on the connection between CS and FP. There is no significant moderating effect of ITI (β = -0.066, t = 0.772, p = 0.440) on the connection between DSS and FP. There is no significant moderating effect of ITI (β = -0.040, t = 0.580, p = 0.562) on the connection between SMAP and FP. All these hypotheses are therefore not supported. There is however a significant moderating effect of ITI (β = 0.178, t = 2.072, p < 0.05)" on the connection between PMS and FP.

Table 37: Significance of moderation effect of ITI on the link between MAPs and FP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_FP ->FP	-0.087	0.093	0.943	0.346
MOD_CS_FP ->FP	-0.039	0.081	0.478	0.633
MOD_DSS_FP ->FP	-0.066	0.085	0.772	0.440
MOD_PMS_FP ->FP	0.178	0.086	2.072	0.039
MOD_SMAP_FP ->FP	-0.040	0.068	0.580	0.562

Source: Akuma (2022)

The effect size (f^2) of ITI on the link between MAPs and FP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and

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Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019)and Hair et al. (2021).

From Table 38 below, the effect size (f^2) shows a small moderating effect of ITI ($f^2 = 0.007$) on the relationship between BS and FP. There is no moderating effect of ITI ($f^2 = 0.001$) on the relationship between CS and FP. There is a small moderating effect of ITI ($f^2 = 0.005$) on the relationship between DSS and FP. There is a large moderating effect of ITI ($f^2 = 0.028$) on the relationship between PMS and FP. Finally, there is a no moderating effect of ITI ($f^2 = 0.002$) on the relationship between SMAP and FP.

Table 38: Effect size of ITI on the link between MAPs and FP

	FP
MOD_BS_FP	0.007
MOD_CS_FP	0.001
MOD_DSS_FP	0.005
MOD_PMS_FP	0.028
MOD_SMAP_FP	0.002

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Integration (ITI) in the connection between Management Accounting Practices (MAPs) and Environmental Performance (EP)

Figure 4 below shows the **measurement and structural model** of the moderating role of ITI in the link between MAPs and EP.
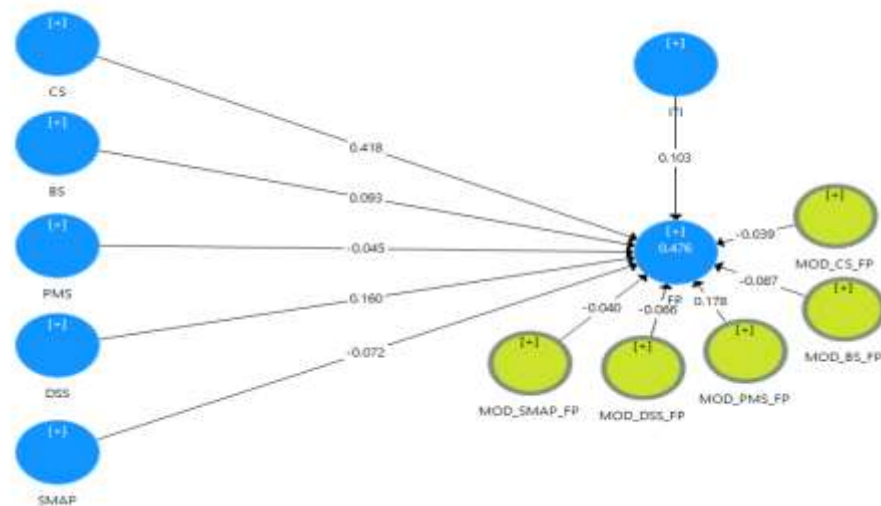

Figure 4: Moderating model of the role of ITI in the link between MAPs and EP
Source: Field Survey, Akuma (2022).

The **path coefficient** of the moderating model was assessed to establish the strength of the moderating role of ITI on the relationship between MAPs and EP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 39 below that ITI has a negative but moderately weak moderating effect (MOD_BS_EP = -0.090) on the

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connection between BS and EP. ITI has a positive but moderately weak moderating effect (MOD_CS_FP = 0.081) on the connection between CS and EP. ITI has a negative but weak moderating effect (MOD_DSS_EP = -0.018) on the connection between DSS and EP. ITI has a positive but moderately weak moderating effect (MOD_PMS_SP = 0.094) on the connection between PMS and EP. ITI has a negative but weak moderating effect (MOD_SMAP_FP = -0.027) on the connection between SMAP and FP.

To assess whether the path coefficient of the moderation effect of ITI is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. In order to determine whether a relationship is significant at a level of 5%, the p values must be less than 0.05. (Hair et al., 2011). But in order to suggest that a relationship is significant when using a 1% significance level, the p values must be below 0.01.

From Table 39 below, we can conclude that there is no significant moderating effect of ITI "(β = -0.090, t = 0.817, p = 0.414) on the connection between BS and EP. There is no significant moderating effect of ITI (β = 0.081, t = 0.670, p = 0.503) on the connection between CS and EP. There is no significant moderating effect of ITI (β = -0.018, t = 0.163, p = 0.871) on the connection between DSS and EP. There is no significant moderating effect of ITI (β = 0.094, t = 0.831, p = 0.406) on the connection between PMS and EP. There is also no significant moderating effect of ITI (β = -0.027, t = 0.276, p = 0.783) on the connection between SMAP and FP". All these hypotheses are therefore not supported.

Table 39: Significance of moderation effect of ITI on the link between MAPs and EP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_EP ->EP	-0.090	0.111	0.817	0.414
MOD_CS_EP ->EP	0.081	0.120	0.670	0.503
MOD_DSS_EP ->EP	-0.018	0.109	0.163	0.871
MOD_PMS_EP ->EP	0.094	0.113	0.831	0.406
MOD_SMAP_EP ->EP	-0.027	0.097	0.276	0.783

Source: Akuma (2022)

The effect size (f^2) of ITI on the link between MAPs and EP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 40 below, the effect size (f^2) shows a small moderating effect of ITI ($f^2 = 0.008$) on the relationship between BS and EP. There is no

moderating effect of ITI ($f^2 = 0.001$) on the relationship between CS and EP. There no moderating effect of ITI ($f^2 = 0.000$) on the relationship between DSS and EP. There is a small moderating effect of ITI ($f^2 = 0.008$) on the relationship between PMS and EP. Finally, there is no moderating effect of ITI ($f^2 = 0.001$) on the relationship between SMAP and EP.

Table 40: Effect size of ITI on the link between MAPs and EP

	EP
MOD_BS_EP	0.008
MOD_CS_EP	0.007
MOD_DSS_EP	0.000
MOD_PMS_EP	0.008
MOD_SMAP_EP	0.001

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Integration (ITI) in the connection between Management Accounting Practices (MAPs) and Social Performance (SP)

Figure 5 below shows the **measurement and structural model** of the moderating role of ITI in the link between MAPs and SP.
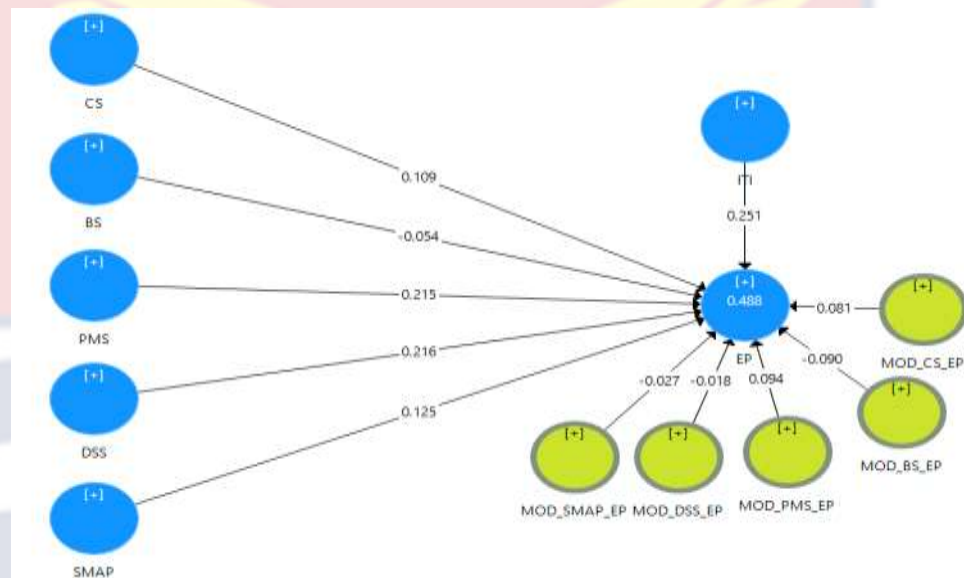
Figure 5: Moderating model of the role of ITI in the link between MAPs and SP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of ITI on the relationship between MAPs and SP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 41 below that ITI has a negative but moderately weak moderating effect (MOD_BS_SP = -0.028) on the connection between BS and SP. ITI has a negative but moderately weak moderating effect (MOD_CS_SP = 0.066) on the connection between CS and

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SP. ITI has a negative but weak moderating effect (MOD_DSS_SP = -0.045) on the connection between DSS and SP. ITI has a positive but moderately weak moderating effect (MOD_PMS_SP = 0.056) on the connection between PMS and SP. ITI has a positive but weak moderating effect (MOD_SMAP_SP = 0.046) on the connection between SMAP and SP.

To assess whether the path coefficient of the moderation effect of ITI is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 41 below, we can conclude that there is no significant moderating effect of ITI (β = -0.028, t = 0.265, p = 0.791) on the connection between BS and SP. There is no significant moderating effect of ITI (β = -0.066, t = 0.684, p = 0.494) on the connection between CS and SP. There is no significant moderating effect of ITI (β = -0.045, t = 0.480, p = 0.632) on the connection between DSS and SP. There is no significant moderating effect of ITI (β = 0.056, t = 0.659, p = 0.510) on the connection between PMS and SP. There is also no significant moderating effect of ITI (β = 0.046, t = 0.554, p = 0.580) on the connection between SMAP and SP. All these hypotheses are therefore not supported.

Table 41: Significance of moderation effect of ITI on the link between MAPs and SP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_SP->SP	-0.028	0.106	0.265	0.791
MOD_CS_SP->SP	-0.066	0.096	0.684	0.494
MOD_DSS_SP->SP	-0.045	0.093	0.480	0.632
MOD_PMS_SP->SP	0.056	0.086	0.659	0.510
MOD_SMAP_SP->SP	0.046	0.082	0.554	0.580

Source: Akuma (2022)

The effect size (f^2) of ITI on the link between MAPs and SP was assessed. This study reviewed Cohen (1992) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 42 below, the effect size (f^2) shows no moderating effect of ITI ($f^2 = 0.001$) on the relationship between BS and SP. There is small

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moderating effect of ITI ($f^2 = 0.005$) on the relationship between CS and SP. There is no moderating effect of ITI ($f^2 = 0.002$) on the relationship between DSS and SP. There is a no moderating effect of ITI ($f^2 = 0.003$) on the relationship between PMS and SP. Finally, there is no moderating effect of ITI ($f^2 = 0.002$) on the relationship between SMAP and SP.

Table 42: Effect size of ITI on the link between MAPs and SP

	SP
MOD_BS_SP	0.001
MOD_CS_SP	0.005
MOD_DSS_SP	0.002
MOD_PMS_SP	0.003
MOD_SMAP_SP	0.002

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Knowledge (ITK) in the connection between Management Accounting Practices (MAPs) and Financial Performance (FP)

Figure 6 below shows the **measurement and structural model** of the moderating role of ITK in the link between MAPs and FP.
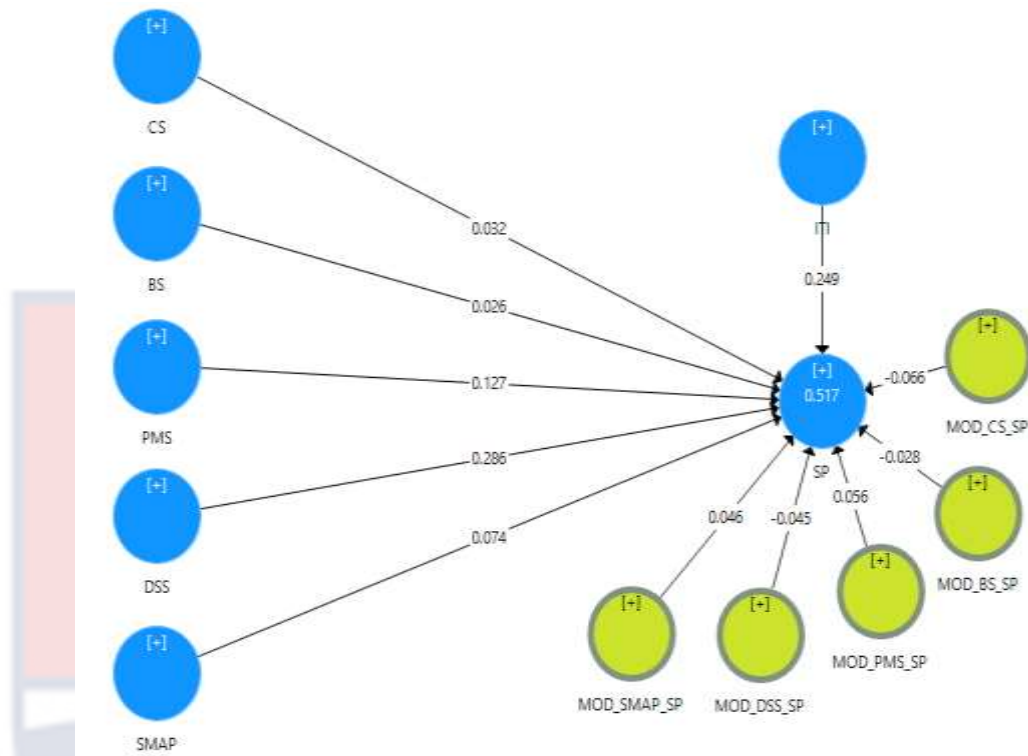
Figure 6: Moderating model of the role of ITK in the link between MAPs and FP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of ITK on the relationship between MAPs and FP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 43 below that ITK has a negative but moderately weak moderating effect (MOD_BS_FP = -0.123) on the connection between BS and FP. ITK has a negative but weak moderating effect (MOD_CS_FP = -0.009) on the connection between CS and FP. ITK

has a negative but weak moderating effect (MOD_DSS_FP = -0.132) on the connection between DSS and FP. ITK has a positive but relatively strong moderating effect (MOD_PMS_FP = 0.207) on the connection between PMS and FP. ITK has a positive but weak moderating effect (MOD_SMAP_FP = 0.007) on the connection between SMAP and FP.

To assess whether the path coefficient of the moderation effect of ITK is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. To determine whether a relationship is significant at a level of 5%, the p values must be less than 0.05. (Hair et al., 2011). The p values must be less than 0.01 to establish that a relationship is significant, however, when using a significance level of 1%.

From Table 43 below, we can conclude that there is no significant moderating effect of ITK "(β = -0.123, t = 1.376, p = 0.169) on the connection between BS and FP. There is no significant moderating effect of ITK (β = -0.009, t = 0.113, p = 0.910) on the connection between CS and FP. There is no significant moderating effect of ITK (β = -0.132, t = 1.508, p = 0.132)" on the connection between DSS and FP. There is also no significant moderating effect of ITK (β = 0.007, t = 0.087, p = 0.931) on the connection between SMAP and FP. All these hypotheses are therefore not supported. These hypotheses are therefore not supported.

There is a significant moderating effect of ITK (β = 0.207, t = 2.336, p < 0.05) on the connection between PMS and FP. This hypothesis is therefore supported.

Table 43: Significance of moderation effect of ITK on the link between MAPs and FP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_FP->FP	-0.123	0.089	1.376	0.169
MOD_CS_FP->FP	-0.009	0.083	0.113	0.910
MOD_DSS_FP->FP	-0.132	0.087	1.508	0.132
MOD_PMS_FP->FP	0.207	0.088	2.336	0.020
MOD_SMAP_FP->FP	0.007	0.075	0.087	0.931

Source: Akuma (2022)

The effect size (f^2) of ITK on the link between MAPs and FP was assessed. This study reviewed Cohen (1992) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 44 below, the effect size (f^2) shows small moderating effect of ITK "($f^2 = 0.015$) on the relationship between BS and FP. There is no

moderating effect of ITK ($f^2 = 0.000$) on the relationship between CS and FP. There is medium moderating effect of ITK ($f^2 = 0.020$) on the relationship between DSS and FP. There is a large moderating effect of ITK ($f^2 = 0.034$)" on the relationship between PMS and FP. Finally, there is no moderating effect of ITK ($f^2 = 0.000$) on the relationship between SMAP and FP.

Table 44: Effect size of ITK on the link between MAPs and FP

	FP
MOD_BS_FP	0.015
MOD_CS_FP	0.000
MOD_DSS_FP	0.020
MOD_PMS_FP	0.034
MOD_SMAP_FP	0.000

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Knowledge (ITK) in the connection between Management Accounting Practices (MAPs) and Environmental Performance (EP)

Figure 7 below shows the **measurement and structural model** of the moderating role of ITK in the link between MAPs and EP.
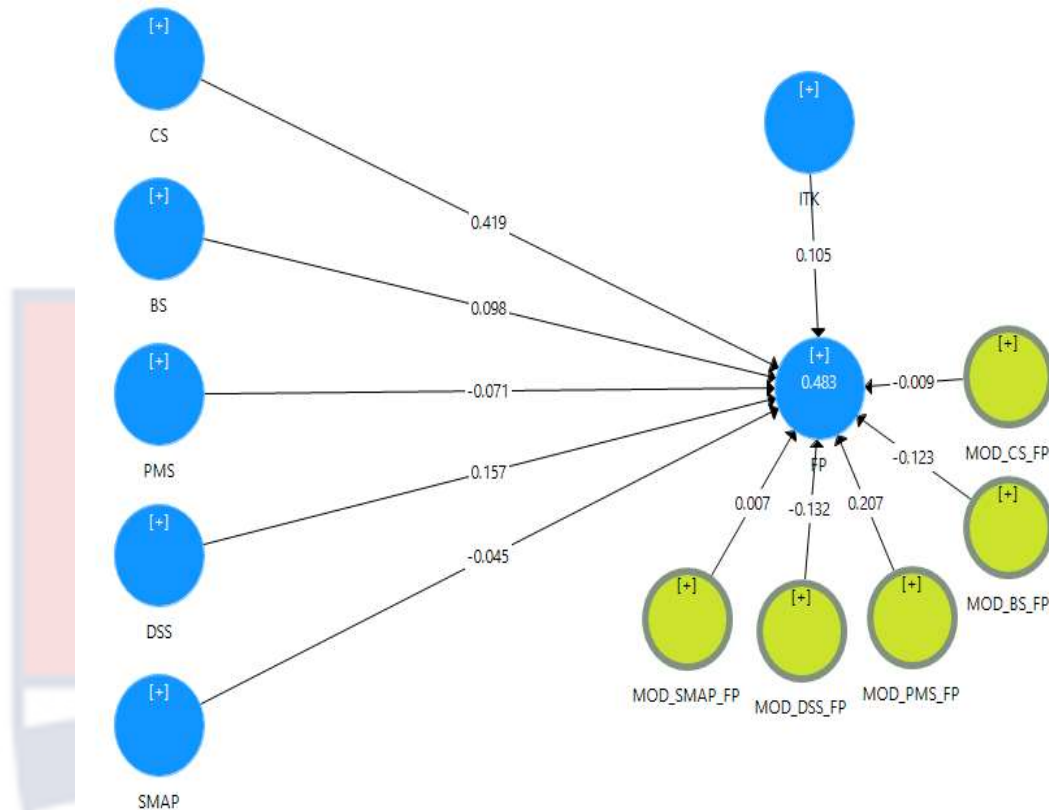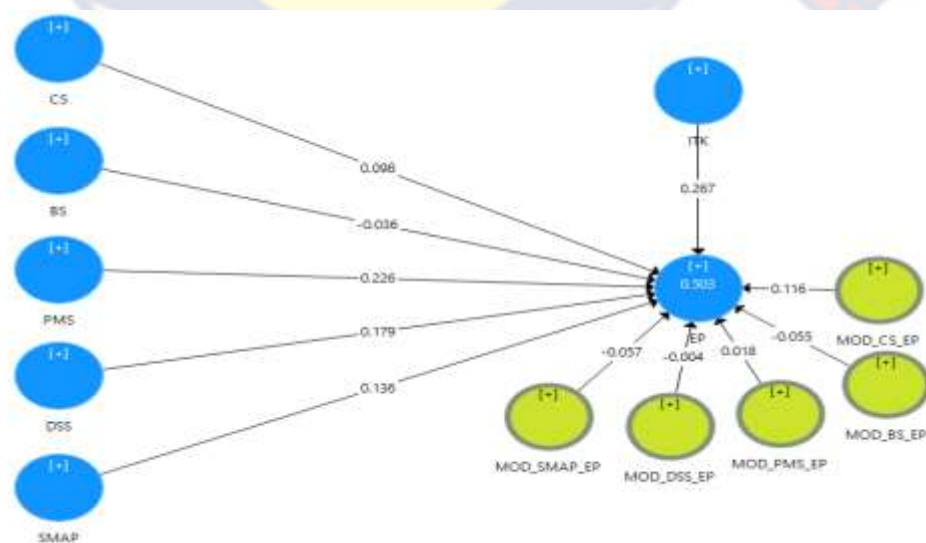

Figure 7: Moderating model of the role of ITK in the link between MAPs and EP
Source: Field Survey, Akuma (2022).

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The path coefficient of the moderating model was assessed to establish the strength of the moderating role of ITK on the relationship between MAPs and EP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 45 below that ITK plays a weak negative moderating role (MOD_BS_EP = -0.055) on the connection between BS and EP. ITK has a positive but weak moderating effect (MOD_CS_EP = 0.116) on the connection between CS and EP. ITK has a negative but weak moderating effect (MOD_DSS_EP = -0.004) on the connection between DSS and EP. ITK has a positive but weak moderating effect (MOD_PMS_EP = 0.018) on the connection between PMS and EP. ITK has a negative but weak moderating effect (MOD_SMAP_EP = 0.057) on the connection between SMAP and EP.

To assess whether the path coefficient of the moderation effect of ITK is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. "When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant".

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From Table 45 below, we can conclude that there is no significant moderating effect of ITK "(β = -0.055, t = 0.460, p = 0.646) on the connection between BS and EP. There is no significant moderating effect of ITK (β = 0.116, t = 1.009, p = 0.314) on the connection between CS and EP. There is no significant moderating effect of ITK (β = -0.004, t = 0.029, p = 0.977) on the connection between DSS and EP. There is also no significant moderating effect of ITK (β = 0.018, t = 0.149, p = 0.882) on the connection between PMS and EP. Finally, the study finds no significant moderating effect of ITK (β = -0.057, t = 0.594, p = 0.553)" on the connection between SMAP and EP. All these hypotheses are therefore not supported.

Table 45: Significance of moderation effect of ITK on the link between MAPs and EP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_EP->EP	-0.055	0.119	0.460	0.646
MOD_CS_EP->EP	0.116	0.115	1.009	0.314
MOD_DSS_EP->EP	-0.004	0.121	0.029	0.977
MOD_PMS_EP->EP	0.018	0.118	0.149	0.882
MOD_SMAP_EP>EP	-0.057	0.095	0.594	0.553

Source: Akuma (2022)

The effect size (f^2) ITK on the link between MAPs and EP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is

just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 46 below, the effect size (f^2) shows no moderating effect of ITK ($f^2 = 0.003$) on the relationship between BS and EP. There is small moderating effect of ITK ($f^2 = 0.017$) on the relationship between CS and EP. There is no moderating effect of ITK ($f^2 = 0.000$) on the relationship between DSS and EP. There is no moderating effect of ITK ($f^2 = 0.000$) on the relationship between PMS and EP. Finally, there is no moderating effect of ITK ($f^2 = 0.003$) on the relationship between SMAP and EP.

Table 46: Effect size of ITK on the link between MAPs and EP

	EP
MOD_BS_EP	0.003
MOD_CS_EP	0.017
MOD_DSS_EP	0.000
MOD_PMS_EP	0.000
MOD_SMAP_EP	0.003

Source: Akuma (2022)

Evaluation of moderation role of Information Technology Knowledge (ITK) in the connection between Management Accounting Practices (MAPs) and Social Performance (SP)

Figure 8 below shows the **measurement and structural model** of the moderating role of ITK in the link between MAPs and SP.

Figure 8: Moderating model of the role of ITK in the link between MAPs and SP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of ITK on the relationship between MAPs and SP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero

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indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 47 below that ITK plays a weak negative moderating role (MOD_BS_SP = -0.041) on the connection between BS and SP. ITK has a positive but weak moderating effect (MOD_CS_SP = -0.011) on the connection between CS and SP. ITK has a negative but weak moderating effect (MOD_DSS_SP = -0.065) on the connection between DSS and SP. ITK has a negative but weak moderating effect (MOD_PMS_SP = -0.025) on the connection between PMS and SP. ITK has a positive but weak moderating effect (MOD_SMAP_SP = 0.060) on the connection between SMAP and SP.

To assess whether the path coefficient of the moderation effect of ITK is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 47 below, we can conclude that there is no significant moderating effect of ITK "(β = -0.041, t = 0.351, p = 0.726) on the connection between BS and SP. There is no significant moderating effect of ITK (β = -0.011, t = 0.099, p = 0.921) on the connection between CS and SP. There is no significant moderating effect of ITK (β = -0.065, t = 0.640, p = 0.523) on the connection between DSS and SP. There is also no significant moderating

effect of ITK ($\beta = -0.025$, t = 0.277, p = 0.782)" on the connection between PMS and SP. Finally, the study finds no significant moderating effect of ITK ($\beta = 0.060$, t = 0.696, p = 0.487) on the connection between SMAP and SP. All these hypotheses are therefore not supported.

Table 47: Significance of moderating effect of ITK on the link between MAPs and SP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_SP->SP	-0.041	0.116	0.351	0.726
MOD_CS_SP->SP	-0.011	0.107	0.099	0.921
MOD_DSS_SP->SP	-0.065	0.102	0.640	0.523
MOD_PMS_SP->SP	-0.065	0.091	0.277	0.782
MOD_SMAP_SP->SP	0.060	0.087	0.696	0.487

Source: Akuma (2022)

The **effect size (f^2)** of ITK on the link between MAPs and SP was assessed. This study reviewed Cohen (1992) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make

reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 48 below, the effect size (f^2) shows no moderating effect of ITK ($f^2 = 0.002$) on the relationship between BS and SP. "There is no moderating effect of ITK ($f^2 = 0.000$) on the relationship between CS and SP. There is small moderating effect of ITK ($f^2 = 0.005$) on the relationship between DSS and SP. There is no moderating effect of ITK ($f^2 = 0.001$) on the relationship between PMS and SP". Finally, there is no moderating effect of ITK ($f^2 = 0.003$) on the relationship between SMAP and SP.

Table 48: Effect size of ITK on the link between MAPs and SP

	SP
MOD_BS_SP	0.002
MOD_CS_SP	0.000
MOD_DSS_SP	0.005
MOD_PMS_SP	0.001
MOD_SMAP_SP	0.003

Source: Akuma (2022)

Evaluation of the moderation role of Corporate Governance (CG) in the connection between Management Accounting Practices (MAPs) and Environmental Performance (EP)

When a third variable, known as a moderator variable, has an impact on the link between two constructs, it is said that there is a moderate association. The moderator variable modifies a relationship between two model constructs, altering its strength or even its direction. For instance, depending on the customer's income, the relationship between customer pleasure and customer loyalty varies. The link between loyalty and

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satisfaction is negatively impacted by income. This is due to the decreased correlation between loyalty and contentment with increasing wealth.

To analyse the moderation effect of CG in the link between MAPs and EP, the study looked at the measurement and structural model, size of the moderating effect, significance of the interaction term and the moderator's effect size. Figure 9 below shows the **measurement and structural model** of the moderating role of CG in the link between MAPs and EP.

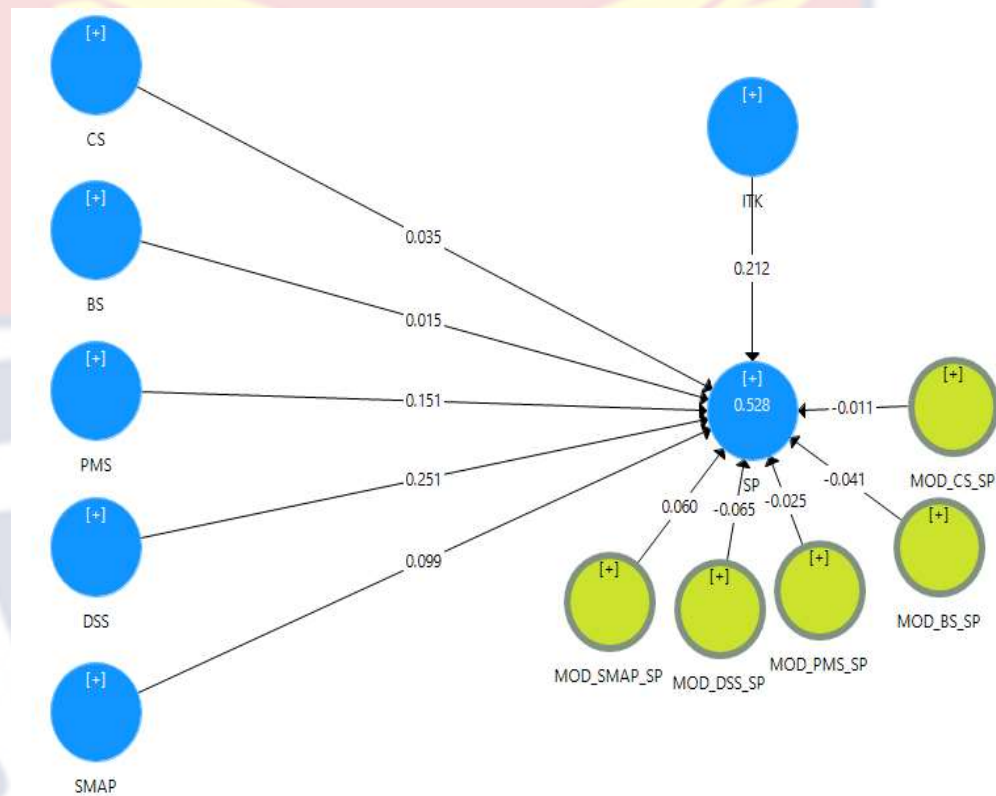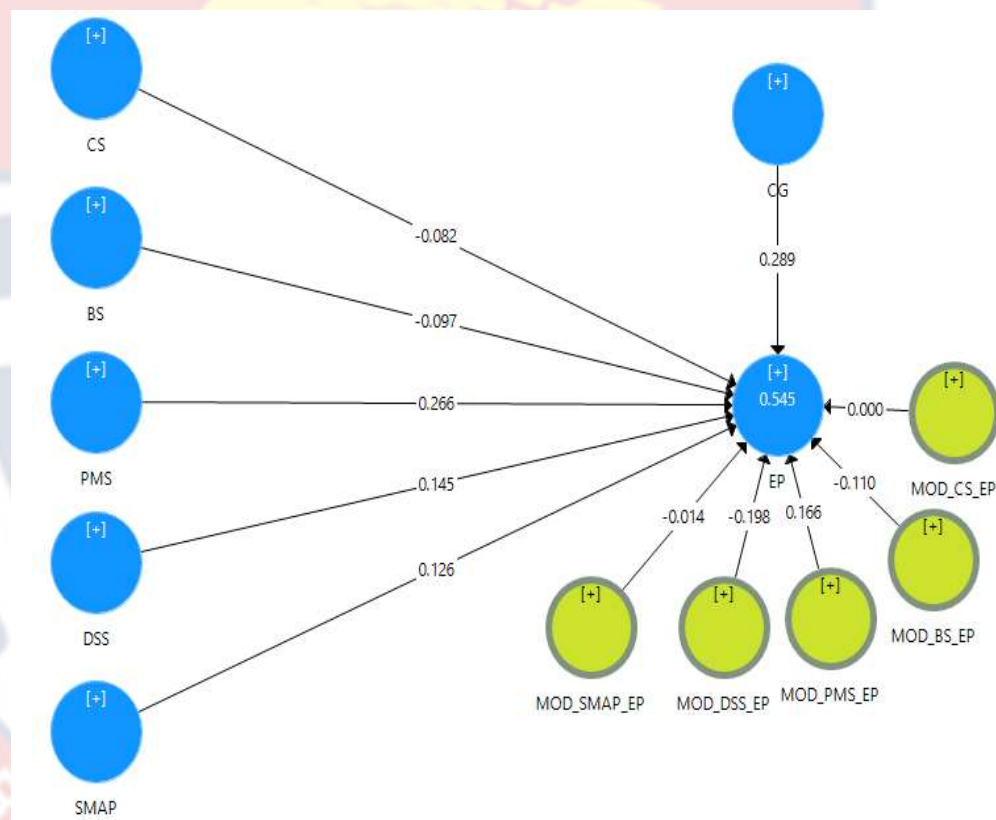*Figure 9:* Moderating model of role of CG in the link between MAPs and EP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of CG on the relationship between MAPs and EP. This researcher adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a

strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 49 below that CG has a negative but moderately weak moderating effect (MOD_BS_EP = -0.110) on the connection between BS and EP. CG has a weak moderating effect (MOD_CS_EP = 0.000) on the connection between CS and EP. CG has a negative but moderately strong moderating effect (MOD_DSS_EP = -0.198) on the connection between DSS and EP. CG has a positive but moderately weak moderating effect (MOD_PMS_EP = 0.166) on the connection between PMS and EP. CG has a negative but weak moderating effect (MOD_SMAP_EP = -0.014) on the connection between SMAP and EP.

To assess the moderation effect of whether the path coefficient is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. The coefficient is deemed statistically significant at a specific error probability when an empirical t value exceeds the critical value. Critical values of 1.65 at 10% significance level and 1.96 at 5% significance level are frequently employed for two-tailed tests. To evaluate significant levels, the majority of researchers utilise p values. To conclude that the association under investigation is significant at a significant level of 5%, the p values must be lower than 0.05. (Hair et al., 2011). The p values, however, must be less than 0.01 to suggest a relationship is significant when using a significance level of 1%.

From Table 49 below, we can conclude that there is a significant positive moderating effect of CG "(β = -0.198, t = 2.478, p < 0.05) on the connection between DSS and EP. There is a significant positive moderating effect of CG (β = 0.166, t = 2.228, p < 0.05) on the link between PMS and EP. These hypotheses are therefore supported.

On the other hand, there is no significant moderating effect of CG (β = -0.110, t = 1.154, p = 0.249) on the connection between BS and EP. There is no significant moderating effect of CG (β = 0.000, t = 0.002, p = 0.998) on the connection between CS and EP. Finally, there is no significant moderating effect of CG (β = -0.014, t = 0.210, p = 0.834)" on the connection between SMAP and EP. These three hypotheses are therefore not supported.

Table 49: Significance of moderation effect of CG on the link between MAPs and EP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_EP -> EP	-0.110	0.096	1.154	0.249
MOD_CS_EP -> EP	0.000	0.085	0.002	0.998
MOD_DSS_EP -> EP	-0.198	0.080	2.478	0.014
MOD_PMS_EP -> EP	0.166	0.075	2.228	0.026
MOD_SMAP_EP -> EP	-0.014	0.066	0.210	0.834

Source: Akuma (2022)

The **effect size (f^2) of CG** on the link between MAPs and EP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several

published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 50 below, the effect size (f^2) shows a weak moderating effect of CG ($f^2 = 0.009$) on the relationship between BS and EP. "There is a weak moderating effect of CG ($f^2 = 0.000$) on the relationship between CS and EP. There is a small moderating effect of CG ($f^2 = 0.000$) on the relationship between DSS and EP. However, there is a large moderating effect of CG ($f^2 = 0.027$) on the relationship between PMS and EP. Finally, there is a weak moderating effect of CG ($f^2 = 0.000$) on the relationship between SMAP and EP.

Table 50: Effect size of CG on the link between MAPs and EP

	EP
MOD_BS_EP	0.009
MOD_CS_EP	0.000
MOD_DSS_EP	0.034
MOD_PMS_EP	0.027
MOD_SMAP_EP	0.000

Source: Akuma (2022)

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Evaluation of moderation role of Corporate Governance (CG) in the connection between Management Accounting Practices (MAPs) and Financial Performance (FP)

Figure 10 below shows the **measurement and structural model** of the moderating role of CG in the link between MAPs and FP.
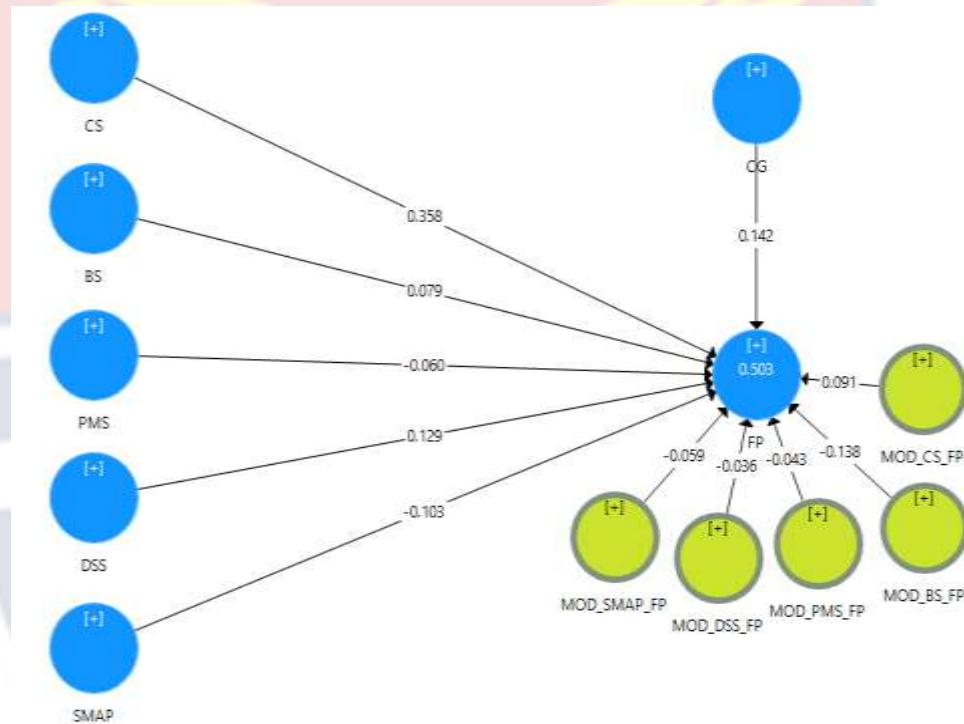
Figure 10: Moderating model of the role of CG in the link between MAPs and FP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of CG on the relationship between MAPs and FP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

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It can be observed from Table 52 below that CG has a negative but moderately weak moderating effect (MOD_BS_FP = -0.138) on the connection between BS and FP. CG has a positive but moderately weak moderating effect (MOD_CS_FP = 0.091) on the connection between CS and FP. CG has a negative but moderately weak moderating effect (MOD_DSS_FP = -0.036) on the connection between DSS and FP. CG has a negative but moderately weak moderating effect (MOD_PMS_FP = -0.043) on the connection between PMS and FP. CG has a negative but moderately weak moderating effect (MOD_SMAP_FP = -0.059) on the connection between SMAP and FP.

To assess whether the path coefficient of the moderation effect is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 51 below, we can conclude that there is no significant moderating effect of CG (β = -0.138, t = 1.519, p = 0.129) on the connection between BS and FP. There is no significant moderating effect of CG (β = 0.091, t = 1.078, p = 0.282) on the connection between CS and FP. There is no significant moderating effect of CG (β = -0.036, t = 0.377, p = 0.707) on the connection between DSS and FP. There is no significant moderating effect of CG (β = -0.043, t = 0.489, p = 0.625) on the connection between PMS and FP.

There is no significant moderating effect of CG (β = -0.059, t = 0.679, p = 0.497) on the connection between SMAP and FP. All these hypotheses are therefore not supported.

Table 51: Significance of moderation effect of CG on the link between MAPs and FP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_FP -> FP	-0.138	0.091	1.519	0.129
MOD_CS_FP -> FP	0.091	0.085	1.078	0.282
MOD_DSS_FP -> FP	-0.036	0.095	0.377	0.707
MOD_PMS_FP -> FP	-0.043	0.088	0.489	0.625
MOD_SMAP_EP -> EP	-0.059	0.087	0.679	0.497

Source: Akuma (2022)

The **effect size (f^2) of CG** on the link between MAPs and FP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make

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reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny (2018) and Hair et al. (2021).

From Table 52 below, the effect size (f^2) shows a medium moderating effect of CG ($f^2 = 0.013$) on the relationship between BS and FP. There is a small moderating effect of CG ($f^2 = 0.006$) on the relationship between CS and FP. There is a no moderating effect of CG ($f^2 = 0.001$) on the relationship between DSS and FP. There is no moderating effect of CG ($f^2 = 0.002$) on the relationship between PMS and FP. Finally, there is no moderating effect of CG ($f^2 = 0.000$) on the relationship between SMAP and FP.

Table 52: Effect size of CG on the link between MAPs and FP

	FP
MOD_BS_FP	0.013
MOD_CS_FP	0.006
MOD_DSS_FP	0.001
MOD_PMS_FP	0.002
MOD_SMAP_FP	0.005

Source: Akuma (2022)

Evaluation of moderation role of Corporate Governance (CG) in the connection between Management Accounting Practices (MAPs) and Social Performance (SP)

Figure 11 below shows the **measurement and structural model** of the moderating role of CG in the link between MAPs and SP.

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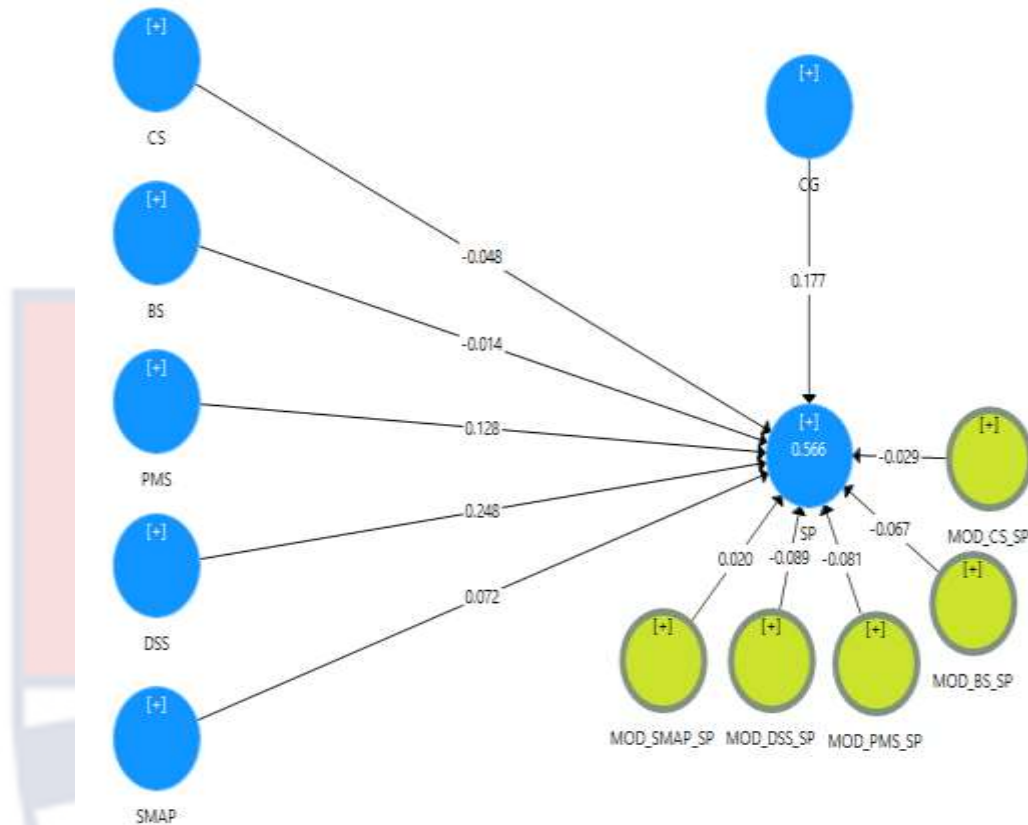
Figure 11: Moderating model of the role of CG in the link between MAPs and SP

Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of CG on the relationship between MAPs and SP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 53 below that CG has a negative but moderately weak moderating effect (MOD_BS_SP = -0.067) on the connection between BS and SP. CG has a negative but moderately weak moderating effect (MOD_CS_SP = -0.029) on the connection between CS and

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SP. CG has a negative but moderately weak moderating effect (MOD_DSS_SP = -0.089) on the connection between DSS and SP. CG has a negative but moderately weak moderating effect (MOD_PMS_SP = -0.043) on the connection between PMS and SP. CG has a positive but moderately weak moderating effect (MOD_SMAP_SP = 0.020) on the connection between SMAP and FP.

To assess whether the path coefficient of the moderation effect is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 53 below, we can conclude that there is no significant moderating effect of CG (β = -0.067, t = 0.787, p = 0.432) on the connection between BS and SP. There is no significant moderating effect of CG (β = -0.029, t = 0.342, p = 0.732) on the connection between CS and SP. There is no significant moderating effect of CG (β = -0.089, t = 1.118, p = 0.264) on the connection between DSS and SP. There is no significant moderating effect of CG (β = -0.081, t = 1.115, p = 0.265) on the connection between PMS and SP. There is no significant moderating effect of CG (β = 0.020, t = 0.340, p = 0.734) on the connection between SMAP and SP". All these hypotheses are therefore not supported.

Table 53: Significance of moderation effect of CG on the link between MAPs and SP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_SP -> SP	-0.067	0.085	0.787	0.432
MOD_CS_SP -> SP	-0.029	0.084	0.342	0.732
MOD_DSS_FP -> SP	-0.089	0.080	1.118	0.264
MOD_PMS_SP -> SP	-0.081	0.073	1.115	0.265
MOD_SMAP_SP ->SP	0.020	0.059	0.340	0.734

Source: Akuma (2022)

The effect size (f^2) of CG on the link between MAPs and SP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.05 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 54 below, the effect size (f^2) shows a no moderating effect of CG ($f^2 = 0.003$) on the relationship between BS and SP. "There is no

moderating effect of CG ($f^2 = 0.001$) on the relationship between CS and SP. There is a no moderating effect of CG ($f^2 = 0.007$) on the relationship between DSS and SP. There is no moderating effect of CG ($f^2 = 0.007$) on the relationship between PMS and SP. Finally, there is no moderating effect of CG ($f^2 = 0.001$) on the relationship between SMAP and SP".

Table 54: Effect size of CG on the link between MAPs and SP

	SP
MOD_BS_SP	0.003
MOD_CS_SP	0.001
MOD_DSS_SP	0.007
MOD_PMS_SP	0.007
MOD_SMAP_SP	0.001

Source: Akuma (2022)

Evaluation of moderation role of Organizational Culture (OC) in the connection between Management Accounting Practices (MAPs) and Social Performance (SP)

Figure 12 below shows the **measurement and structural model** of the moderating role of OC in the link between MAPs and SP

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Figure 12: Moderating model of the role of OC in the link between MAPs and SP

Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of OC on the relationship between MAPs and SP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 55 below that OC plays a weak positive moderating role (MOD_BS_SP = 0.008) on the connection between BS and SP. OC has a negative but weak moderating effect (MOD_CS_SP = -0.107) on the connection between CS and SP. OC has a negative but weak moderating effect (MOD_DSS_SP = -0.088) on the connection between DSS

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and SP. OC has a negative but weak moderating effect (MOD_PMS_SP = -0.077) on the connection between PMS and SP. OC has a positive but weak moderating effect (MOD_SMAP_SP = 0.016) on the connection between SMAP and SP.

To assess whether the path coefficient of the moderation effect of OC is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 55 below, we can conclude that there is no significant moderating effect of OC "(β = 0.008, t = 0.101, p = 0.920) on the connection between BS and SP. There is no significant moderating effect of OC (β = -0.107, t = 1.524, p = 0.128) on the connection between CS and SP. There is no significant moderating effect of OC (β = -0.088, t = 1.256, p = 0.210) on the connection between DSS and SP. There is also no significant moderating effect of OC (β = -0.077, t = 1.057, p = 0.291) on the connection between PMS and SP. Finally, the study finds no significant moderating effect of OC (β = 0.016, t = 0.268, p = 0.789) on the connection between SMAP and SP". All these hypotheses are therefore not supported.

Table 55: Significance of moderation effect of OC on the link between MAPs and SP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_SP->SP	0.008	0.076	0.101	0.920
MOD_CS_SP->SP	-0.107	0.070	1.524	0.128
MOD_DSS_SP->SP	-0.088	0.070	1.256	0.210
MOD_PMS_SP->SP	-0.077	0.073	1.057	0.291
MOD_SMAP_SP>SP	0.016	0.060	0.268	0.789

Source: Akuma (2022)

The **effect size (f^2)** of OC on the link between MAPs and SP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.005 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 56 below, the effect size (f^2) shows no moderating effect of OC ($f^2 = 0.000$) on the relationship between BS and SP. "There is medium

moderating effect of OC ($f^2 = 0.013$) on the relationship between CS and SP. There is midium moderating effect of OC ($f^2 = 0.010$) on the relationship between DSS and SP. There is small moderating effect of OC ($f^2 = 0.006$) on the relationship between PMS and SP. Finally, there is no moderating effect of OC ($f^2 = 0.000$) on the relationship between SMAP and SP".

Table 56: Effect size of OC on the link between MAPs and SP

	SP
MOD_BS_SP	0.000
MOD_CS_SP	0.013
MOD_DSS_SP	0.010
MOD_PMS_SP	0.006
MOD_SMAP_SP	0.000

Source: Akuma (2022)

Evaluation of moderation role of Organizational Culture (OC) in the connection between Management Accounting Practices (MAPs) and Financial Performance (FP)

Figure 13 below shows the **measurement and structural model** of the moderating role of OC in the link between MAPs and FP
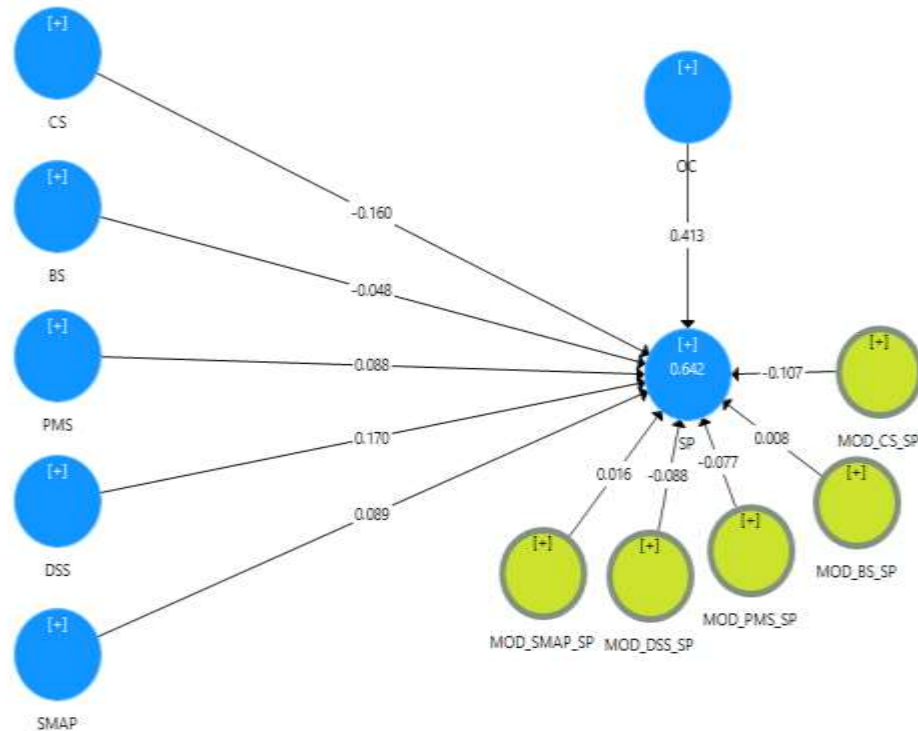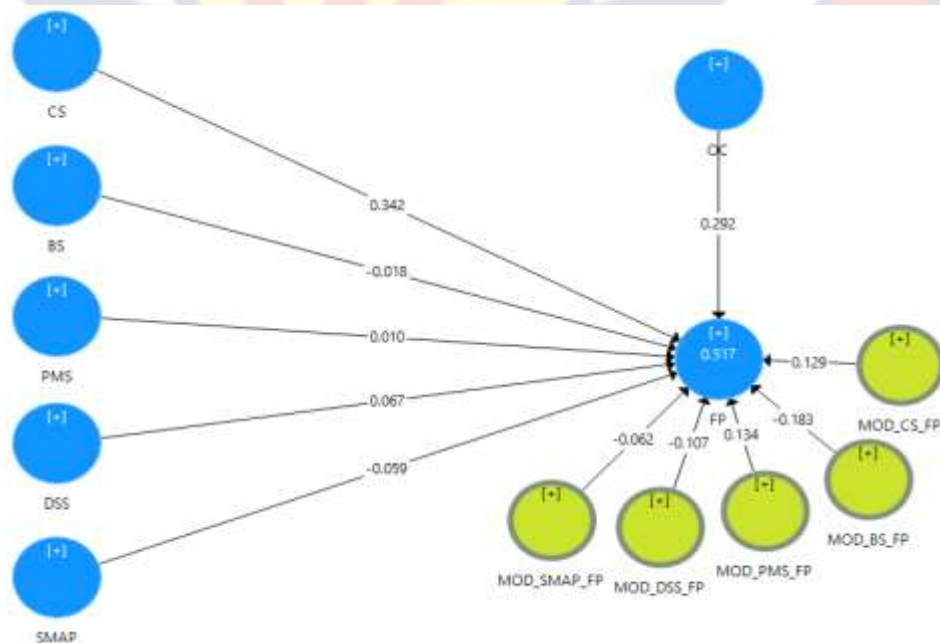

Figure 13: Moderating model of the role of OC in the link between MAPs and FP

Source: Field Survey, Akuma (2022).

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The path coefficient of the moderating model was assessed to establish the strength of the moderating role of OC on the relationship between MAPs and FP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

It can be observed from Table 57 below that OC plays a weak positive moderating role (MOD_BS_FP = -0.183) on the connection between BS and FP. OC has a positive but relatively weak moderating effect (MOD_CS_FP = 0.129) on the connection between CS and FP. OC has a negative but relatively weak moderating effect (MOD_DSS_FP = -0.107) on the connection between DSS and FP. OC has a positive but relatively weak moderating effect (MOD_PMS_FP = 0.134) on the connection between PMS and FP. OC has a negative but weak moderating effect (MOD_SMAP_FP = -0.062) on the connection between SMAP and FP.

To assess whether the path coefficient of the moderation effect of OC is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 57 below, we can conclude that there is no significant moderating effect of OC "(β = -0.183, t = 1.571, p = 0.117) on the connection between BS and FP. There is no significant moderating effect of OC (β = 0.129, t = 1.510, p = 0.132) on the connection between CS and FP. There is no significant moderating effect of OC (β = -0.107, t = 1.163, p = 0.245) on the connection between DSS and FP. There is also no significant moderating effect of OC (β = 0.134, t = 1.233, p = 0.218) on the connection between PMS and FP. Finally, the study finds no significant moderating effect of OC (β = -0.062, t = 0.622, p = 0.534) on the connection between SMAP and FP". All these hypotheses are therefore not supported.

Table 57: Significance of moderation effect of OC on the link between MAPs and FP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_FP->FP	-0.183	0.116	1.571	0.117
MOD_CS_FP->FP	0.129	0.086	1.510	0.132
MOD_DSS_FP->FP	-0.107	0.092	1.163	0.245
MOD_PMS_FP->FP	0.134	0.109	1.233	0.218
MOD_SMAP_FP>FP	-0.062	0.100	0.622	0.534

Source: Akuma (2022)

The effect size (f^2) of OC on the link between MAPs and FP was assessed. This study reviewed Cohen (1998) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is

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just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.005 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 58 below, the effect size (f^2) shows medium moderating effect of OC ($f^2 = 0.021$) on the relationship between BS and FP. "There is medium moderating effect of OC ($f^2 = 0.013$) on the relationship between CS and FP. There is medium moderating effect of OC ($f^2 = 0.011$) on the relationship between DSS and FP. There is medium moderating effect of OC ($f^2 = 0.013$) on the relationship between PMS and FP. Finally, there is no moderating effect of OC ($f^2 = 0.004$) on the relationship between SMAP and FP.

Table 58: Effect size of OC on the link between MAPs and FP

	FP
MOD_BS_FP	0.021
MOD_CS_FP	0.013
MOD_DSS_FP	0.011
MOD_PMS_FP	0.013
MOD_SMAP_FP	0.004

Source: Akuma (2022)

Evaluation of moderation role of Organizational Culture (OC) in the connection between Management Accounting Practices (MAPs) and Social Performance (EP)

Figure 14 below shows the **measurement and structural model** of the moderating role of OC in the link between MAPs and EP
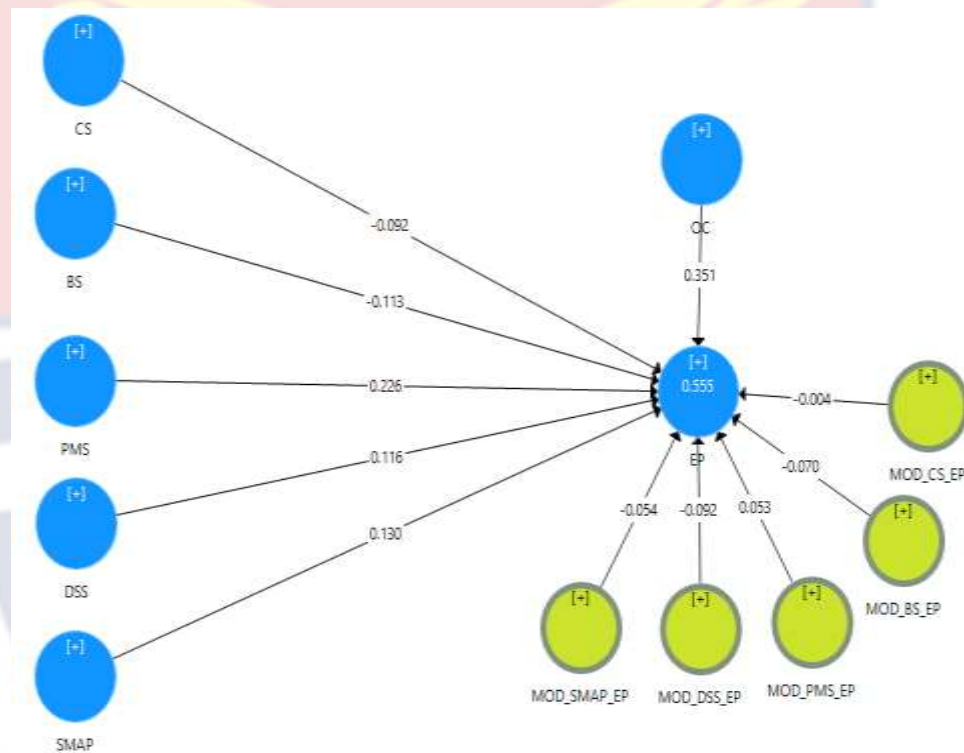
Figure 14: Moderating model of the role of OC in the link between MAPs and EP
Source: Field Survey, Akuma (2022).

The path coefficient of the moderating model was assessed to establish the strength of the moderating role of OC on the relationship between MAPs and EP. This study adopted the path coefficient criterion of Hair et al. (2011) where it is stated that a path coefficient close to one indicates a strong positive relationship while a path coefficient close to negative one indicates a strong negative relationship. On the other hand a path coefficient close to zero indicates a weak relationship. It should be noted that a very low path coefficient value close to zero generally is not statistically significant.

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It can be observed from Table 59 below that OC plays a weak negative moderating role (MOD_BS_EP = -0.070) on the connection between BS and EP. OC has a relatively weak negative moderating effect (MOD_CS_EP = -0.004) on the connection between CS and EP. OC has a negative but relatively weak moderating effect (MOD_DSS_EP = -0.092) on the connection between DSS and EP. OC has a positive but relatively weak moderating effect (MOD_PMS_EP = 0.053) on the connection between PMS and EP. OC has a negative but weak moderating effect (MOD_SMAP_EP = -0.054) on the connection between SMAP and EP.

To assess whether the path coefficient of the moderation effect of OC is significant or not depends on its standard error that is obtained by bootstrapping, to enable the computation of empirical t values and p values for all structural path coefficients. When assessing a significant level of 5%, the p values must be smaller than 0.05 to conclude that the relationship under consideration is significant (Hair et al., 2011). However, when assuming a significant level of 1%, the p values must be less than 0.01 to indicate that a relationship is significant.

From Table 59 below, we can conclude that there is no significant moderating effect of OC "(β = -0.070, t = 0.648, p = 0.517) on the connection between BS and EP. There is no significant moderating effect of OC (β = -0.004, t = 0.051, p = 0.959) on the connection between CS and EP. There is no significant moderating effect of OC (β = -0.092, t = 0.897, p = 0.370) on the connection between DSS and EP. There is also no significant moderating effect of OC (β = 0.053, t = 0.544, p = 0.587) on the connection between PMS and EP. Finally, the study finds no significant moderating effect of OC (β = -

0.054, t = 0.635, p = 0.526) on the connection between SMAP and EP". All

these hypotheses are therefore not supported.

Table 59: Significance of moderation effect of OC on the link between MAPs and EP

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MOD_BS_EP->EP	-0.070	0.108	0.648	0.517
MOD_CS_EP->EP	-0.004	0.080	0.051	0.959
MOD_DSS_EP->EP	-0.092	0.103	0.897	0.370
MOD_PMS_EP->EP	0.053	0.097	0.544	0.587
MOD_SMAP_EP>EP	-0.054	0.085	0.635	0.526

Source: Akuma (2022)

The effect size (f^2) of OC on the link between MAPs and EP was assessed. This study reviewed Cohen (1992) guidelines for assessing f^2 with values 0.02, 0.15 and 0.35 representing small effect, medium effect and large effect respectively. A value that is less than 0.02 indicates that there no effect of the moderating variable on the dependent variable. However, Kenny and Judd (2019) and Hair et al. (2021), after looking at the effect size of several published articles observed that average effect size for moderating effects is just 0.009 and this violates the reported standard in Cohen (1992). These authors therefore recommended effect size of moderating effect of 0.005, 0.01 and 0.025 for small effect, medium effect and large effect respectively. Any figure lower than 0.005 depicts weak effect. Their justification is that when analysing effect size of moderation effect, the researcher is just dealing with a minute side of the structural model, hence these lower thresholds make reasonable sense. This study therefore adopted the standards of effect size prescribed by Kenny and Judd (2019) and Hair et al. (2021).

From Table 60 below, based on Kenny and Judd (2019), the effect size (f^2) shows weak moderating effect of OC ($f^2 = 0.003$) on the relationship between BS and EP. "There is weak moderating effect of OC ($f^2 = 0.000$) on the relationship between CS and EP. There is small moderating effect of OC ($f^2 = 0.008$) on the relationship between DSS and EP. There is weak moderating effect of OC ($f^2 = 0.002$) on the relationship between PMS and EP. Finally, there is weak moderating effect of OC ($f^2 = 0.000$) on the relationship between SMAP and EP".

Table 60: Effect size of OC on the link between MAPs and EP

	EP
MOD_BS_EP	0.003
MOD_CS_EP	0.000
MOD_DSS_EP	0.008
MOD_PMS_EP	0.002
MOD_SMAP_EP	0.003

Source: Akuma (2022)

Chapter Summary

This chapter presented all the findings from the Smart PLS output. Profile of respondents, validity and reliability procedures, descriptive statistics, structural model assessment as well as assessment of moderation effects of ITI, ITK, CG and OC on the relationship between MAPs and performance of manufacturing firms in Ghana were presented. Full discussions of these findings are presented in chapter 5.

CHAPTER FIVE

DISCUSSION OF FINDINGS

Introduction

This study assessed the impact of Management Accounting Practices (MAPs) on the sustainability performance (SsP) of manufacturing firms in Ghana. The study also looked at the moderating roles of Information Technology (IT) adoption, Corporate Governance (CG) and Organizational Culture (OC) in the connection between MAPs and SsP of manufacturing firms in Ghana. This chapter presents detailed discussions and analyses of the findings presented in chapter 4 in line with the objectives that were investigated. It should be noted that, MAPs comprise CS, BS, DSS, PMS and SMAP. Sustainability performance (SsP) in this study comprises Financial Performance (FP), Environmental Performance (EP) and Social Performance (SP). Again, IT adoption in this study comprises Information Technology Knowledge (ITK) and Information Technology Integration (ITI).

As shown in Table 5, 266 valid responses from 266 manufacturing firms in Ghana were used for the statistical analyses. 139 of the firms are owned by Ghanaians, 65 are owned by foreigners while 62 are owned by both Ghanaians and foreigners. As can be observed from table 6, 163 of the 266 respondents are males and 103 are females. This implies that leadership positions of manufacturing firms in Ghana is dominated by males.

Evaluation of the relationship between Management Accounting Practices and Sustainability Performance of manufacturing firms in Ghana (H₁)

The first hypothesis of this study postulates a significant positive relationship between MAPs and SsP of manufacturing firms in Ghana. The

independent variable which is MAPs have five sub constructs under it namely; Budgeting System (BS), Costing System (CS), Decision Support System (DSS), Performance Management System (PMS) and Strategic Management Accounting System (SMAP). The dependent variable which is sustainability performance (SsP) has three aspects namely; Financial Performance (FP), Environmental Performance (EP) and Social Performance (SP). The researcher focused on first order construct so the variables were tested individually instead of second order where the variables would have been tested in composite forms.

From Table 26, the path coefficients between CS and FP, DSS and EP, DSS and SP, PMS and EP, PMS and SP as well as SMAP and EP were found to be positive, consistent with expectation and the p-values of these relationships were found to be significant (Table 26) at 1% and 5% [CS and FP ($\beta = 0.441$, t = 6.116, p < 0.01), DSS and EP ($\beta = 0.211$, t = 2.176, p < 0.05), DSS and SP ($\beta = 0.291$, t = 3.160, p < 0.01), PMS and EP ($\beta = 0.278$, t = 2.635, p < 0.01), PMS and SP ($\beta = 0.226$, t = 2.465, p = 0.05) as well as SMAP and EP ($\beta = 0.177$, t = 2.025, p = 0.05)]. This implies that there is significant positive relationship between these pairs of variables. These first order hypotheses are therefore supported. These positive and significant relationships confirm the institutional theory of organizations, which argues that, MAPs of firms have impact on their performance.

In the first place, the costing systems (CS) in place at the manufacturing firms caused their financial performance (FP) to improve. This means that, Ghanaian manufacturing firms continuously engage in job costing, process costing and variable costing which help them to minimise

their cost of operations. These cost control measures help the firms to improve upon their sales, profits and cash flows. This finding is consistent with an earlier study by Adu-Gyamfi and Chipwere (2020) in Ghana, where the authors found that costing systems of listed manufacturing firms have significant positive relationship with their financial performance. Similarly, this finding agreed in a way with the result of a study conducted by Maiga et al. (2014), where the authors found out that costing systems of manufacturing firms in USA interact with information technology integration to boost their financial performance. Again, this finding is in line with a research by Hardan and Shatnawi (2013) which found a positive relationship of costing system and financial performance of telecom companies in Jordan. However, Pokoma (2016) demonstrated that, medium and large scale companies in Czech Republic that use costing system recorded similar improved financial performance as those who do not have any particular costing systems in place. This implies that other factors might have contributed to the improved performance and not necessarily their costing system. Again, focusing on hotels in Greece, Diavastis et al. (2016) was able to establish that costing systems alone have no significant relationship with financial performance, but appropriate costing systems interact with accounting information system to enhance financial performance.

Secondly, the decision support systems (DSS) in place at the manufacturing firms caused their environmental performance (EP) to improve. The intuition behind this is that Ghanaian manufacturing firms regularly engage in customer profitability analysis and net present value (NPV) analysis. For instance, they classify their customers into various

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groupings according to the profit each customer brings to the firm. These firms also use NPV as a capital budgeting tool to decide on the most profitable project to invest in. These measures help Ghanaian manufacturing firms to make more profit. Some of this profit is used to keep the environment neat and safe for residents. For instance, some of the profit they make is used to implement policies that help to minimise the waste they generate that pollute the environment. Though this study is partially in line with literature, most scholars use financial performance as a measure of performance. Though Nartey and Van der Poll (2021) advised scholars to research on the impact of Innovative Management Accounting Practices (IMAP) like DSS on EP of firms, much has not yet been done to look at the impact of DSS on environmental performance of firms. For instance, Adu-Gyamfi and Chipwere (2020) and Maziriri (2017), found a significant positive relationship between DSS and FP of listed firms in Ghana and South Africa respectively. The novel finding from this study is that, DSS can also help to improve EP, not only FP. Thus, this study on the positive link between DSS and EP should guide manufacturing firms to know their custommers more as well as use NPV analysis in investment decision making to boost their EP.

Thirdly, the decision support systems (DSS) in place at the manufacturing firms caused their social performance (SP) to improve. This implies that Ghanaian manufacturing firms regularly engage in DSS like net present value analysis and customer profitability analysis. These measures help to improve their social performance. For instance, by engaging in customer profitability analysis, these firms were able produce quality goods to attract more customers and this helped them to employ more school leavers,

retain their experienced staff as well as provide free social amenities for the communities in which they are located. Again, by engaging NPV analysis to invest in profitable projects, these manufacturing firms are able to record bigger profiss that help them to expand their operations to emply more people from the localities in which they operate. Though this study is partially in line with literature, most scholars use financial performance as a measure of performance. Though Nartey and Van der Poll (2021) advised scholars to research on the impact of Innovative Management Accounting Practices (IMAP) like DSS on SP of firms, much has not yet been done to look at the impact of DSS on SP of firms. For instance, Adu-Gyamfi and Chipwere (2020) and Maziriri (2017), found a significant positive relationship between DSS and FP of listed firms in Ghana and South Africa respectively. The novel finding from this study is that, DSS can also help to improve SP, not only FP. Thus, this study on the positive link between DSS and SP should guide manufacturing firms to know their custommers more as well as use NPV analysis in investment decision making to boost their SP.

Fourthly, the performance management systems (PMS) in place at the manufacturing firms caused their environmental performance (EP) to improve. The performance management measures include engaging in ratio analysis and keeping records of reasons why employees leave the firm or absent themselves from work. For instance, it is possible that these firms keep records of the proportion of their yearly profits that is spent on keeping the environment safe. These records can serve as a guide to continuously encourage management of the firms to allocate higher budgets for tree planting and other environmental satefy measures. Again, knowing the

reasons why employees leave the firms or absent themselves from work, help management of these manufacturing firms to implement motivational packages to retain their experienced employees, who stay and work hard to improve the profit levels of the firms. Again, portions of this profit can be used to keep the environment safe.

Though this finding is partially in support of many scholarly studies that found significant positive relationship between Environmental Management Accounting Practices and EP (Gunarathne & Lee, 2015; Solovida & Latan, 2017; Fuzi et al., 2019; Susanto, 2019; Sari et al., 2020; Christine et al., 2019; Zandi & Lee, 2019), studies on direct relationship between PMS and EP have not been sighted. Though, Adu-Gyamfi and Chipwere (2020) and Maziriri (2017), found a significant positive relationship between PMS and FP, their study did not cover EP. This finding, which is in response to the advice given by Nartey and Van der Poll (2021) that scholars should conduct more studies on the impact of PMS on EP of firms, should guide leadership of firms to use ratio analysis and motivation of employees to boost their EP.

Furthermore, the performance management systems (PMS) in place at the manufacturing firms caused their social performance (SP) to improve. This implies that, as the these manufacturing firms use ratio analysis and record of why their employees leave their firms or absent themselves from work, their social performance (SP) improves. The performance management measures include engaging in ratio analysis and keeping records of reasons why employees leave the firm or absent themselves from work. For instance, it is possible that these firms keep records of the proportion of their yearly

profits that is spent on improving the lives of people living in the communities in which they operate, in terms of production of quality products and job creation for the locals.

These records can serve as a guide to continuously encourage management of the firms to allocate higher budgets to improve quality of products, expand operations as well as do more clean-up campaigns. Again, knowing the reasons why employees leave the firms or absent themsemves from work, help management of these manufacturing firms to implement motivational packages to retain their experienced employees, who stay and work hard to improve the profit levels of the firms. Again, portions of this profit can be used to expand operations in order to create more jobs for the local people.

Though this finding is partially in support of many scholarly studies that found significant positive relationship between Management Accounting Practices and EP (Gunarathne & Lee, 2015; Solovida & Latan, 2017; Fuzi et al., 2019; Susanto, 2019; Sari et al., 2020; Christine et al., 2019; Zandi & Lee, 2019), studies on direct relationship between PMS and SP have not been sighted. Though, Adu-Gyamfi and Chipwere (2020) and Maziriri (2017), found a significant positive relationship between PMS and FP, their study did not cover SP. This finding, which is in response to the advice given by Nartey and Van der Poll (2021) that scholars should conduct more studies on the impact of PMS on SP of firms, should guide leadership of firms to use ratio analysis and motivation of employees to boost their SP. This finding is also slightly at variance with that of Adu-Gyamfi and Chipwere (2020) and

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Maziriri (2017) who found a significant positive relationship between PMS and FP. These studies, however, did not use SP as their performance indicator.

Finally, the strategic management accounting practices (SMAP) of the manufacturing firms helped to enhance their environmental performance (EP). SMAP has to do with consistent gathering and analysing of data on business competitors and using these as guidelines for informed decision making. The intuition here is that, as the Ghanaian manufacturing firms constantly collect and analyse data on the activities of their competitors and using same to guide their decisions, they are able to improve on their environmental performance indicators. For example, as a manufacturing firm considers the price its competitors are charging for their products, it is able to fix its price at a level that helps to boost its profits, some of which is used to protect the environment.

This finding is partially consistent with the result of Maziriri (2017) and Varzaru et al. (2022) who found a significant positive relationship between Strategic Management Accounting Practices and FP of firms in South Africa and Romania respectively. These studies however, focsed on FP as a measure of performance. The finding of positive relationship between SMAP and EP in this study, is a timely response to the need to conduct a study on the impact of SMAP on EP (Nartey & Van der Poll, 2021).

In summary, the findings of this study on objective one, found out that, the costing systems, decision support systems, performance management systems and the strategic management accounting systems of Ghanaian manufacturing firms have helped to improve their financial performance, environmental performance and social performance.

Evaluation of the moderating role of Information Technology Integration in the connection between Management Accounting Practices and Sustainability Performance of manufacturing firms in Ghana (H2a)

The second hypothesis of this study sought to examine the moderating role of **information technology (IT) adoption** in the relationship between management accounting practices (MAPs) and performance of manufacturing firms in Ghana (H_2). Bharadwaj et al. (1999) and Tippins and Sohi (2003), distinguished between Information Technology Integration (ITI) and Information Technology Knowledge (ITK). ITI refers to the use of IT tools and softwares to constantly be in touch with customers, suppliers, regulators as well as other external industry players; while ITK has to do with the ability of employees to use and apply their IT skills and knowledge at the work place. Thus, the first sub-hypothesis used to test this hypothesis examined the moderating role of **information technology integration (ITI) in the connectio**n between MAPs and sustainability performance of manufacturing firms in Ghana (H_{2a}).

It can be observed from Table 31 that, ITI has a positive significant moderating effect on the relationship between Performance Management System (PMS) and Financial Performance (FP), consistent with expectation and the p-value of the relationship ($\beta = 0.178$, $t = 2.072$, $p < 0.05$) was found to be significant at 5%. This implies that, manufacturing firms in Ghana use ITI tools like softwares and whatzup platforms to constantly link up with their customers, suppliers and other industry players. They at the same time implement performance management practices like ratio analysis and taking record of reasons why customers leave the firms or absent themselves from

work. The simultaneous implementation of ITI systems and PMS have helped to improve the profits and cash flows of manufacturing firms in Ghana. This implies that, ITI positively and significantly strengthens the connection between PMS and FP. Alternatively, we can say that the ITI practices of the firms helped to strengthen the link between their PMS and their FP, in terms of higher sales and profitability. This finding is in support of the contingency and RBV theories which suggest that, MAPs can only boost the performance of firms when appropriate technology is in place.

Though several studies exist on the direct impact of IT systems on performance of firms (Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), a study on the moderating role of ITI on the connection between PMS and FP has not been sighted. This finding is one of the gaps that has been filled in literature. This study however, did not find any significant moderating effect of ITI on the link between the other MAPs and SsP indicators.

Evaluation of the moderating role of Information Technology Knowledge in the connection between Management Accounting Practices and Sustainability Performance of manufacturing firms in Ghana (H$_{2b}$)

The second hypothesis of this study sought to examine the moderating role of information technology (IT) adoption in the relationship between management accounting practices (MAPs) and sustainability performance (SsP) of manufacturing firms in Ghana (H$_2$). The second sub-hypothesis used to test this hypotheis examined the moderating role of information technology Knowledge (ITK) in the connection between MAPs and sustainability performance (SsP) of manuafcturing firms in Ghana (H$_{2b}$).

As can be observed from Table 38, Information Technology Knowledge (ITK) has a positive significant moderating effect on the relationship between Performance Management System (PMS) and Financial Performance (FP). This is consistent with expectation and the p-value of the relationship ($\beta = 0.207$, t = 2.336, $p < 0.05$) was found to be significant at 5%. This implies that, the manufacturing firms in Ghana have employees who possess modern IT skills and knowledge through education and training. The firms also employ the use of Performance Management System tools like the use of ratio analysis in decision making as well as keeking records of reasons why employees leave the firms or absent themselves from work. ITK of employees therefore, helped to strengthen the relationshiop between PMS and profitability of manufacturing firms, in terms of higher sales, profits and cash flows. This finding confirms the assertion by contingency and RBV theories that, MAPs can only boost the performance of firms when appropriate technology is in place.

Though several studies exist on the direct impact of **IT systems on performance** of firms (Gutiérrez & Teshima, 2018; Ankrah, 2019; Amoako et al., 2020; Seth & Xiaofang, 2021), but a study on the moderating role of ITK on the connection between PMS and FP has not been sighted. For instance, Vachon (2012) found a positive significant relationship between ITK and performance of manufacturing firma in Brazil, China, USA, Germany and Hungary. Again, in a study conducted by Wu et al. (2017), the authors found out that Chinese firms with superior IT capabilities were more profitable than their counterparts who have employees with inferior IT skills. This finding is one of the gaps that has been filled in literature. This study however, did not

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find any significant moderating effect of ITK on the link between the other MAPs and SsP indicators.

The cue from this finding is that, manufacturing firms in Ghana should ensure that, apart from engaging employees who can apply advanced IT skills at the work place, they should also implement relevant performance management tools like ratio analysis to boost their financial performance. This is because, these two interact effectively to boost their bottom line profits.

Evaluation of the moderating role of Corporate Governance in the connection Management Accounting Practices and Sustainability Performance of manufacturing firms in Ghana (H₃)

The third hypothesis that was examined by this study is the moderating role of Corporate Governance (CG) in the relationship between management accounting practices (MAPs) and sustainability performance (SsP) of manufacturing firms in Ghana. From table 44, this study established that CG has a significant positive moderating effect on the relationship between PMS and EP, consistent with expectation. Besides, the p-value of this relationship ($\beta = 0.166$, $t = 2.228$, $p < 0.05$) was found to be significant at 5%. This implies that, CG practices of Ghanaian manufacturing firms like having effective audit committees have helped to strengthen the link between their PMS and their EP. For instance, these firms have well resourced and functioning audit committees as well as effective performance management systems like reliance on ratio analysis in decision making. These two work hand in hand to generate more profits that was used to keep the environment safe. For example, it is likely that, some of the yearly profit they generate is budgeted and used to implement policies that helped to mitigate the harmful

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effects their operations cause to the environment. Thus, they are able to control pollution in the respective areas where they operate. This finding confirms the assertion by contingency and RBV theories that, MAPs can only boost the performance of firms when appropriate internal resources like effective CG practices are in place.

Though many studies have established direct impact of CG on performance of firms (Wang & Huyah, 2015, Puni & Anlesinya, 2020), no study has been sighted on the moderating role of CG in the link between PMS and EP as recommended by the contingency and RBV theories. This finding has therefore, been able to fill this lacuna. For instance, significant positive relationships were found to exist between CG principles and FP of firms (Wang & Huyah, 2014; Puni & Anlesinya, 2020). However, in a study conducted by Mohan and Chandramohan (2018), the authors found significant negative effect of CEO duality and board size on FP of listed firms in Soudi Arabia. Khatib and Nour (2021) also found significant negative effect of board meetings and audit committees on FP of listed firms in Malaysia. This implies that regular board meetings and audit committees' work might have ballooned their operating cost which in turn reduced their profitability.

The study also found significant negative moderating role of CG on the link between DSS and EP, which is not consistent with expectation (Table 44). The p-value of this relationship CG ($\beta = -0.198$, $t = 2.478$, $p < 0.05$) was inversely significant at 5%. This implies that, as the firms practice their CG systems more, the relationship between their DSS and EP is weakened. This strongly contradicts the assertion by the RBV and contingency theories which expect CG to play a significant positive moderating role onn the relationship.

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This may mean that, the CG systems of these firms are not yet institutionalised or strong enough to have any strong impact on the relationship between their DSS and their EP.

Though many studies have established direct impact of CG on performance of firms (Wang & Huyah, 2015, Puni & Anlesinya, 2020), no study has been sighted on the moderating role of CG on the link between DSS and EP as recommended by the contingency and RBV theories. For instance, Mohan and Chandramohan (2018), conducted a study on the direct relationship between CG and FP and found a significant negative relationship between them. These authors found out that, CEO duality, board size and board composition affect profitability negatively in Southern Arabia. It can be argued that, in our part of the world and for that matter Ghana, CG policies are more theoretical than practical. This finding has therefore, been able to fill this lacuna, in terms of just the significanty moderating role of CG.

It could be that these CG policies are not well implemented, hence unable to impact on the MAPs versus performance relationship. On the other hand, the moderating role of CG in the relationship between other MAPs and other SsP indicators was found not to be significant.

Evaluation of the moderating role of Organizational Culture in the connection between Management Accounting Practices and Sustainability Performance of manufacturing firms in Ghana (H$_4$)

The fourth and final hypothesis of this study sought to examine the moderating role of **Organizational Culture (OC)** in the relationship between management accounting practices (MAPs) and sustainability performance (SsP) of manufacturing firms in Ghana. This study found that OC does not

play any significant moderating role on the relationship between MAPs and SsP of manufacturing firms in Ghana. This finding is in contradiction with the RBV and contingency theories, that suggest that OC can strengthen this relationship. This implies that, notwithstanding the fact that, the manufacturing firms in Ghana practise some form of culture, this is not strong enough or has not reached the required threshhold to influence the connection between MAPs and SsP.

Chapter Summary

This chapter focused on discussing the findings presented in chapter four in respect of the four hypotheses that were tested in the study. The study found that some of the MAPs of the manufacturing firms in Ghana (CS, DSS, PMS and SMAP) have positive significant relationship with FP, SP and EP. Again, though ITI, ITK and CG play some level of moderating role between MAPs and SsP of manufacturing firms in Ghana, OC does not play any such moderating role.

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CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This study sought to assess the impact of Management Accounting Practices (MAPs) on the sustainability performance (SsP) of manufacturing firms in Ghana. It also looked at the moderating role of Information Technology (IT) adoption, Corporate Governance (CG) and Organizational Culture (OC) in the relationship between MAPs and performance of firms. This chapter presents a summary of the study, major findings, recommendations as well as suggestions for further research.

Summary

The manufacturing sector in every economy has a role to play in the achievement of the SDGs. Though the manufacturing sector in Ghana is consistently not contributing enough to its GDP due to certain unique challenges, appropriate implementation of appropriate MAPs can help boost performance of firms in the sector, according to the institutional theory of management. Based on the institutional theory, the study assessed the relationship between MAPs and SsP of firms in the Ghanaian manufacturing sector. Furthermore, based on the contingency and RBV theories, the study also looked at the moderating roles of Information Technology (IT) adoption, Corporate Governance (CG) and Organizational Culture (OC) in the connection between MAPs and SsP of manufacturing firms in Ghana. Validated questionnaires were used to obtain data from 266 manufactuing firms that are registered with the Association of Ghana Industries (AGI).

Smart PLS-SEM, version 3, was used to process and analyse the data. In all, four major hypotheses were formulated and tested.

The summary of findings of the study are as follow: MAPs (CS, DSS, PMS and SMAP) have significant positive relationship with SsP. Secondly, IT adoption (ITK and ITI) plays a positive significant moderating role in the connection between PMS and FP. Thirdly, CG plays a significant negative moderating role in the relationship between DSS and EP. Furthermore, CG plays a significant positive moderating role in the link between PMS and EP. However, OC does not play any significant moderating role in the link between MAPs and SsP of manufactyuring firms in Ghana.

The first hypothesis postulated a significant positive relationship between MAPs (CS, BS, PMS, DSS and SMAPs) and SsP (SP, FP and EP). Analysis of the Smart PLS output reveal that some MAPs have significant positive impact on certain aspects of performance. Specifically, significant positive relationships were found between CS and FP, DSS and EP, DSS and SP, PMS and EP, PMS and SP as well as between SMAP and EP. On the contrary, not significant relationships were found between BS and EP, BS and FP, BS and SP, CS and EP, CS and SP, DSS and FP as well as between SMAP and SP. Again, no significant relationships were also found to exist between PMS and FP as well as between SMAP and FP.

The second hypothesis postulated a significant positive moderating effect of information technology (IT) adoption on the connection between MAPs and SsP of manufacturing firms in Ghana. In relation to this hypothesis, he study found significant positive moderating effect of Information Technology Knowledge (ITK) and Information Technology Integration (ITI)

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on the connection between PMS and FP. However, the study found no significant moderating effect of ITI on the connection between BS and FP, CS and FP, DSS and FP, SMAP and FP, BS and EP, DSS and EP, SMAP and EP, BS and SP, CS and SP as well as between DSS and SP. Again, no significant moderating effect of ITI was found on the relationship between PMS and FP, PMS and EP, PMS and SP as well as between SMAP and SP.

Still on the second hypothesis, no significant moderating effect of ITK was found to exist on the relationship between BS and FP, CS and FP, DSS and FP, BS and EP, DSS and EP, SMAP and EP, BS and SP, CS and SP, DSS and SP as well as between PMS and SP. Furthermore, no significant moderating effect of ITK was found on the relationship between PMS and FP, SMAP and FP, CS and EP, PMS and EP as well as between SMAP and SP.

The third hypothesis postulated a significant positive moderating effect of Corporate Governance (CG) on the connection between MAPs and SsP of manufacturing firms in Ghana. In relation to this hypothesis, CG has a positive and significant moderating effect on the link between PMS and EP. The same CG was found to have a negative but significant moderating effect on the link between DSS and EP. On the contrary, no significant moderating effect of CG was found to exist in the link between BS and FP, DSS and FP, PMS and FP, SMAP and FP, BS and SP, CS and SP, DSS and SP, PMS and SP, BS and EP as well as between SMAP and EP. In addition, no significant moderating effect of CG was found to exist in the relationship between CS and FP, SMAP and SP as well as between CS and EP.

The fourth and final hypothesis of the study postulated a significant positive moderating effect of Organizational Culture (OC) on the connection

between MAPs and SsP of manufacturing firms in Ghana. Unfortunately, OC was not found to have any significant moderating effect on the connection between MAPs and performance of manufacturing firms in Ghana. All the first order hypotheses of the moderating role of OC were therefore rejected outright.

Conclusions

This study sought to assess the relationship between MAPs and SsP of manufacturing firms in Ghana as well as the moderating role of IT adoption, CG and OC in the link between MAPs and SsP of manufacturing firms in Ghana. Smart PLS-SEM was used to analyse responses of 266 managers of the firms. The findings of the study have a lot of methodological, theoretical, managerial and practical contributions to offer.

In terms of theory or knowledge, the findings of this study have extended the literature of institutional, contingency and RBV theories. For instance, the institutional theory made it possible to establish the fact that Strategic Management Accounting Practices (SMAP) of manufacturing firms in Ghana will help to enhance the Sustainability Performance (SsP) of manufacturing firms in Ghana. Again, the contingency theory as well as the RBV theory correctly introduced the moderators (IT adoption, CG and OC) into the relationship between MAPs and SsP and these have been verified into a conceptual framework.

The findings of the study also have some managerial contributions to top level management as well as the board of manufacturing firms. In order to boost their SsP, they must implement CS (like variable costing), DSS (like customer profitability analysis), PMS (like variance analysis, and ratio

analyses) and SMAP. For instance, a manufacturing firm must constantly gather information on what its competitors are doing and use it as a guide in taking informed decisions. They must also come out with a policy to regularly train their staff to use IT skills and implement PMS (like ratio analyses) to enhance their EP.

Still on managerial contribution, manufacturing firms in Ghana, should also provide their audit committees with the needed resources as well as implement PMS (like ratio analyses) to boost their EP. Staff members must as a policy direction from management use IT tools and softwares to regularly interact with their customers, suppliers, regulators and other industry players. This is because, employees' knowledge in IT as well as the use IT to deal with all stakeholders will strengthen the connection between PMS and financial performance.

Finally, as a policy, manufacturing firms must put effective corporate governance structures in place (like having well-functioning audit committees in place and regular board meetings) since this will help to strengthen the relationship between the DSS (like customer profitability analysis) and EP as well as between PMS (like ratio analysis) of manufacturing firms and their environmental performance (EP).

In terms of methodological contribution, the study has a lot to offer. In the first place, Association of Ghana Industries (AGI) offers ideal and well represented population of manufacturing firms in Ghana. This is because, AGI has a pool of of manufacturing firms that spread across all the regions of Ghana. Some of the manufacturing firms are small, medium and large. AGI also has a representative on the Public Utilities and Regulatory Commission

(PURC) and the government of Ghana always consults them before taking any decision that affects their members. This ensures that findings can be generalised to all manufacturing firms in Ghana. Secondly, this study should encourage academic scholars to use Smart PLS-SEM to analyse studies on manufacturing firms since it can be used to analyse both normal and non-normal data. It is also very easy to use. Again, researchers should focus more on SMAP as a modern MAP as well as use SsP to represent performance of manufacturing firms. The key take away here is that, current focus of MAPs should be Strategic Management Accounting Practices (SMAP), so firms should constantly look at what competitors are doing before taking decisions. This will ensure that SsP of firms is boosted to the benefit of current and future generations.

The findings also have some practical contributions to offer. The Institute of Chartered Accountants-Ghana, which is the body that is responsible for training professional accountants in Ghana as well as issuing auditing firms in Ghana with practising licence should put SMAP in their syllabus and set examination questions on it. This will help auditors to advise their clients to implement SMAP as well as IT adoption practices to boost their SsP. This will ensure that manufacturing firms in Ghana survive as going concerns.

Recommendations

Based on the findings on objective one, the leadership of manufacturing firms in Ghana should implement CS (like job costing, process costing and variable costing), DSS (like customer profitability analysis and net present value analysis), PMS (like ratio analysis and keeping records of

why employees leave the firm or absent themselves from work) as well as SMAP (like constantly observing what competitors are doing) in order to enhance their sustainability performance (SsP).

Based on the findings on objective two, the leadership of manufacturing firms in Ghana should implement PMS (like ratio analysis and keeping records of why employees leave the firm or absent themselves from work). They must also train the staff to be knowledgeable in modern IT adoption skills and use them to engage all their stakeholders. These two policies will interact effectively to improve upon their profitability in terms of higher sales, profits and cash flows. For instance, they should have a yearly budget in place to purchase modern IT tools and softwares as well as train their employees in new IT skills and programmes. These will work hand in hand with their PMS to boost their FP.

Based on the findings on objective three, the leadership of manufacturing firms in Ghana should train, empower and resource their audit committees to make them very effective. They should at the same time implement PMS (like ratio analysis and keeping records of why employees leave the firm or absent themselves from work). These two measures will help to boost their environmental performance. For example, corporate governance (CG) experts should be regularly invited to interact with management on the best way to strengthen their audit committees in order to impact positively on the relationship between their PMS and EP.

On objective four, manufacturing firms in Ghana should know that, as at now, their cultural practices have not yet been instititinalised to play any moderating role in the link between their MAPs and their SsP. Though they

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may have some culture in place, it has not reached the level to have any strong inpact the the relationship under study. They should therefore use consistent seminars and workshops to draft unique cultural practices and encourage all and sundry to live by them. When this happens, in the near future, this OC will be strong enough to strengthen their MAPs and SsP nexus.

Suggestions for further research

As the study did not support the moderating role of organizational culture in the connection between Management Accounting Practices (MAPs) and sustainability performance (SsP) of firms, future research should consider adopting qualitative approach through interviews and focussed group discussions. This will provide more detailed data for analysis.

Secondly, this study adopted the cross-sessional research design where data was collected at one point in time. Future research should therefore, collect data from more than one point in time to capture changes that may take place over time. This will help the researcher to compare findings from different time periods.

Future researchers should also consider looking for grant to pay research assistants to use interview approach to fill the questionnaires. This will help to gather more detailed information for the analysis. This is because, since most of the questionnaires are in google forms, some managers may fill them in a hurry and may not read before filling them.

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APPENDICES

APPENDIX A: RESEARCH INSTRUMENT

Department of Accounting

School of Business

College of Humanities and Legal Studies

University of Cape Coast

QUESTIONNAIRE

Management Accounting Practices and Performance of Manufacturing firms in Ghana

Dear respondent,

My name is John Kwame Akuma, a PhD in Business Administration candidate of the University of Cape Coast School of Business. I humbly seek your knowledge on Management Accounting Practices (MAPs) of manufacturing firms in Ghana. As part of collecting primary data for this study, you have been selected as a respondent due to your immense knowledge and expertise in this research area. It will take you approximately 15 minutes to fill this questionnaire. The information is solely for academic purposes so respondents are assured of their privacy and confidentiality. Thank you for your participation.

Section A: Demographic Profile

A1. In which year was your firm established?....................................

A2. Total number of employees in your organization...........................

A3. Type of owenership?   Ghanaian(s) [ ]   Foreigner(s) [ ]   Both [ ]

A4. Gender: Male [ ]   Female [ ]

A5. Position in the firm: Senior Manager [ ] Board Member [ ] Shareholder [ ]
Others (please specify)........................

A6. Number of years of working in this firm....................................

A7. Age: Less than 30 years [ ]   Between 30 to 40 years [ ]
Between 41 to 50 years [ ]   More than 50 years [ ]

A8. Manufacturing activities of your firm (sector)

Furniture [ ]   Rubber and plastic [ ]

Food and beverage [ ]   Chemicals & chemical products [ ]

Non-metallic mineral products [ ]

Others (Please specify)..

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PART B
Measurement of Management Accounting Practices (MAPs) of manufacturing firms
Which of the following management accounting practices are in use by your firm? Please you can tick more than one.

- Costing Systems [ ]
- Budgeting Systems [ ]
- Performance Management Systems [ ]
- Decision Support Systems [ ]
- Strategic Management Accounting Practices [ ]
- Environmental Management Accounting Practices [ ]

Please indicate the extent to which you agree with the measurement of MAPs of your firm on the following scale by ticking [√] the appropriate box:

1. **Not at all**
2. **Least agree**
3. **Agree**
4. **Strongly agree**
5. **Very strongly agree**

S/N	MANAGEMENT ACCOUNTING PRACTICE STATEMENT	1	2	3	4	5
	Management Accounting Practice Indicator (MAPI)					
A) COSTING SYSTEM						
CS 1	My firm uses **Job Costing** to monitor the costs incurred in production (that is **cost of specific jobs**)					
CS 2	My firm uses **Batch Costing** to monitor the costs we incur in production (that is **cost incurred when a group of products are produced**)					
CS 3	My firm uses **Contract Costing** to monitor the cost incurred in production (that is cost that relate to a specific contract with a customer)					
CS 4	My firm uses **Process Costing** to monitor the cost incurred in production (that is allocating direct and indirect costs of a manufacturing process)					
CS 5	My firm uses **Absorption Costing** to monitor the costs incurred in production (this means cost of a product is determined by adding all **cost of raw materials used, direct labour, variable expenses and fixed manufacturing cost**)					
CS 6	My firm uses **Variable Costing** to monitor the costs incurred in production (this means cost of products produced include cost of **direct raw materials, direct labour and variable expenses**)					
CS 7	My firm uses **Activity Based Costing** to monitor the costs incurred in production (this means all activities involved in producing a product are identified and specific cost is assigned to each activity)					

B) BUDGETING SYSTEM						
BS 1	My firm prepares **sales budget** to forecast sales and plan for utilization of resources					
BS 2	My firm prepares **purchases budget** to plan for the amount of raw materials that must be bought during each budget period					
BS 3	My firm prepares **production budget** to show the number of units of products that must be manufactured to meet expected demand					
BS 4	"My firm prepares **cash flow budget** to estimate all cash receipts and cash expenditures that are expected to occur during the budget period"					
BS 5	My firm prepares **cash budget** to assess whether the firm will have sufficient cash to continue operating over a period of time					
BS 6	My firm prepares **zero based budgets** to justify all planned expenses (this means budgets are prepared from the scratch)					
BS 7	My firm prepares **incremental based budgets** to justify all planned expenses (this means previous budget is used as the base to prepare the current budget)					
BS 8	My firm prepares **activity-based budgets** to justify all planned expenses					
BS 9	My firm prepares **flexible based budgets** to justify all planned expenses (this means **budgets that are adjusted to the activity or volume levels)**					
BS 10	My firm prepares monthly budgets (**every month**)					
BS 11	My firm prepares quarterly budgets (**every 3 months)**					
BS 12	My firm prepares semi-annual budgets (**every 6 months)**					
BS 13	xiii) My firm prepares annual budgets (**once a year)**					
C) PERFORMANCE MANAGEMENT SYSTEM						
PMS 1	My firm uses **return on investment (ROI)** to measure its performance (that is Profit divided by cost of investment)					
PMS 2	My firm always compares its **budget estimates with the actual expenditure** to measure its performance					
PMS 3	My firm **interviews its customers** to find out their level of satisfaction with our products					
PMS 4	My firm uses **ratio analysis** to measure its performance					
PMS 5	My firm keeps record of **on-time delivery** of goods to customers to assess its delivery					

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	performance over time					
PMS 6	My firm keeps record of the **total time it takes to manufacture its products** during every manufacturing period					
PMS 7	My firm keeps record of **reasons why employees leave** the organisation					
PMS 8	My firm keeps record of reasons why employees absent themselves from work or come to work late					
D) DECISION SUPPORT SYSTEMS						
DSS 1	My firm does **break-even analysis** to determine the number of goods to produce to start making profit					
DSS 2	My firm does **economic order quantity analysis** to determine the number of raw materials to buy at a time to minimise storage cost and holding cost					
DSS 3	My firm does **customer profitability analysis** to determine the customers who give us the highest profit					
DSS 4	My firm computes **payback period** to determine the period it will take the firm to recover monies it has invested into the operations of the firm					
DSS 5	My firm computes **net present value** to determine profitability or otherwise before every production process					
E) STRATEGIC MAPs						
SMAP 1	My firm engages in **target costing** when designing new products in order to engage in proactive cost reduction practices (the target cost is obtained by deducting our expected profit from the prevailing market price)					
SMAP 2	"My firm engages in analysis of the costs incurred in each of the activities in the firm's value chain"					
SMAP 3	My firm monitors and keeps records of the costs that occur across stages of product development and distribution (for example costs of installation, operation, support, maintenance and disposal)					
SMAP 4	My firm takes into account strategic factors when fixing prices for its products (for example: competitor price reaction, elasticity, market growth, economies of scale and experience)					
SMAP 5	My firm constantly collects and analysis data on competitors' price reaction, demand reaction and market position					

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PART C

Measurement of sustainability performance of manufacturing firms

Please indicate the extent to which you agree with the measurement of performance of your firm on the following scale by ticking [√] the appropriate box:

1. **Not at all**
2. **Least agree**
3. **Agree**
4. **Strongly agree**
5. **Very strongly agree**

S/N	SUSTAINABILITY PERFORMANCE INDICATORS	1	2	3	4	5
	Financial Performance Indicators (FPI)					
FP 1	The overall financial performance of my company has increased over that last 3 years					
FP 2	Return on assets of my company has increased over the last 3 years					
FP 3	Return on investment of my company has increased over the last 3 years					
FP 4	Operating profit of my company has increased over the last 3 years					
FP 5	Operating cash flow of my company has been stable over the last 3 years					
FP 6	The overall market share of my firm has increased over the last 3 years					
FP 7	Business transaction costs have reduced over the last 3 years					
	Social Performance Indicators (SPI)					
SP 1	Our number of new clients or customers has increased over the last 3 years					
SP 2	Employee satisfaction and retention in my firm have increased over the last 3 years					
SP 3	Employees are more responsive toward clients					
SP 4	Employee empowerment has increased in this firm over the last 3 years					
SP 5	Employee productivity in this firm has increased over the past years					
SP 6	Quality of our products and services has improved over the last 3 years					
SP 7	The number of new products we provide have increased over the last 3 years					
SP 8	Our firm has employed more people in the local community we operate over the last 3 years					
SP 9	The number of complaints by customers has reduced by at least 70% in the last three years					
SP 10	The number of customers refereed to our products has increased by at least 50% in the					

	last three years					
SP 11	The level of customer satisfaction has been on the rise in the last 3 years					
SP 12	We have opened more branches in the last 3 years					
SP 13	Over 70% of our customers feedback on the products bought are positive over the last 3 years					
SP 14	Over the past 3 years, our customers are now patronising more of our products					
SP 15	There is improved employee morale in the organization over the past 3 years					

		1	2	3	4	5
	Environmental Performance Indicators (EPI)					
EP 1	This firm has reduced the amount spent on raw material costs over the past 3 years					
EP 2	Our firm has reduced the amount spent on processes and production over the past 3 years					
EP 3	We have reduced costs of regulatory compliance over the past 3 years					
EP 4	There has been an increase in process and production efficiency					
EP 5	Personnel of this firm now have increased knowledge about effective ways of managing the environment and operations					
EP 6	There is an improvement in process and product innovations					
EP 7	Organizational-wide learning about the environment among employees has improved over the past 3 years					
EP 8	Our firm now has better relationships with our stakeholders such as local communities, regulators and environmental groups due to our environmental practices					
EP 9	There is an overall improved company reputation or goodwill due to our environmental practices					
EP 10	We have better filters and controls over emissions and discharges from our company					
EP 11	Environmental indicators are now more important in our reward systems					
EP 12	We now place more emphasis on environmental performance objectives in our planning systems					
EP 13	My firm has been able to achieve its environmental targets over the past 3 years					

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EP 14	My firm has had less complaints from the public with regards to environmental issues					

PART D
Measurement of organisational culture of manufacturing firms

Please indicate the extent to which you agree with the measurement of organisational culture of your firm on the following scale by ticking [√] the appropriate box:

1. **Not at all**
2. **Least agree**
3. **Agree**
4. **Strongly agree**
5. **Very strongly agree**

ORGANIZATIONAL CULTURE (OC)

	MEASUREMENT OF ORGANISATIONAL CULTURE					
OC1 INVTO 3	Teams in my organization are our primary building blocks					
OC2 INVCD 2	My firm continuously invests in the skills of employees					
OC3 CONSCV 1	The leaders and managers of this firm follow the guidelines that they set for the rest of the organization					
OC4 CONSCV 2	There is a clear and consistent set of values in this organization that governs the way we do business					
OC5 CONSA 1	When disagreements occur in this firm, we work hard to achieve solutions that benefit both parties in the disagreement					
OC6 ADAPCC 2	This organization responds well to competitors and other changes in the business environment					
OC7 ADAPCF 2	Customer inputs and complains directly influence our decisions					
OC8 ADAPOL 2	This organization encourages and rewards those who take risk					
OC9 ADAPOL 3	We make sure that we coordinate our actions and efforts between different units in this organization					
OC10 MISV 3	We have a clear vision and mission					

	which create excitement and motivation for our employees					

PART E

Measurement of information technology adoption of manufacturing firms

Please indicate the extent to which you agree with the measurement of information technology adoption of your firm on the following scale by ticking [√] the appropriate box:

1. **Not at all**
2. **Least agree**
3. **Agree**
4. **Strongly agree**
5. **Very strongly agree**

	Measurement of information technology adoption	1	2	3	4	5
a) IT Knowledge	**IT Knowledge Indicators (ITKI)**					
ITK 1	Our firm has a clear IT strategy					
ITK 2	We have the knowledge to develop and maintain IT-based communication links with our customers					
ITK 3	We are very knowledgeable about new IT-based innovations					
ITK 4	Our IT technical support is sufficient					
ITK 5	Our firm has skilled people who can work with different types of IT levels (these include: internet access, e-mail, accounting software, inventory software, ERP etc)					
ITK 6	We possess a high degree of IT-based technical expertise					
b) IT Integration	**IT Integration Indicators (ITII)**					
ITI 1	My firm has implemented IT solutions to fulfil our expectations					
ITI 2	Our firm uses IT to collect and analyze market information					
ITI 3	Our firm frequently utilizes decision-support systems and softwares					
ITI 4	Our firm encourages risk taking and experimentation with IT					
ITI 5	My firm has clear vision regarding how IT contributes to business value					
ITI 6	Our firm has IT-based links with our suppliers					
ITI 7	Our firm has IT-based links with our customers					

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ITI 8	Our firm integrates its business strategic planning with its IT planning				

PART F

CORPORATE GOVERNANCE

Section a: General Information

Please tick the appropriate box

Fa1. Your firm has how many Board of Directors (BODs)?...............................

Fa2. How many members of the board are regular workers of the firm?............

Fa3. How many members of the board are females?...........................

Fa4. State the gender of the Chairman of your Board of directors……………

Fa5. State the gender of your CEO or General Manager……………………..

Fa6. How often does the Board meet in a year?

Four times [ ] Twice in a year [ ]   Once in a year [ ]   Others [Specify]……

Fa7. How many Shareholders (owners) are part of the Board of Directors?..........................

Fa8. Who appoints the CEO or General Manager?

A. Board of Directors [ ] B. Shareholders [ ] C. Others (Specify)… …………

Fa9. Does your firm have an audit committee?

Yes [ ]   No [ ]

Fa10. How often does the audit committee meet?

A. Once a month [ ]   B. Once every two months [ ]

C. Once every three months [ ]   D. Once every four months [ ]

E. Once every six months [ ]   F. Once every year [ ]   G. Not Applicable [ ]

Section b: Corporate Governance Practices

Fb1. State the highest qualification of your CEO or Director.

A. Diploma [ ]   B. Degree [ ]   C. Masters' Degree [ ]

    D. Others (Specify)……

Fb2. State the highest qualification of your Chairman of Board of Directors.

A. Diploma [ ]   B. Degree [ ]   C. Masters' Degree [ ]

    D. Others (Specify)……

Fb3. How old is your CEO or director?

A. Below 25 years [ ]   B. Between 26 and 40 years [ ]

C. Between 41 and 55 years   D. Over 56 [ ]

Fb4. How old is your Chairman of Board of Directors?

A. Below 25 years [ ]   B. Between 26 and 40 years [ ]

C. Between 41 and 55 years   D. Over 56 [ ]

Fb5. Who takes major decisions for the organization? Please tick.

A. CEO or Manager [ ]   B. Chairman of the Board of Directors [ ]

C. Others (Specify)…………………………………………………….

Fb6. Does the chairman of the Board of directors own shares in your firm?

a) Yes [ ]

b) No [ ]

Fb7. My CEO or General Manager is the same as Chairman of Board of

Directors

a) Yes [ ]   b) No [ ]"

Section c

Measurement of role of Corporate Governance (CG) on financial performance

Please indicate the extent to which you agree with the measurement of role of corporate governance of your firm on the following scale by ticking [√] the appropriate box:

1. **Not at all**
2. **Least agree**
3. **Agree**
4. **Strongly agree**
5. **Very strongly agree**

		1	2	3	4	5
	MEASUREMENT OF CORPORATE GOVERNANCE					
	Corporate Governance Indictors (CGI)					
CG 1	Performance of my firm will improve if the board chairman is the same as the CEO (duality)					
CG 2	More females on the Board will have a positive effect on performance of my firm (board composition)					
CG 3	Board meetings have a positive effect on performance of our firm					
CG 4	Gender of my CEO/General Manager has a positive impact on the performance of my firm					
CG 5	Gender of my Chairman of Board of Directors has a positive impact on the performance of my firm					
CG 6	Age of our CEO/General Manager has a positive impact on the performance of my firm					
CG 7	Age of our Chairman of Board of Directors has a positive impact on the performance of my firm					
CG 8	Qualification of our CEO/General Manager has a positive impact on the performance of our firm					
CG 9	Qualification of our Chairman of Board of Directors has a positive impact on the performance of my firm					
CG 10	My firm has an effective audit committee					

Thank you for your time, opinion and comments.   ~ The End ~

APPENDIX B: APPROVAL LETTER FROM UCCIRB

UNIVERSITY OF CAPE COAST

INSTITUTIONAL REVIEW BOARD SECRETARIAT

TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: UCC/IRB/A/2016/1301
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

1ST APRIL, 2022

Mr. John Kwame Akuma
Department of Accounting
University of Cape Coast

Dear Mr. Akuma,

ETHICAL CLEARANCE – ID (UCCIRB/CHLS/2021/88)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your research **Management Accounting Practices and Performance of Manufacturing Firms in Ghana**. This approval is valid from 1st April, 2022 to 30th March, 2023. You may apply for a renewal subject to submission of all the required documents that will be prescribed by the UCCIRB.

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Samuel Asiedu Owusu, PhD
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

APPENDIX C: CONSENT FORM

CONSENT FORM
C1.   INFORMED CONSENT FORM FOR ADULT
PART I: INFORMATION SHEET
Title: Management Accounting Practices and Performance of Manufacturing firms in Ghana
Principal Investigator: John Kwame Akuma
Address: University of Cape Coast, Department Of Accounting, School Of Business, University Post Office, Cape Coast, Ghana."

General Information about the Research

My name is John Kwame Akuma, a PhD in Business Administration candidate at the School of Business, University of Cape Coast. I am conducting a research on Management Accounting Practices (MAPs) and performance of manufacturing firms in Ghana. The study involves administration of questionnaires to leadership of all manufacturing firms that are registered with the Association of Ghana Industries (AGI). I am interested in tapping your ideas on the moderating roles of corporate governance, organizational culture and information technology on the link between MAPs and of performance of your firm.

You are expected to fill this questionnaire which is expected to take up to twenty (20) minutes to complete. In order to have reliable and timely data to work with, the questionnaires have been given to your leadership, AGI to distribute to their members. The researcher hopes this arrangement will help retrieve them back in time for the analyses."

Procedures

To find answers to questions that relate to the application of MAPs in your manufacturing firm, one person in your leadership position is expected to take part in this survey which is designed and provided by the researcher, John Kwame Akuma. The researcher (my good self) or any of my trained field assistants will come to your head office to make the questions available to you in google form. One person within your leadership will be required to fill and submit the survey questionnaire on the phone. Once you submit, the response will come directly into my mail.

The researcher has selected the leadership of your manufacturing firm to fill the instrument because they are in charge of formulation and implementation of strategic policies of the firm. They have the experience and knowledge in MAPs of the firm. Thus, there is high probability of receiving reliable responses that will contribute much to the conclusions that will be drawn from the findings.

The information recorded is considered confidential, and no one else except the researcher and his supervisor, Dr George Tachie, will have access to your

survey responses. The expected duration of the survey is about thirty (30) minutes.

Please, you have the right not to respond to any question item on the questionnaire document.

Possible Risks and Discomforts

The only expected risk associated with this research is participants taking some time off their busy schedules to fill the questionnaire. Apart from this no risk is expected.

Possible Benefits

It is expected that the findings of this research will help manufacturing firms to implement appropriate MAPs, good corporate governance procedures and right information technology in order to boost their performance. The researcher is also of the strong conviction that, as manufacturing firms start performing better through the implementation of the right policies, they will get enough resources to expand and provide more jobs for the youth as well manufacture products that will make the environment safe for all residents.

Confidentiality

I shall use all powers within my means to protect the information you provide for this study. The name of your manufacturing firm will not be captured in my analyses and reports. Rather, general findings of manufacturing firms will be made. Copies of the final report will be made available to your outfit.

Compensation

After the sets of questionnaire are retrieved, two blue pens and a mini diary will be given to each participant who fills the survey document. This reward package will be left at the front desk of The Association of Ghana Industries (AGI) in Accra for distribution.

Voluntary Participation and Right to Leave the Research

It should be clear to the selected respondents that they are not forced to take part in this research and they can decide anytime, if they so wish, to stop responding to the questions without incurring any cost.

Contacts for Additional Information

For further enquiries about this research, the following people should be contacted:

- Student: John Kwame Akuma (024 454 2464/057 029 7194)
- Principal Supervisor: Dr George Tachie (024 437 8894/020 875 3999)
- Co-Supervisor: Dr Anthony Idun (054 381 8894/020 847 2443)

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of University of Cape Coast (UCCIRB). If you have any questions about your rights as a research participant you can contact the Administrator at the IRB Office between the hours of 8:00 am and 4:30 p.m. through the phone lines 0558093143/0508878309 or email address: irb@ucc.edu.gh."

PART II: VOLUNTEER'S AGREEMENT

The above document describing the benefits, risks and procedures for the research title **(Management Accounting Practices and performance of Manufacturing Firms in Ghana)** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Volunteer's Name:………………………………...
Volunteer's Mark/Thumbprint…………
Date: ……………………………………………

If volunteer cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Witness's Name: ………………………………
Witness's Mark/Thumbprint: …………………
Date: ………………………………………………

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Researcher's Name:…………………………….
Researcher's Signature: ……………………..
Date: **………………………………………..**"

APPENDIX D: OUTER LOADINGS

	BS	CS	DSS	EP	FP	PMS	SMAP	SP
BS1	0.853							
BS12	0.730							
BS13	0.753							
BS2	0.846							
BS3	0.770							
BS4	0.855							
BS5	0.835							
BS6	0.705							
BS9	0.708							
CS1		0.852						
CS4		0.861						
CS6		0.856						
DSS3			0.879					
DSS5			0.893					
EP10				0.840				
EP11				0.847				
EP14				0.761				
EP4				0.790				
EP5				0.773				
EP8				0.827				
FP1					0.876			
FP2					0.922			
FP3					0.895			
FP4					0.903			
FP5					0.820			
PMS4						0.777		
PMS6						0.803		
PMS7						0.871		
PMS8						0.844		
SMAP5							1.000	
SP11								0.757
SP13								0.809
SP14								0.709
SP15								0.771
SP2								0.736
SP3								0.724
SP4								0.782
SP5								0.790
SP6								0.745
SP7								0.714

Source: Akuma (2022)

APPENDIX E: CROSS LOADINGS

	BS	CS	DSS	EP	FP	PMS	SMAP	SP
BS1	0.853	0.729	0.625	0.465	0.549	0.593	0.573	0.522
BS12	0.730	0.569	0.510	0.488	0.353	0.603	0.537	0.421
BS13	0.753	0.634	0.564	0.353	0.493	0.541	0.548	0.374
BS2	0.846	0.648	0.557	0.460	0.502	0.599	0.570	0.487
BS3	0.770	0.519	0.574	0.488	0.332	0.650	0.627	0.452
BS4	0.855	0.631	0.617	0.464	0.525	0.597	0.496	0.509
BS5	0.835	0.598	0.582	0.502	0.551	0.590	0.564	0.529
BS6	0.705	0.587	0.484	0.345	0.400	0.485	0.414	0.428
BS9	0.708	0.600	0.455	0.381	0.354	0.454	0.498	0.383
CS1	0.710	0.852	0.651	0.450	0.629	0.584	0.515	0.479
CS4	0.638	0.861	0.499	0.492	0.519	0.497	0.542	0.505
CS6	0.649	0.856	0.568	0.414	0.491	0.493	0.532	0.438
DSS3	0.610	0.606	0.879	0.504	0.490	0.611	0.523	0.519
DSS5	0.639	0.582	0.893	0.544	0.453	0.630	0.589	0.598
EP10	0.455	0.437	0.458	0.840	0.459	0.470	0.464	0.651
EP11	0.487	0.525	0.530	0.847	0.477	0.554	0.476	0.706
EP14	0.471	0.429	0.419	0.761	0.384	0.490	0.443	0.552
EP4	0.409	0.360	0.533	0.790	0.444	0.483	0.428	0.658
EP5	0.490	0.395	0.472	0.773	0.367	0.541	0.478	0.682
EP8	0.389	0.404	0.441	0.827	0.449	0.391	0.402	0.629
FP1	0.503	0.524	0.447	0.447	0.876	0.408	0.406	0.556
FP2	0.539	0.603	0.483	0.497	0.922	0.436	0.468	0.643
FP3	0.536	0.572	0.470	0.436	0.895	0.403	0.355	0.566
FP4	0.511	0.570	0.451	0.483	0.903	0.377	0.372	0.573
FP5	0.476	0.562	0.497	0.492	0.820	0.428	0.363	0.595
PMS4	0.543	0.447	0.576	0.489	0.296	0.777	0.434	0.466
PMS6	0.602	0.445	0.571	0.522	0.386	0.803	0.516	0.493
PMS7	0.656	0.590	0.589	0.483	0.429	0.871	0.545	0.505
PMS8	0.583	0.540	0.577	0.517	0.412	0.844	0.614	0.541
SMAP5	0.682	0.618	0.629	0.558	0.445	0.643	1.000	0.547
SP11	0.359	0.346	0.466	0.610	0.471	0.364	0.389	0.757
SP13	0.458	0.370	0.471	0.628	0.478	0.422	0.365	0.809
SP14	0.322	0.332	0.352	0.578	0.563	0.364	0.397	0.709
SP15	0.446	0.376	0.485	0.604	0.418	0.571	0.456	0.771
SP2	0.409	0.452	0.522	0.640	0.457	0.541	0.493	0.736
SP3	0.424	0.527	0.493	0.538	0.672	0.418	0.317	0.724
SP4	0.569	0.588	0.512	0.564	0.593	0.546	0.428	0.782
SP5	0.546	0.439	0.517	0.638	0.443	0.547	0.484	0.790
SP6	0.434	0.362	0.475	0.640	0.469	0.370	0.397	0.745
SP7	0.378	0.329	0.432	0.640	0.468	0.360	0.361	0.714

Source: Akuma (2022)

APPENDIX F: COMMON METHOD BIAS

Total Variance Explained

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %
1	42.828	39.656	39.656	42.828	39.656	39.656
2	9.072	8.400	48.056			
3	4.784	4.429	52.485			
4	4.301	3.983	56.468			
5	3.188	2.952	59.420			
6	2.269	2.101	61.520			
7	1.863	1.725	63.245			
8	1.759	1.628	64.874			
9	1.605	1.486	66.360			
10	1.406	1.302	67.661			
11	1.365	1.264	68.925			
12	1.314	1.217	70.142			
13	1.243	1.151	71.293			
14	1.150	1.065	72.358			
15	1.055	.977	73.334			
16	1.045	.967	74.302			
17	1.007	.933	75.234			
18	.985	.912	76.146			
19	.938	.868	77.014			
20	.920	.852	77.866			
21	.855	.792	78.658			
22	.818	.758	79.416			
23	.807	.747	80.163			
24	.753	.697	80.860			
25	.743	.688	81.548			
26	.717	.664	82.211			
27	.691	.639	82.851			
28	.662	.613	83.464			
29	.642	.594	84.058			
30	.612	.566	84.624			
31	.607	.562	85.186			
32	.583	.539	85.726			
33	.562	.520	86.246			
34	.549	.508	86.755			
35	.508	.471	87.225			
36	.496	.459	87.685			
37	.476	.441	88.125			
38	.469	.434	88.560			
39	.456	.422	88.982			
40	.442	.409	89.391			
41	.435	.403	89.794			
42	.413	.382	90.176			
43	.397	.368	90.544			

44	.390	.361	90.905
45	.384	.356	91.261
46	.366	.339	91.600
47	.343	.317	91.918
48	.341	.316	92.233
49	.328	.304	92.537
50	.325	.301	92.838
51	.307	.285	93.123
52	.304	.281	93.404
53	.296	.274	93.677
54	.276	.255	93.933
55	.269	.249	94.182
56	.266	.247	94.428
57	.261	.241	94.670
58	.244	.226	94.896
59	.235	.218	95.113
60	.225	.208	95.322
61	.217	.201	95.523
62	.209	.193	95.716
63	.206	.191	95.907
64	.204	.189	96.096
65	.195	.181	96.277
66	.194	.180	96.456
67	.184	.170	96.626
68	.177	.164	96.791
69	.165	.153	96.944
70	.164	.152	97.096
71	.156	.145	97.240
72	.149	.138	97.379
73	.148	.137	97.515
74	.144	.133	97.649
75	.139	.128	97.777
76	.133	.123	97.900
77	.131	.121	98.021
78	.126	.117	98.138
79	.124	.115	98.253
80	.116	.107	98.360
81	.110	.101	98.461
82	.108	.100	98.561
83	.102	.094	98.655
84	.097	.089	98.745
85	.095	.088	98.833
86	.091	.084	98.917
87	.087	.081	98.997
88	.086	.079	99.077
89	.081	.075	99.151
90	.075	.069	99.221
91	.073	.068	99.288
92	.069	.064	99.352
93	.065	.060	99.412

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94	.064	.060	99.472			
95	.062	.058	99.529			
96	.060	.055	99.585			
97	.054	.050	99.635			
98	.050	.046	99.681			
99	.048	.044	99.726			
100	.046	.043	99.769			
101	.045	.042	99.810			
102	.041	.038	99.848			
103	.036	.033	99.882			
104	.031	.029	99.911			
105	.030	.028	99.938			
106	.026	.024	99.963			
107	.022	.020	99.983			
108	.018	.017	100.000			

Extraction Method: Principal Component Analysis.